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BID NOTICE

STELLENBOSCH MUNICIPALITY HEREBY INVITES YOU TO TENDER FOR B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2

TENDER NUMBER:	**B/SM 17/26**
DESCRIPTION:	**STELLENBOSCH MUNICIPALITY HEREBY INVITES YOU TO TENDER FOR B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2**
CLOSING DATE:	**27 October 2025**
CLOSING TIME:	12h00: Bids will be opened in the **Council Chambers or Supply Chain Management Boardroom.**
CIDB:	The following CIDB class of construction works will be applicable to the Tender, in accordance with the sum tendered or value determined in accordance with regulation 25(7A) of the Construction Industry Development Regulations, 2004 (as amended) – As of 23 May 2019 - Class of Construction Works: CIDB grading of 6GB or higher is required

INFORMATION:
Tender Specifications: **Warno Rude at Tel: 021 300 1749; Email: warno@nuvorm.com**
SCM Requirements: **Renae Bergstedt at 021 808 8588: e-mail:** Renae.Bergstedt@stellenbosch.gov.za
Office hours for collection; **08h00-15h30**

A Compulsory Clarification Meeting will be held at 11:00 on 8 October 2025 at Farm 29, Stellenbosch. Tenderers who fail to attend the compulsory information session will be regarded as non-compliant.

Tenders may only be submitted on the Tender document issued by Stellenbosch Municipality and must be valid for **180 days** after tender closing. Late, electronic format, telephonic or faxed Tenders will not be considered and Stellenbosch Municipality does not bind itself to accept the lowest bid or any of the tenders that has been submitted.

Sealed Tenders, with **"B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2"** clearly endorsed on the envelope, must be deposited in the Tender box at the offices of the Stellenbosch Municipality, Town House Complex (Main Building between Town Hall and Municipal Library), Plein Street, Stellenbosch. The Tender box is accessible 24 hours a day and Tenders must be accompanied by the completed Tender documents. Tenders not accompanied by a complete Tender document, will not be considered.

NOTE: This tender will be evaluated in terms of the General Conditions of Contract (General) **,** Supply Chain Management Policy and relevant specification as depicted in the document and also the Stellenbosch Preferential Procurement Policy effective from 16 January 2023 in accordance with the Preferential Procurement Regulations that was promulgated by the Minister of Finance on 04 November 2022 in Government Gazette No 47452.

The preferential points system applied is as follows:80/20 in terms of the approved policy.

Price	**80**
B-BBEE status level of contribution	**10**
Locality	**10**
Total points for Price, B-BBEE and locality	**100**

The following conditions to Tender exist (failure to comply may result in your Tender being disqualified):

1. This Tender is subject to the Joint Building Contracts Committee and special conditions for Tendering.
2. Relevant terms of reference.
3. Tenderers must be registered on the Central supplier database (CSD) if they wish to conduct business with the municipality.
4. No award will be made to tenderers whose tax status is non-compliant.
5. Tenders submitted must be in a sealed envelope clearly marked with the Tender number, placed in the tender box before closing time. Failure will result in the tender being invalid.

Tender documents, in English, are available free of charge on the website: www.stellenbosch.gov.za . Alternatively, hard copies of the document are obtainable from the offices of the Supply Chain Management Unit, Stellenbosch Municipality, Town House Complex, 1st Floor, Plein Street, Stellenbosch, upon payment of a non-refundable fee of R3970.00 per document.

Note: The municipality will never contact you to pay money in exchange for the award of a tender.

G Mettler (Ms)
MUNICIPAL MANAGER

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TENDER KENNISGEWING

STELLENBOSCH MUNISIPALITEIT NOOI U VIR DIE VOLGENDE TENDER: B/SM 17/26 KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2

TENDER NOMMER:	**B/SM 17/26**
BESKRYWING:	**STELLENBOSCH MUNISIPALITEIT NOOI U VIR DIE VOLGENDE TENDER: B/SM 17/26 KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2**
SLUITINGSDATUM:	**27 Oktober 2025**
TYD VAN SLUITING:	**12h00.** Tenders sal oopgemaak word in die **Raadsaal** of in die **Voorsieningskanaalbestuurs Raadsaal**.
KIOR:	Die volgende KIOR klas vir konstruksiewerk, in ooreenstemming met die totale bedrag getender of waarde bepaal in ooreenstemming met regulasie 25 (7A) van die Konstruksie-industrie Ontwikkelingsraad, Regulasies, 2004 (soos gewysig) op 23 Mei 2019, sal op die bod van toepassing wees. Tenderaars moet 'n geskatte KIOR kontrakteurgradering van ten minste 6GB of hoër is vereis.

NAVRAE:

Tender spesifikasies:	**Warno Rude at Tel: 021 300 1749; Email: warno@nuvorm.com**
Vkb vereistes:	**Renae Bergstedt at 021 808 8588: e-mail: Renae.Bergstedt@stellenbosch.gov.za**
Kantoor Ure:	08h00-15h30

'n Verpligte terreinvergadering word op 8 October 2025 om 11:00, by Farm 29, Stellenbosch.. Tenderaars wat versuim om die verpligte inligtingsessie by te woon, sal as nie-nakoming beskou word.

Tenders mag slegs ingedien word op die tenderdokumentasie verskaf deur Stellenbosch Munisipaliteit en moet geldig wees vir **180.dae** na die sluitingsdatum. Laat, elektroniese formaat of gefakse tenders sal nie aanvaar word nie en Stellenbosch Munisipaliteit is nie verplig om die laagste of enige tender wat ingedien word te aanvaar nie.

Verseëlde tenders duidelik gemerk: "**B/SM 17/26 DIE KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2",** op die koevert, moet geplaas word in tenderbus buite die kantore van Stellenbosch Munisipaliteit ,Meenthuis Kompleks, (Hoofgebou tussen Stadsaal en Munisipale Biblioteek), Stellenbosch. Die tenderbus is 24 uur per dag beskikbaar en tenders moet vergesel word met die voltooide stel tenderdokumente. Tenderaanbiedinge wat nie deur die volledige tenderdokument vergesel word nie, sal nie oorweeg word nie.

LET WEL: Hierdie tender sal geëvalueer word ingevolge die Algemene Kontrakvoorwaardes, , Voorsieningskanaal Bestuursbeleid and relevante spesifikasies, soos vervat in die tender dokument asook die Stellenbosch **Voorkeurverkrygingsbeleid effektief vanaf 16 Januarie 2023 in samewerking met die Voorkeurverkrygingsregulasies wat op 04 November 2022 deur die Minister van Finansies in Staatskoerant No 47452 afgekondig is.**

Die voorkeurpunte stelsel is soos volg gebaseer: 80/20 in terme van die goedgekeurde beleid:

Prys	**80**
BBSEB status	**10**
Ligging	**10**
Totale punte vir prys, B-BSEB en ligging	**100**

Die volgende voorwaardes vir Tender soos volg: (versuim om te voldoen, kan veroorsaak dat u Tender gediskwalifiseer word):

1. Hierdie tender is onderworpe aan die standaard tender voorwaardes en spesiale voorwaardes vir die tender;
2. Toepaslike opdrag
3. Tenderaars moet geregistreer wees op Sentrale verskaffersdatabasis (SVD) as hulle met die munisipaliteit sake wil doen
4. Geen toekenning sal gemaak word aan diensverskaffers wie se Belasting status ongeldig is.
5. Die tender wat ingedien moet word, moet in 'n verseëlde koevert wees wat duidelik gemerk is met die Tendernommer, wat in die tenderbus voor sluitingstyd geplaas word. Versuim sal tot gevolg hê dat die tender ongeldig is.

Tenderdokumente, in Engels, is verkrygbaar by die kantoor van die Voorsieningskanaalbestuurseenheid, Stellenbosch Munisipaliteit, Meenthuis Kompleks, 1ste Vloer, Pleinstraat, Stellenbosch na betaling van 'n nie-terugbetaalde tenderdeelnamefooi van R3970.00 per dokument. Alternatiewelik mag die dokument gratis afgelaai word vanaf die webblad www.stellenbosch.gov.za..

Let wel: Die munisipaliteit sal jou nooit kontak om geld te betaal in ruil vir die toekenning van 'n tender nie.

G Mettler (Me)
MUNISIPALE BESTUURDER

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TENDER NO.: B/SM 17/26

THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2

PROCUREMENT DOCUMENT

NAME OF TENDERER:			
Total Bid Price (Inclusive of VAT) *(refer to page 108 of 120)*:			
COMPLETION PERIOD IN WORKING DAYS:	**100 WORKING DAYS**		
ALTERNATIVE PRICE			
BBBEE LEVEL			
CLAIM POINTS FOR	**LOCALITY**	**YES**	**NO**

DATE: SEPTEMBER 2025

PREPARED AND ISSUED BY:

Directorate: Finance:
Supply Chain Management Unit
Stellenbosch Municipality,
PO Box 17, Stellenbosch, 7599

CONTACT FOR ENQUIRIES REGARDING SPECIFICATIONS:

Natasha Siyengele
Project Manager: PMU
Tel. Number: **021 808 8465**

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1. TENDER NOTICE & INVITATION TO TENDER

BID NOTICE

STELLENBOSCH MUNICIPALITY HEREBY INVITES YOU TO TENDER FOR B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2

TENDER NUMBER: **B/SM 17/26**

DESCRIPTION: **THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2**

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INFORMATION:

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SCM Requirements: **Renae Bergstedt at 021 808 8588: e-mail:** renae.bergstedt@stellenbosch.gov.za

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NOTE: This tender will be evaluated in terms of the Joint Building Contracts Committee (General or CIDB) , Supply Chain Management Policy and relevant specification as depicted in the document and also the Stellenbosch Preferential Procurement Policy effective from 16 January 2023 in accordance with the Preferential Procurement Regulations that was promulgated by the Minister of Finance on 04 November 2022 in Government Gazette No 47452.

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Note: The municipality will never contact you to pay money in exchange for the award of a tender.

G Mettler (Ms)
MUNICIPAL MANAGER

Please note that any suspicious collusive tendering behavior and restrictive practices by tenderers will be reported to the Competition Commission for investigation and possible imposition of administrative penalties

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TENDER KENNISGEWING

STELLENBOSCH MUNISIPALITEIT NOOI U VIR DIE VOLGENDE TENDER: B/SM 17/26 KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2

TENDER NOMMER:	**B/SM 17/26**
BESKRYWING:	**DIE KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2**
SLUITINGSDATUM:	**27 Oktober 2025**
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KIOR:	Die volgende KIOR klas vir konstruksiewerk, in ooreenstemming met die totale bedrag getender of waarde bepaal in ooreenstemming met regulasie 25 (7A) van die Konstruksie-industrie Ontwikkelingsraad, Regulasies, 2004 (soos gewysig) op 23 Mei 2019, sal op die bod van toepassing wees. Tenderaars moet 'n **geskatte KIOR kontrakteurgradering** van ten minste 6GB of hoër is vereis.

NAVRAE:

Tender spesifikasies:	Warno Rude at Tel: 021 300 1749; Email: warno@nuvorm.com
Vkb vereistes:	**Renae Bergstedt at 021 808 8588: e-mail: renae.bergstedt@stellenbosch.gov.za**
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Tenders mag slegs ingedien word op die tenderdokumentasie verskaf deur Stellenbosch Munisipaliteit en moet geldig wees vir **180**.**dae** na die sluitingsdatum. Laat, elektroniese formaat of gefakse tenders sal nie aanvaar word nie en Stellenbosch Munisipaliteit is nie verplig om die laagste of enige tender wat ingedien word te aanvaar nie.

Verseëlde tenders duidelik gemerk: **"B/SM 17/26 DIE KONSTRUKSIE VAN CALCUTTA BEGRAFPLAAS EN HERDENKINGSPARK OP PLAAS 29, STELLENBOSCH – FASE 2",** op die koevert, moet geplaas word in tenderbus van die kantore van Stellenbosch Munisipaliteit ,Meenthuis Kompleks, (Hoofgebou tussen Stadsaal en Munisipale Biblioteek), Stellenbosch. Die tenderbus is 24 uur per dag beskikbaar en tenders moet vergesel word met die voltooide stel tenderdokumente. Tenderaanbiedinge wat nie deur die volledige tenderdokument vergesel word nie, sal nie oorweeg word nie.

LET WEL: Hierdie tender sal geëvalueer word ingevolge die Algemene Kontrakvoorwaardes JBCC, Voorsieningskanaal Bestuursbeleid and relevante spesifikasies, soos vervat in die tender dokument asook die Stellenbosch **Voorkeurverkrygingsbeleid effektief vanaf 16 Januarie 2023 in samewerking met die Voorkeurverkrygingsregulasies wat op 04 November 2022 deur die Minister van Finansies in Staatskoerant No 47452 afgekondig is.**

Die voorkeurpunte stelsel is soos volg gebaseer: 80/20 in terme van die goedgekeurde beleid:

Prys	**80**
BBSEB status	**10**
Ligging	**10**
Totale punte vir prys, B-BSEB en ligging	**100**

Die volgende voorwaardes vir Tender soos volg: (versuim om te voldoen, kan veroorsaak dat u Tender gediskwalifiseer word):

1. Hierdie tender is onderworpe aan die standaard tender voorwaardes en spesiale voorwaardes vir die tender;
2. Toepaslike opdrag
3. Tenderaars moet geregistreer wees op Sentrale verskaffersdatabasis (SVD) as hulle met die munisipaliteit sake wil doen
4. Geen toekenning sal gemaak word aan diensverskaffers wie se Belasting status ongeldig is.
5. Die tender wat ingedien moet word, moet in 'n verseëlde koevert wees wat duidelik gemerk is met die Tendernommer, wat in die tenderbus voor sluitingstyd geplaas word. Versuim sal tot gevolg hê dat die tender ongeldig is.

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Let wel: Die munisipaliteit sal jou nooit kontak om geld te betaal in ruil vir die toekenning van 'n tender nie.

G Mettler (Me)
MUNISIPALE BESTUURDER

Let wel: Die munisipaliteit sal jou nooit kontak om geld te betaal in ruil vir die toekenning van 'n tender nie.

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PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE STELLENBOSCH MUNICIPALITY					
BID NUMBER:	B/SM 17/26	CLOSING DATE:	27 October 2025	CLOSING TIME:	12H00
DESCRIPTION	THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).					

BID RESPONSE DOCUMENTS MUST BE DEPOSITED IN THE BID BOX SITUATED AT **STELLENBOSCH MUNICIPALITY, TOWN HOUSE COMPLEX(MAIN BUILDING BETWEEN TOWN HALL AND MUNICIPAL LIBRARY), PLEIN STREET, STELLENBOSCH**							
SUPPLIER INFORMATION							
NAME OF BIDDER							
POSTAL ADDRESS							
STREET ADDRESS							
TELEPHONE NUMBER	CODE			NUMBER			
CELLPHONE NUMBER							
E-MAIL ADDRESS							
VAT REGISTRATION NUMBER							
TAX COMPLIANCE STATUS	TCS PIN:		**OR**	CSD No:			
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT	☐ Yes ☐ No			
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]							
1. ARE YOU THE ACCREDITED REPRESENTATIVE **IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES ENCLOSE PROOF]		**2.** ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES, ANSWER PART B:3]			
3. TOTAL NUMBER OF ITEMS OFFERED			**4. TOTAL BID PRICE**	**R**			
5. SIGNATURE OF BIDDER	……		**6. DATE**				
7. NAME AND SURNAME OF RESPONSIBLE PERSON							
8. CAPACITY UNDER WHICH THIS BID IS SIGNED							

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT	Project Management Unit	CONTACT PERSON	Warno Rude
CONTACT PERSON	Natasha Siyengele	TELEPHONE NUMBER	021 300 1749
TELEPHONE NUMBER	021 808 8465 / 073 214 3722	E-MAIL ADDRESS	warno@nuvorm.com
E-MAIL ADDRESS	natasha.siyengele@stellenbosch.gov.za		

PART B
TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.

1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR SUBMITTED ONLINE**

1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 16 January 2023, THE STELLENBOSCH SUPPLY CHAIN MANAGEMENT POLICY,THE GENERAL CONDITIONS OF CONTRACT (GCC, JBCC, FIDIC OR CIDB) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

2. TAX COMPLIANCE REQUIREMENTS

2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.

2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.

2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.

2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.

2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.

2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

3.1.	IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO
3.2.	DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO
3.3.	DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO
3.4.	DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO
3.5.	IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.
NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER:

……

CAPACITY UNDER WHICH THIS BID IS SIGNED:

……

NAME AND SURNAME DATE

……..... ……..

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PART A – ADMINISTRATIVE REQUIREMENTS IN TERMS OF THE SUPPLY CHAIN MANAGEMENT POLICY

2. CHECKLIST

PLEASE ENSURE THAT THE FOLLOWING FORMS HAVE BEEN DULY COMPLETED AND SIGNED AND THAT ALL DOCUMENTS AS REQUESTED, ARE ATTACHED TO THE TENDER DOCUMENT:

Certificate of Clarification Meeting Attendance - Is the form duly completed and signed by both tenderer and agent of the Stellenbosch Municipality?	**Yes**		**No**	
Authority to Sign a Bid - Is the form duly completed and is a **certified copy** of the **resolution** attached?	**Yes**		**No**	
Certificate of Authority for Joint Venture - Is the form duly completed and is a copy of the Joint Venture Agreement attached	**Yes**		**No**	
MBD 4 - Declaration of Interest - Is the form duly completed and signed?	**Yes**		**No**	
MBD 5 - Is the form duly completed and signed?	**Yes**		**No**	
MBD 6.1 (Preference Points claim form for purchases/services) - Is the form duly completed and signed? Is a copy of the **B-BBEE Certificate** issued by a Verification Agency accredited by SANAS **or** the **original Sworn Affidavit** attached? (NB! BBBEE CERTIFICATES CAN BE VERIFIED WITH THE VERIFICATION AGENCY BUT A SWORN AFFIDAVIT **MUST** BE AN ORIGINAL AND **NOT** A COPY TO BE ELIGIBLE FOR BBBEE POINTS)	**Yes**		**No**	
MBD 8 (Declaration of Past Supply Chain Practices) - Is the form duly completed and signed?	**Yes**		**No**	
MBD 9 (Certificate of Independent Bid Determination) - Is the form duly completed and signed?	**Yes**		**No**	
MBD 10 (Certificate of Payment of Municipal Accounts) - Is the form duly completed and signed? Are the **Identity numbers**, **residential addresses** and **municipal account numbers** of **ALL** members, partners, directors, etc. provided on the form as requested? (NB! MUNICIPAL ACCOUNTS WILL BE VERIFIED AND USED AS BASIS FOR PREFERENCE POINTS SCORING IN TERMS OF THE STELLENBOSCH PREFERENTIAL PROCUREMENT POLICY. THE BUSINESS ADDRESS, LEASE AGREEMENT OR SWORN AFFADAVIT WILL BE THE BASIS FOR AWARDING POINTS FOR LOCALITY)	**Yes**		**No**	
OHSA (Occupational Health and Safety) - Is the form duly completed and signed? Is a valid **Letter of Good Standing** from the Compensation Commissioner attached?	**Yes**		**No**	
Contract of temporary employment as community liaison officer - Is the form duly completed and signed?	**Yes**		**No**	
Proposed key personnel CV - Is all qualifications of listed personnel attached together with proof of authenticity, is the form duly completed and signed?	**Yes**		**No**	
Financial References - Is the form duly completed and signed?	**Yes**		**No**	
Estimated monthly expenditure - Is the form duly completed and signed?	**Yes**		**No**	
Proposed deviations and qualifications by tenderer - Is the form duly completed and signed?	**Yes**		**No**	
Certificate of insurance cover - Is the form duly completed and signed?	**Yes**		**No**	
Preliminary construction program - Is the program attached?	**Yes**		**No**	
Record of addenda to the tender documents - Is the form duly completed and signed?	**Yes**		**No**	
Letter of intent to provide a performance bond - Is the form duly completed and signed?	**Yes**		**No**	
Compulsory enterprise questionnaire - Is the form duly completed and signed?	**Yes**		**No**	

Health and safety plan - Is the Health and Safety Plan attached and is the form duly completed and signed?	**Yes**		**No**	
Form of Indemnity - Is the form duly completed and signed?	**Yes**		**No**	
Schedule of plant and equipment - Is the form duly completed and signed?	**Yes**		**No**	
Schedule of subcontractors - Is the form duly completed and signed?	**Yes**		**No**	
Schedule of work experience – Current Contracts - Is the form duly completed and signed?	**Yes**		**No**	
Schedule of work experience – Completed Contracts - Is the form duly completed and signed?	**Yes**		**No**	
Certificate of registration with CIDB – Is the certificate attached and is the form duly completed and signed?	**Yes**		**No**	
Form of Offer- Is the form duly completed and signed?	**Yes**		**No**	
Pricing Schedule - Is the form duly completed and signed?	**Yes**		**No**	
Bill of Quantities – Is the bill of quantities duly completed and signed?	**Yes**		**No**	
Declaration by Tenderer - Is the form duly completed and signed?	**Yes**		**No**	

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3. CLARIFICATION MEETING CERTIFICATE

I / We*, the undersigned, certify that I / we* have examined the Site for the Works and its surroundings for which I / we* am / are* submitting this Tender and have, as far as practicable possible, familiarized myself / ourselves* with all information, risks, contingencies and other circumstances which may influence or affect my / our* tender.

NAME & SURNAME			
CAPACITY			
NAME OF FIRM			
ADDRESS			
TELEPHONE NO			
E-MAIL		SIGNATURE	

NB: Please note that no latecomers will be allowed.

For all compulsory briefing sessions/site meetings/clarification meetings, bids received from interested bidders that did not attend the meeting or arrived later than predetermined date and time, will be ***disqualified***

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4. AUTHORITY TO SIGN A BID

1. SOLE PROPRIETOR (SINGLE OWNER BUSINESS) AND NATURAL PERSON

1.1. I, _____, the undersigned, hereby confirm that I am the sole owner of the business trading as _____.

OR

1.2. I, _____, the undersigned, hereby confirm that I am submitting this tender in my capacity as natural person.

SIGNATURE:		DATE:	
PRINT NAME:			
WITNESS 1:		WITNESS 2:	

OR

2. COMPANIES AND/OR CLOSE CORPORATIONS

2.1. **If a Bidder is a COMPANY**, **a certified copy of the resolution by the board of directors**, duly signed, authorising the person who signs this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid and/or contract on behalf of the company **must be submitted with this bid,** that is, before the closing time and date of the bid

2.2. In the case of a **CLOSE CORPORATION (CC**) submitting a bid**, a resolution by its members**, authorizing a member or other official of the corporation to sign the documents on their behalf, **shall be included with the bid.**

PARTICULARS OF RESOLUTION BY BOARD OF DIRECTORS OF THE COMPANY/MEMBERS OF THE CC

Date Resolution was taken	
Resolution signed by (name and surname)	
Capacity	
Name and surname of delegated Authorized Signatory	
Capacity	
Specimen Signature	

Full name and surname of ALL Director(s) / Member (s)			
1.		2.	
3.		4.	
5.		6.	
7.		8.	
9.		10.	

Is a COPY of the resolution attached?	**YES**		**NO**	

SIGNED ON BEHALF OF COMPANY / CC:		DATE:	
PRINT NAME:			
WITNESS 1:		WITNESS 2:	

OR

3. PARTNERSHIP

We, the undersigned partners in the business trading as _____ hereby authorize Mr./Ms. _____ to sign this bid as well as any contract resulting from the bid and any other documents and correspondence in connection with this bid and /or contract for and on behalf of the abovementioned partnership.

The following particulars in respect of every partner must be furnished:

Full name of partner			Signature
SIGNED ON BEHALF OF PARTNERSHIP:		DATE:	
PRINT NAME:			
WITNESS 1:		WITNESS 2:	

OR

4. CONSORTIUM

We, the undersigned consortium partners, hereby authorize_____ _____ (Name of entity) to act as lead consortium partner and further authorize Mr./Ms. _ _____ To sign this offer as well as any contract resulting from this tender and any other documents and correspondence in connection with this tender and / or contract for and on behalf of the consortium.

The following particulars in respect of each consortium member must be provided and signed by each member:

Full Name of Consortium Member	Role of Consortium Member		% Participation	Signature
SIGNED ON BEHALF OF PARTNERSHIP:			DATE:	
PRINT NAME:				
WITNESS 1:		WITNESS 2:		

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5. CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by JOINT VENTURES

We, the undersigned, are submitting this tender offer in joint venture and hereby authorize Mr./Ms. _____ authorized signatory of the Company/Close Corporation/Partnership (name) _____, acting in the capacity of lead partner, to sign all documents in connection with the tender offer and any contract resulting from it on our behalf.

(i) Name of firm (Lead partner)			
Address			
		Tel. No.	
Signature		Designation	

(ii) Name of firm			
Address			
		Tel. No.	
Signature		Designation	

(iii)Name of firm			
Address:			
		Tel. No.	
Signature		Designation	

(iv) Name of firm			
Address			
		Tel. No.	
Signature		Designation	

NOTE: A copy of the Joint Venture Agreement showing clearly the percentage contribution of each partner to the Joint Venture, shall be appended to this Schedule.

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6. STANDARD CONDITIONS OF TENDER (CIDB)

F.1 General

F.1.1 Actions

F.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

F.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note

1) A conflict of interest may arise due to a conflict of roles, which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty, which would in any way, affect any decisions taken.

F.1.1.3 The employer shall not seek, and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

F.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

F.1.3 Interpretation

F.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

F.1.3.2 These conditions of tender, the tender data and tender schedules, which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

F.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation in which:

i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially.

ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or

iii) incompatibility or contradictory interests exist between an employee and the organisation which employs that employee.

b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration.

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process.

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels.

e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body.

f) **functionality** means the measurement according to the predetermined norms of a service or commodity designed to be practical and useful, working or operating, taking into account quality, reliability, viability and durability of a service and technical capacity and ability of a tenderer.

F.1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non- receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

F.1.5 Cancellation and Re-Invitation of Tenders

F1.5.1 An organ of state may, prior to the award of the tender, cancel a tender if-

(a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or

(b) funds are no longer available to cover the total envisaged expenditure; or

(c) no acceptable tenders are received.

F1.5.2 The decision to cancel a tender must be published in the CIDB website and in the government Tender Bulletin for the media in which the original tender invitation was advertised.

F.1.6 Procurement procedures

F.1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to F.3.13, be concluded with the tenderer who in terms of F.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

F.1.6.2 Competitive negotiation procedure

F.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of F.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of F.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

F.1.6.2.2 All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of F.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

F.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

F.1.6.2.4 The contract shall be awarded in accordance with the provisions of F.3.11 and F.3.13 after tenderers have been requested to submit their best and final offer.

F.1.6.3 Proposal procedure using the two stage-system

F.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method

of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

F.1.6.3.2 Option 2

F.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

F.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

F.2 Tenderer's obligations

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.

F.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

F.2.2 Cost of tendering

F2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

F2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

F.2.3 Check documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

F.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

F.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

F.2.7 Clarification meeting

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

F.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the tender data.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

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F.2.10 Pricing the tender offer

F.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the tender data.

F2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

F.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

F.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

F.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

F.2.12 Alternative tender offers

F.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

F.2.12.3 An alternative tender offer may only be considered in the event that the main tender offer is the winning tender.

F.2.13 Submitting a tender offer

F.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

F.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

F.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

F.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

F.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked “financial proposal” and place the remaining returnable documents in an envelope marked “technical proposal”. Each envelope shall state on the outside the employer’s address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

F.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

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F.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

F.2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

F.2.15 Closing time

F.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

F.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

F.2.16 Tender offer validity

F.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

F.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

F.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

F.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of F.2.13 with the packages clearly marked as "SUBSTITUTE".

F.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: *Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.*

F.2.18 Provide other material

F.2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.

F.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

F.2.20 Submit securities, bonds and policies

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

F.2.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

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F.2.22 Return of other tender documents

If so instructed by the employer, return all retained tender documents within 28 days after the expiry of the validity period stated in the tender data.

F.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

F.3 The employer's undertakings

F.3.1 Respond to requests from the tenderer

F.3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five working days before the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.

F.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;

b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or

c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

F.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who drew documents.

F.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

F.3.4 Opening of tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

F.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its B-BBEE status level and time for completion for the main tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

F.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on B-BBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.

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F.3.6 Non-disclosure

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

F.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

F.3.8 Test for responsiveness

F.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

a) complies with the requirements of these Conditions of Tender,

b) has been properly and fully completed and signed, and

c) is responsive to the other requirements of the tender documents.

F.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,

b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or

c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

F.3.9 Arithmetical errors, omissions and discrepancies

F.3.9.1 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 for:

a) the gross misplacement of the decimal point in any unit rate;

b) omissions made in completing the pricing schedule or bills of quantities; or

c) arithmetic errors in:

i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or

ii) the summation of the prices.

F3.9.2 The employer must correct the arithmetical errors in the following manner:

a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.

b) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

c) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

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F.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

F.3.11 Evaluation of tender offers

F.3.11.1 General

Appoint an evaluation panel of not less than three persons. Reduce each responsive tender offer to a comparative offer and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

F.3.11.2 Method 1: Price and Preference

In the case of a price and preference:

1) Score tender evaluation points for price
2) Score points for preference
3) Add the points scored for price and preference

F.3.11.3 Method 2: Functionality, Price and Preference

In the case of a functionality, price and preference:

1) Score functionality, rejecting all tender offers that fail to achieve the minimum number of points for functionality as stated in the Tender Data.
2) No tender must be regarded as an acceptable tender if it fails to achieve the minimum qualifying score for functionality as indicated in the tender invitation.
3) Tenders that have received the minimum qualification score for functionality must be evaluated further in terms of the preference points system prescribed in paragraphs 4 and 5 below.

The 80/20 point system for acquisition of services, works or goods up to Rand value of R50 million.

The following formula must be used to calculate the points for price in respect of tender (including price quotation) with a rand value equal to, or above R30 000 and up to Rand value of R50 000 000 (all applicable taxes included):

$$Ps = 80\left(1 - \frac{Pt - Pmin}{Pmin}\right)$$

Where:

Ps = *Points scored for price of bid under consideration;*

Pt = *Price of bid under consideration; and*

Pmin = *Price of lowest acceptable tender or offer.*

1) (a)(1) A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), must be allocated for specific goals. These goals are :

(i) contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability;

(ii) Promotion of enterprises located in the municipal area (WCO24)

2) Regarding par 1(a)(1)(i) at least 50% of the 20/10 points must be allocated to promote this goal and points will be allocated in terms of the BBBEE scorecard as follows.

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B-BBEE Status Level of Contributor	Number of Points for 80/20 Preference Points System
1	20
2	18
3	16
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

- A tenderer must submit proof of its BBBEE status level contributor.

- A tenderer failing to submit proof of BBBEE status level of contributor may only score in terms of the 80/90-point formula for price; and scores 0 points out of 10/5 BBBEE status level of contributor, which is in line with section 2 (1) (d) (i) of the Act, where the supplier or service provider did not provide proof thereof.

3) Regarding par 1(a)(1)(ii) a maximum of 50% of the 20/10 points must be allocated to promote this goal. Maximum points will be allocated as follows.

Locality of supplier	Number of Points for 80/20 Preference Points System	Number of Points for 90/10 Preference Points System
Within the boundaries of the municipality	10	5
Outside of the boundaries of the municipality	0	0

The maximum will be proportionately adjusted depending on the number of points allocated for this goal. E.G., 40% will equate to 8/4 points.

4) An employer of state may apply the formula in paragraph (i) for price quotations with a value less than R30 000, if and when appropriate:

5) Subject to paragraph 4.3.8 of "Standard for Uniformity in Procurement, April 2017", the contract must be awarded to the tender who scores the highest total number of points.

The 90/10 preference points system for acquisition of services, works or goods with a Rand value above R50 million

5) (a) The following formula must be used to calculate the points for price in respect of tenders with a Rand value above R50 000 000 (all applicable taxes included):

$$Ps = 90\left(1 - \frac{Pt - Pmin}{Pmin}\right)$$

Where:

Ps = *Points scored for price of bid under consideration;*

Pt = *Price of bid under consideration; and*

Pmin = Price of lowest acceptable bid.

6) (a)(i) A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), must be allocated for specific goals. These goals are :

(ii) contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability;

(iii) Promotion of enterprises located in the municipal area (WCO24)

7) Regarding par 6(a)(i) at least 50% of the 20/10 points must be allocated to promote this goal and points will be allocated in terms of the BBBEE scorecard as follows.

B-BBEE status level of contributor	Number of points
1	10
2	9
3	6
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

- A tenderer must submit proof of its BBBEE status level contributor.

- A tenderer failing to submit proof of BBBEE status level of contributor
may only score in terms of the 80/90-point formula for price; and
scores 0 points out of 10/5 BBBEE status level of contributor, which is in line with section 2 (1) (d) (i) of the Act, where the supplier or service provider did not provide proof thereof.

8) Regarding par 6(a)(1)(ii) a maximum of 50% of the 20/10 points must be allocated to promote this goal. Maximum points will be allocated as follows.

Locality of supplier	Number of Points for 80/20 Preference Points System	Number of Points for 90/10 Preference Points System
Within the boundaries of the municipality	10	5
Outside of the boundaries of the municipality	0	0

The maximum will be proportionately adjusted depending on the number of points allocated for this goal. E.G., 40% will equate to 8/4 points.

5) (c) A maximum of 10 points may be allocated in accordance with subparagraph (5)(b).

5) (d) The points scored by tender in respect of B-BBEE contribution must be added to the points scored for price as calculated

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5) (e) Subject to paragraph 4.3.8 of "Standard for Uniformity in Procurement, April 2017", the contract must be awarded to the tender who scores the highest total number of points.

F.3.11.6 Decimal places

Score price, preference and functionality, as relevant, to two decimal places.

F.3.11.7 Scoring Price

Score price of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

Where:

N_{FO} = *the number of tender evaluation points awarded for price.*

W_1 = *the maximum possible number of tender evaluation points awarded for price as stated in the Tender Data.*

A = *a number calculated using the formula and option described in Table F.1 as stated in the Tender Data.*

Table F.1: Formulae for calculating the value of A

Formula	Comparison aimed at achieving	Option 1[a]	Option 2[a]
1	Highest price or discount	$A = \left(1 + \frac{P - Pm}{Pm}\right)$	A = P / Pm
2	Lowest price or percentage commission / fee	$A = \left(1 - \frac{P - Pm}{Pm}\right)$	A = Pm / P
	[a] Pm = is the comparative offer of the most favourable comparative offer. P = is the comparative offer of the tender offer under consideration.		

F.3.11.8 Scoring preferences

Confirm that tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where tenderers are not eligible for such preferences. Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the tender data.

F.3.11.9 Scoring functionality

Score each of the criteria and sub-criteria for quality in accordance with the provisions of the Tender Data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

Where:

S_O = *the score for quality allocated to the submission under consideration;*

M_S = *the maximum possible score for quality in respect of a submission; and*

W_2 = *the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data*

F.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

F.3.13 Acceptance of tender offer

Accept the tender offer; if in the opinion of the employer, it does not present any risk and only if the tenderer:

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,

b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,

c) has the legal capacity to enter into the contract,

d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,

e) complies with the legal requirements, if any, stated in the tender data, and

f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

F.3.14 Prepare contract documents

F.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

a) addenda issued during the tender period,

b) inclusion of some of the returnable documents, and

c) other revisions agreed between the employer and the successful tenderer.

F.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

F.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.16 Notice to unsuccessful tenderers

F.3.16.1 Notify the successful tenderer of the employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data, or agreed additional period.

F.3.16.2 After the successful tenderer has been notified of the employer's acceptance of the tender, notify other tenderers that their tender offers have not been accepted.

F.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender, but withhold information, which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

F3.19 Transparency in the procurement process

F3.19.1 The CIDB prescripts require that tenders must be advertised and be registered on the CIDB- i-Tender system.

F3.19.2 The employer must adopt a transparency model that incorporates the disclosure and accountability as transparency requirements in the procurement process.

F3.19.3 The transparency model must identify the criteria for selection of projects, project information template and the threshold value of the projects to be disclosed in the public domain at various intervals of delivery of infrastructure projects.

F3.19.4 The client must publish the information on a quarterly basis, which contains the following information:

- Procurement planning process

- Procurement method and evaluation process
- Contract type
- Contract status
- Number of firms tendering
- Cost estimate
- Contract title
- Contract firm(s)
- Contract price
- Contract scope of work
- Contract start date and duration
- Contract evaluation reports

F3.19.5 The employer must establish a Consultative Forum which will conduct a random audit in the implementation of the transparency requirements in the procurement process.

F3.19.6 Consultative Forum must be an independent structure from the bid committees. F3.19.7 The information must be published on the employer's website.

F 3.19.8 Records of such disclosed information must be retained for audit purposes.

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7. TENDER DATA

The Standard for Uniformity in Construction Procurement was first published in Board Notice 62 of 2004 in Government Gazette No 26427 of 9 June 2004. It was subsequently amended in Board Notice67 of 2005 in Government Gazette No 27831 of 22 July 2005, Board Notice 99 of 2005 in Government Gazette No 28127 of 14 October 2005, Board Notice 93 of 2006 in Government Gazette No 29138 of 18 August 2006, Board Notice 9 of 2008 in Government Gazette No 30692, of 1 February 2008, Board Notice 11 of 2009 in Government Gazette No 31823 of 30 January 2009, Board Notice 86 of 2010 in Government Gazette No 33239 of 28 May 2010 and Board Notice 136 of 2015 in Government Gazette38960 of 10 July 2015 (see www.cidb.org.za).

This edition incorporates the amendments made in Board Notice 136 of 2015 in Government Gazette 38960 of 10 July 2015 and the erratum notices issued thereafter

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

F.1 General

F.1.1 Actions

Add the following:

The Employer is:

STELLENBOSCH MUNICIPALITY, represented by the Engineering Department.
PO Box 17
Stellenbosch
7599

F.1.2 Tender Documents

Add the following:

"The following documents form part of this contract but is not included:

VOLUME 1: The **JBCC Principal Building Agreement, Edition 6.2** (March 2020), as published by the **Joint Building Contracts Committee (JBCC)**, shall apply. This publication is available, and tenderers must obtain copies at their own cost from the JBCC. Copies can be obtained from the Joint Building Contracts Committee at Block B, Georgina Office Park, 1283 Heuwel Avenue, Centurion, 0157, South Africa. For enquiries, contact the JBCC at telephone number +27 (0)10 593 0200, email address info@jbcc.co.za, or visit their website at www.jbcc.co.za.

VOLUME 2.1 : The South African Bureau of Standards Standardized Specification for Civil Engineering Construction SANS 1200, prepared by and obtainable from the South African Bureau of Standards, Private Bag X191, Pretoria 0001, Tel: (012) 428 6929, Fax: (012) 428 6928, Web site : www.sans.co.za. And

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Volumes 1 and 2.1 may also be inspected, by appointment, at the offices of the Employer's Agent during normal office hours

"The tender documents issued by the Employer comprise:"

VOLUME 3: The Tender Document (this document), in which is bound:

- Tender Notice & Invitation To Tender
- Clarification Meeting Certificate
- Authority To Sign A Bid
- Certificate Of Authority For Joint Ventures
- Standard Conditions Of Tender (CIDB)
- Tender Data
- Joint Building Contracts Committee – Government Procurement
- General Conditions Of Tender
- Special Conditions Of Contract
- Mbd 4 – Declaration Of Interest
- Mbd5 – Declaration For Procurement Above R10 Million (Vat Included)
- Mbd6.1 – Preference Points Claim Form In Terms Of The Preferential Procurement Regulations 2022 – Purchases/Services 80/20
- Mbd 8 – Declaration Of Bidder's Past Supply Chain Management Practices
- Mbd 9 – Certificate Of Independent Bid Determination
- Mbd 10 – Certificate For Payment Of Municipal Services
- Compensation For Occupational Injuries And Diseases Act, 1993 (Act 130 Of 1993)
- Contract Of Temporary Employment As Community Liaison Officer
- Proposed Key Personnel CV
- Financial References
- Estimated Monthly Expenditure
- Proposed Deviations And Qualifications By Tenderer
- Certificate Of Insurance Cover
- Preliminary Construction Programme (For Information Purposes Only)
- Record Of Addenda To Tender Documents
- Letter If Intent To Provide A Performance Bond
- Compulsory Enterprise Questionnaire
- Health And Safety Plan
- Form Of Indemnity
- Specifications
- Schedule Of Plant And Equipment

- Schedule Of Subcontractors
- Schedule Of Work Experience Of The Tenderer – Current Contracts
- Schedule Of Work Experience Of The Tenderer – Completed Contracts
- Certificate Of Registration With CIDB
- Form Of Offer And Acceptance
- Pricing Instructions
- Pricing Schedule
- Bill of Quantities
- Declaration By Tenderer

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F.1.4 The Employer's agent is:

Add the following:

Attention is drawn to the fact that verbal information, given by the Employer's Agent during site visits / clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the Employer. Only information issued formally by the Employer in writing to tenderers will be regarded as amending the Tender Documents.

Name:	Nuvorm (Pty) Ltd
Address:	Unit 305, Oude Postkantoor,
	c/o Plein Street and Bird Street,
	Stellenbosch
	7600
Contact person:	Mr. Warno Rüde
Tel:	+27(0)21 300 1749
Email:	warno@nuvorm.com

F.1.5 The Employer's right to accept or reject any tender offer

Add the following:

F.1.5.3 The Employer may reject a tender if, in the opinion of the Employer, the tenderer will be unable to achieve the contract participation goal tendered, in the performance of the contract.

F.1.6.2 Competitive negotiation procedure

Add the following to F.1.6.2

A competitive negotiation procedure will **not** be followed.

F.1.6.3 Proposal procedure using two-stage system

Add the following to F.1.6.3:

A two-stage system will not be followed.

F.2 Tenderer's obligations

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the tenderer satisfies the following criteria.

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(1) Completed similar projects successfully

Bidders must provide a listing of the bidder's past work experience in terms of similar projects successfully completed. The value and scale of the projects indicated for these purposes must be supplied together with other relevant information.

For building works, "Similar projects" for this tender evaluation must include a combination of the following:

- Structural concrete and superstructure construction.
- Masonry, roofing, and external envelope works.
- Internal finishes and fit-out.
- Installation of building services (electrical, plumbing, and HVAC).

For the Building works, a minimum of 3 projects completed in the past 10 years or, currently in construction, with a minimum contract sum of R10 million, including VAT, must be provided.

Note:

- Where the entity bidding is a joint venture, the experience will be assessed for each party to the joint venture which will then be considered in proportion to the percentage contribution of each party to the joint venture

(2) Demonstrate experience of key-personnel

The work required in terms of this project is considered to require specific experience and expertise and it is essential that suitably qualified and experienced personnel be assigned to this project. It would be extremely advantageous if the key personnel to be directly involved with this contract have relevant experience related to similar successfully completed projects and particular fields of specialization.

Bidders must provide CV's for the key personnel identified for each listed position to point out similar successfully completed projects and experience that is relevant to this project for each of the key personnel indicated.

Contract Manager must have a BTech or equivalent (NQF level 7 or NQF 8 qualification in the Built Environment) qualification in Building Science, Construction Management, or Quantity Surveying, and more than 5 years' experience in similar building projects, with a minimum of 2 projects valued at more than R10 million completed in the last 5 years.

The Construction Manager (Site Agent) must have a National Diploma or equivalent qualification in Construction Management, and more than 5 years' experience in similar building projects. A minimum of 2 building projects valued at over R10million must have been successfully completed within the last 5 years. The Construction Manager must be full-time on site for the duration of the construction.

Occupational Health and Safety Officer to have a minimum NQF 5 in Occupational Health and Safety or equivalent qualification, complete with professional registration as a Construction Health and Safety Officer with the South African Council for the Project and Construction Management Professions or South African Institute of Occupational Safety and Health (SAIOSH)

Tenderers shall attach certified copies of all relevant qualifications of the tendered key personnel, a Curriculum Vitae (signed by the person as a true reflection of experience) and a list of projects completed with contactable references (Client and/or Engineer).

Note:

- A degree is qualified as a 3 or 4-year degree in the relevant disciple at a registered higher university.
- A diploma is qualified as a 3- or 4-year national diploma in a relevant discipline obtained from registered University or Technicon.
- The experience must be specific to similar projects.
- One person only to qualify for each listed position. The key personnel to be used in this regard will be subject to the approval of the Employer Agent prior to the commencement date of the contract. Should any of the persons identified in the returnable schedules not be available for the position which they are indicated for, then a suitable candidate with equal or superior tertiary qualification and/or relevant experience than that of the person which he/she replaces shall be used for every such position.

(3) Construction Industry Development Board (CIDB) Registration

Only those tenderers who are registered with the CIDB or are capable of being so registered prior to the evaluation of submissions are allowed to tender. The following CIDB class of construction works will be applicable to the Tender, in accordance with the sum tendered or value determined in accordance with regulation 25(7A) of the Construction Industry Development Regulations, 2004 (as amended) – As of 23 May 2019 - **Class of Construction Works: CIDB grading of 6GB or higher is required.**

Joint ventures are eligible to submit tenders provided that:

(1) every member of the joint venture is registered with the CIDB;

(2) the lead partner has a contractor grading designation in the **GB class** of construction work; and

(3) the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a 6GB class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations.

(4) Stellenbosch Municipality Suppliers Database Registration

The Employer will only enter a formal contract with the successful tenderer who is registered on the Stellenbosch Municipality Supplier Database as well as Central Suppliers Database

(CSD). In the case of joint venture partnerships this requirement will apply individually to each party of the joint venture.

F.2.7 **Clarification Meeting**

Add the following:

The arrangements for a **compulsory** site meeting are stated in the Tender Notice and Invitation to Tender:

Tenderers should be represented at the site meeting by a person who is suitably qualified and experienced to comprehend the implications of the work involved. Tenderers must request a certificate of attendance for the clarification meeting and sign the attendance list in the name of the tendering entity after attending the site meeting. Addenda will be issued to, and tenders will be received only from those tendering entities appearing on the attendance list.

F.2.12 Alternative Tender offers

Not applicable to this tender.

F.2.13 Submitting a tender offer

Add the following to F.2.13.3

F.2.13.1 Where the tendering entity is a joint venture, it is recommended that the standard CIDB Joint Venture Agreement be used.

F.2.13.2 Parts of each tender offer communicated on paper shall be submitted as an original, plus 0 (**NIL**) copies.

F.2.13.5 *Add the following to F.2.13.5*

The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are:

Location of Tender box:	Foyer (the ground floor) of Stellenbosch Municipality Offices
Physical address:	STELLENBOSCH MUNICIPALITY
	71 Plein Street
	Stellenbosch
Identification details:	Tender number: **B/SM 17/26**
	Title of Tender: **THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2**

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F.2.13.6 *Add the following to F2.13.6*

A two-envelope procedure will **not** be followed (F.3.5)

F.2.13.9 Telephonic, facsimile or emailed tender offers will **not** be accepted.

F.2.13.10 *Add the following sub-clause after F.2.13.9:*

By signing the offer part in the Offer and Acceptance form, the tenderer declares that all the information provided in the tender submission is true and correct.

F.2.15 Closing time

Add the following to F.2.15.1:

F.2.15.1 The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.

F.2.16 Tender offer validity

Add the following to F.2.16.1:

F.2.16.1 The tender offer validity period is **180 days**.

F.2.17 Clarification of tender offer after submission

Add the following to F.2.17:

A tender will be rejected as non-responsive if the tenderer fails to provide any clarification requested by the Employer, within the time for submission stated in the Employer's written request for such clarification. A tender will also be rejected as non-responsive if the tenderer fails, within the time stated in writing by the Employer, to comply with the requirements of F.4.3.

F.2.20 **Submit securities, bonds, policies, etc.**

Add the following:

The Tenderer is required to submit with his Tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part T2.2 of this procurement document.

F.2.22 Return of other tender document

Add the following:

Return all retained Tender Documents within 28 days after the acceptance of the tender.

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F.2.23 Certificates

Add the following:

The Tenderer is required to submit the following with his tender:

F.2.23.1 Tax Compliance Status

Tenderers shall be registered and in good standing with the South African Revenue Services (SARS) and comply with conditions stated in MBD 1 (Part B).

Each party to a Consortium/Joint Venture shall comply to the conditions stated in MBD 1.

Tenderers are to note that the Employer will not award a contract to a Tenderer whose tax matters are not in order. Furthermore, the successful Tenderer (Contractor) is required to submit updated Tax Compliance Status information to the Employer should any current tax information status expire during the contract.

F.2.23.2 Bargaining Council Certificates

Tenderers must be registered with a relevant Bargaining Council (if such be in place) and must submit, with the tender, the applicable Certificate of Compliance (letter of good standing in terms of the relevant Government Gazette).

Each party to a Consortium/Joint Venture shall submit separate certificates in the above regard.

F.2.23.3 **Broad-Based Black Economic Empowerment (B-BBEE) Status Level Certificate(s)**

Tenderers shall submit documentary evidence/proof in the form of an original valid or certified copy B-BBEE Status Level verification certificate in terms of the Construction Sector Charter on Black Economic Empowerment, or an Exempted Micro Enterprise certificate issued by a registered auditor, accounting officer (as contemplated in section 60(4) of the Close Corporation Act, 1984 (Act No. 69 of 1984)) or an accredited verification agency, or certified copies thereof) in terms of the Preferential Procurement Regulations, 2022.

Consortiums/Joint Ventures will qualify for preference points, provided that the entity submits the relevant certificate/scorecard in terms of the Preferential Procurement Regulations, 2022. In the case of unincorporated entities, a verified scorecard in the name of the Consortium/Joint Venture must be submitted with the tender.

F.3 The employer's undertaking

F.3.4 **Opening of tender submission**

Add the following:

The time and location for opening of the tender offers are:

Time: Tenders will be opened immediately after the closing time for receipt of tender as stated in the Tender Notice and Invitation to Tender, or as stated in any Addendum extending the closing date.

Location: Bids will be opened in the Boardroom of Stellenbosch Municipality in public.

F.3.8 Test for responsiveness

Add the following to F3.8:

Tenders will be considered non-responsive if:

- the tenderer has not proven similar project experience and key resource experience on similar projects in terms as per F2.1.1 (1) & F2.1.1 (2) above;
- the tender is not in compliance with the Scope of Work;
- the tenderer does not comply with the CIDB contractor grading designation as specified in above;
- the tenderer has failed to clarify or submit any supporting documentation within the time for submission stated in the Employer's written request.
- The tenderer has failed to sign the Form of Offer.

F.3.9 Arithmetical errors, omissions and discrepancies

Delete the contents of Subclauses F.3.9.2 to F.3.9.4 and replace with the following:

F.3.9.2 Check responsive tender offers for:

(a) the gross misplacement of the decimal point in any unit rate;

(b) omissions made in completing the pricing schedule or bills of quantities; or

(c) arithmetic errors in:

(d) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or

(e) the summation of the prices.

F.3.9.3 Correct arithmetic errors in the following manner:

(a) If bill of quantities (or schedule of quantities) or pricing schedules apply and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the unit rate shall govern, and the line-item total shall be corrected.

(b) Where there is an obviously gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate shall be corrected.

(c) Where there is an error in the total of the prices either because of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall be corrected.

F.3.9.4 Notify the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 of all errors or omissions that are identified in the tender offer and invite the tenderer to confirm the tender offer as tendered and accept the corrected total of prices.

F.3.9.5 Check responsive tender offers for unbalanced unit rates and request tenderers to consider amending and adjusting any rates declared unbalanced by the Employer in accordance with F.4.3 while retaining the total of the prices derived after any correction made in terms of this condition to tender.

Reject a tender offer if the tenderer does not correct or accept the correction of arithmetical errors and consider rejection of a tender offer if the tenderer refuses to amend/adjust an unreasonable, unbalanced rate in the manner described above.

F.3.11 Evaluation of tender offers

F.3.11.1 General

Add the following:

The tender evaluation method for the evaluation of all responsive tender offers will be **Method 1: Price and Preference** in accordance with F.3.11.2.

F.3.11.3 **Method 2: Financial offer and preferences**

The procedure for the evaluation of responsive tenders is **Method 1,** where the total number of tender evaluation points, TEV= NFO + NP1 as detailed below.

Where NFO is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7

NP1 is the number of tender evaluation points awarded for B-BBEE Status Level Contribution in accordance with F.3.11.8.

F3.11.7 **Scoring financial offers**

Add the following:

The financial offer will be scored using **Formula 2 (Option 1),** where the value of W1 is:

- **80 points** where the financial value inclusive of all applicable taxes is equal of below R 50 000 000.
- **90 points** where the financial value inclusive of all applicable taxes is above R 50 000 000.

Price will be scored using the following formula:

N_{FO} = W_1 x A, where

N_{FO} = the number of tender evaluation points awarded for price.

W_1 = the maximum possible number of tender evaluation points awarded for price

A = is a number calculated using the formula and option described in Table 1 below.

Table 1: Formulae for calculating the value of A

Formula	Comparison aimed at achieving	Option 1	Option 2
1	Highest price or discount	$A = 1 + \frac{P - Pm}{Pm}$	$A = \frac{P}{Pm}$
2	Lowest price or percentage commission or fee.	$A = 1 - \frac{P - Pm}{Pm}$	$A = \frac{Pm}{P}$

P_m is the comparative offer of the most favorable (lowest responsive) comparative offer.

P is the comparative offer of the tender offer under consideration.

Up to a maximum of 100 minus W1 will be awarded for Preference with responsive tenders scoring points in accordance with the scoring criteria listed below.

80 Financial / 20 Preference	
Points	Description
	FINANCIAL OFFER
80	Price
	PREFERENCES
10	B-BBEE Status Level Contribution
10	Locality of supplier

F3.11.8 **Scoring preference**

Add the following:



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A maximum of 100 minus W1 tender evaluation points will be awarded for preference to tenderers who submit responsive tenders and who are found to be eligible for the preference claimed, in accordance with the criteria listed below.

Points are based on a tenderer's scorecard measured in terms of the Broad-Based Black Economic Empowerment Act (Act No 53 of 2003) (B-BBEE) and the Regulations, 2022 to the Preferential Procurement Policy Framework Act (Act No 5 of 2000) (PPPFA).

Points awarded will be according to a tenderer's B-BBEE status level of contribution and summarized in the table below:

B-BBEE Contribution Level	**80:20 Preference System**
1	10
2	9
3	7
4	6
5	4
6	3
7	2
8	1
Non-compliant	0

Eligibility for preference points is subject to the following:

(a) A tenderer's scorecard shall be based on the Construction Sector Codes of Practice promulgated in Government Gazette No 32305 of 5 June 2009; and

(b) The scorecard shall be submitted as a certificate attached to Returnable Schedule ; and

(c) The certificate shall have been issued by a registered verification agency accredited by the South African National Accreditation System (SANAS), as contemplated in the B-BBEE Framework for Accreditation and Verification by all Verification Agencies promulgated in Government Notice No 810 of 31 July 2009; and

(d) The date of issue of the certificate must be less than 12 (twelve) months prior to the advertised Tender closing date (see Tender Data F.2.15); and

(e) Compliance with any other information requested to be attached to Returnable Schedule

Add the following new subclause:

F.3.11.10 **Risk Analysis**

Notwithstanding compliance with regard to CIDB registration or any other requirements of the tender, the employer will perform a risk analysis in respect of the following:

a) reasonableness of the financial offer;

b) reasonableness of unit rates and prices;

c) the tenderers ability to fulfil its obligations in terms of the tender document, that is, that the tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience, reputation, personnel to perform the contract, etc.;

d) Minimum "C" Bank Rating as per the Returnable Schedules. A certificate will be obtained from the approved bank/institution to obtain the Bank Grading, if possible.

No tenderer will be recommended for an award unless the tenderer has demonstrated that he/she has the resources and skills required.

F.3.13 Acceptance of tender offer

Add the following:

F.3.13.1 Tender offers will only be accepted if:

(a) the Tenderer attach a valid Tax Clearance Certificate issued by the South African Revenue Services to this bid document. Bidders must indicate their pin as provided by SARS to confirm validity of their Tax Clearance Certificate;

(b) the Tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in this procurement document

(c) the Tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation;

(d) the Tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004, as a person prohibited from doing business with the public sector;

(e) the Tenderer has not:

(i) abused the Employer's Supply Chain Management System; or

(ii) failed to perform on any previous contract and has been given a written notice to this effect;

(f) the Tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the Tenderer's ability to perform the Contract in the best interests of the Employer or potentially compromise the tender process;

(g) the Tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer;

(h) the Employer is reasonably satisfied that the Tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.

(i) the Tenderer has not failed to perform on any previous contracts and has not been given a written notice to this effect.

F.3.17 **Provide copies of the contract**

Add the following:

The number of paper copies of the signed Contract to be provided by the Employer is **One**.

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Add the following:

The number of paper copies of the signed Contract to be provided by the Employer is **One**.

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8. JOINT BUILDING CONTRACTS COMMITEE – GOVERNMENT PROCUREMENT

1. DEFINITIONS

The following terms shall be interpreted as indicated:

1.1. "Closing time" means the date and hour specified in the bidding documents for the receipt of bids.

1.2. "Contract" means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

1.3. "Contract price" means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.

1.4. "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

1.5. "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally

1.6. "Country of origin" means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.

1.7. "Day" means calendar day.

1.8. "Delivery" means delivery in compliance of the conditions of the contract or order.

1.9. "Delivery ex stock" means immediate delivery directly from stock actually on hand

1.10. "Delivery into consignees store or to his site" means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.

1.11. "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.

1.12. "Force majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable.

1.13. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

1.14. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.

1.15. "JBCC" means the Joint Building Contracts Committee.

1.16. "Goods" means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.

1.17. "Imported content" means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.

1.18. "Local content" means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place.

1.19. "Manufacture" means the production of products in a factory using labor, materials, components and machinery and includes other related value-adding activities.

1.20. "Order" means an official written order issued for the supply of goods or works or the rendering of a service.

1.21. "Project site" where applicable, means the place indicated in bidding documents.

1.22. "Purchaser" means the organization purchasing the goods.

1.23. "Republic" means the Republic of South Africa.

1.24. "SCC" means the Special Conditions of Contract.

1.25. "Services" means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.

1.26. "Supplier" means the successful bidder who is awarded the contract to maintain and administer the required and specified service(s) to the State.

1.27. "Tort" means in breach of contract.

1.28. "Turnkey" means a procurement process where one service provider assumes total responsibility for all aspects of the project and delivers the full end product / service required by the contract.

1.29. "Written" or "in writing" means handwritten in ink or any form of electronic or mechanical writing.

2. Application

2.1. These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.

2.2. Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.

2.3. Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

3.1. Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a non-refundable fee for documents may be charged.

3.2. Invitations to bid are usually published in locally distributed news media and on the municipality / municipal entity website.

4. Standards

4.1. The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

5. Use of contract documents and information; inspection.

5.1. The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.

5.2. The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in JBCC clause 5.1 except for purposes of performing the contract.

5.3. Any document, other than the contract itself mentioned in JBCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.

5.4. The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

6. Patent rights

6.1. The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.

6.2. When a supplier developed documentation / projects for the municipality / municipal entity, the intellectual, copy and patent rights or ownership of such documents or projects will vest in the municipality / municipal entity.

7. Performance security

7.1. Within twenty eight (28) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.

7.2. The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.

7.3. The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms:

7.3.1. bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or

7.3.2. a cashier's or certified cheque

7.4. The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified.

8. Inspections, tests and analyses

8.1. All pre-bidding testing will be for the account of the bidder. If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspections tests and analysis, the bidder or contractor's premises shall be open, at all reasonable hours, for inspection by a representative of the purchaser or an organization acting on behalf of the purchaser.

8.2. If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.

8.3. If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the goods to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.

8.4. Where the goods or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such goods or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.

8.5. Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.

8.6. Any contract goods may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected goods shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with goods which do comply with the requirements of the contract. Failing such removal the rejected goods shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute goods forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected goods, purchase such goods as may be necessary at the expense of the supplier.

8.7. The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 22 of JBCC.

9. Packing

9.1. The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2. The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, and in any subsequent instructions ordered by the purchaser.

10. Delivery

Delivery of the goods shall be made by the supplier in accordance with the documents and terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified.

11. Insurance

The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified.

12. Transportation

Should a price other than an all-inclusive delivered price be required, this shall be specified.

13. Incidental

13.1. The supplier may be required to provide any or all of the following services, including additional services, if any:

13.1.1. performance or supervision of on-site assembly and/or commissioning of the supplied goods;

13.1.2. furnishing of tools required for assembly and/or maintenance of the supplied goods;

13.1.3. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;

13.1.4. performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and

13.1.5. training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.

13.2. Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.

14. Spare parts

14.1. As specified, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:

14.1.1. such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and;

14.1.2. in the event of termination of production of the spare parts:

14.1.2.1. advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and

14.1.2.2. following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

15.1. The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

15.2. This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.

15.3. The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

15.4. Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.

15.5. If the supplier, having been notified, fails to remedy the defect(s) within the period specified, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

16. Payment

16.1. The method and conditions of payment to be made to the supplier under this contract shall be specified.

16.2. The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfillment of other obligations stipulated in the contract.

16.3. Payments shall be made by the purchaser **no later than thirty (30**) days after submission of an **invoice, statement** or claim by the supplier.

16.4. Payment will be made in Rand unless otherwise stipulated.

17. Prices

Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized or in the purchaser's request for bid validity extension, as the case may be.

18. Variation orders

In cases where the estimated value of the envisaged changes in purchase does not vary more tha15% of the total value of the original contract, the contractor may be instructed to deliver the goods or render the services as such. In cases of measurable quantities, the contractor may be approached to reduce the unit price and such offers, may be accepted provided that there is no escalation in price.

19. Assignment

The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

20. Subcontracts

The supplier shall notify the purchaser in writing of all subcontracts awarded under this contract, if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

21.1. Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.

21.2. If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.

21.3. The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.

21.4. Except as provided under JBCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to JBCC Clause 22, unless an extension of time is agreed upon pursuant to JBCC Clause 22 without the application of penalties.

21.5. Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

Subject to JBCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to JBCC Clause 23. Penalty amount per day as per the preliminaries included in the bill of quantities.

23. Termination for default

23.1. The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:

23.1.1. if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to JBCC Clause 21.2;

23.1.2. if the Supplier fails to perform any other obligation(s) under the contract; or

23.1.3. if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.

23.2. In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for

such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.

23.3. Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.

23.4. If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the supplier as having no objection and proceed with the restriction.

23.5. Any restriction imposed on any person by the purchaser will, at the discretion of the purchaser, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person, is or was in the opinion of the purchase actively associated.

23.6. If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:

23.6.1. the name and address of the supplier and / or person restricted by the purchaser;

23.6.2. the date of commencement of the restriction

23.6.3. the period of restriction; and

23.6.4. the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

23.7. If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

When, after the date of bid, provisional payments are required, or antidumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped of subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favorable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him.

25. Force Majeure

25.1. Notwithstanding the provisions of JBCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

25.2. If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably

practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for insolvency

The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

27.1. If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.

27.2. If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.

27.3. Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.

27.4. Notwithstanding any reference to mediation and/or court proceedings herein,

27.4.1. the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and

27.4.2. the purchaser shall pay the supplier any monies due for goods delivered and / or services rendered according to the prescripts of the contract.

28. Limitation of liability

28.1. Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to Clause 6;

28.1.1. the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and

28.1.2. the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment

29. Governing language

The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.

30. Applicable law

The contract shall be interpreted in accordance with South African laws, unless otherwise specified.

31. Notices

31.1. Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice

31.2. The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

32. Taxes and duties

32.1. A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country.

32.2. A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser.

32.3. No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid SARS must have certified that the tax matters of the preferred bidder are in order.

32.4. No contract shall be concluded with any bidder whose municipal rates and taxes and municipal services charges are in arrears.

33. Transfer of contracts

The contractor shall not abandon, transfer, cede, assign or sublet a contract or part thereof without the written permission of the purchaser.

34. Amendment of contracts

No agreement to amend or vary a contract or order or the conditions, stipulations or provisions thereof shall be valid and of any force unless such agreement to amend or vary is entered into in writing and signed by the contracting parties. Any waiver of the requirement that the agreement to amend or vary shall be in writing, shall also be in writing.

35. Prohibition of restrictive practices.

35.1. In terms of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder(s) is / are or a contractor(s) was / were involved in collusive bidding.

35.2. If a bidder(s) or contractor(s) based on reasonable grounds or evidence obtained by the purchaser has / have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in section 59 of the Competition Act No 89 0f 1998.

35.3. If a bidder(s) or contractor(s) has / have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and / or terminate the contract in whole or part, and / or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.

Joint Building Contracts Committee (Edition 6.2, 2018)

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9. GENERAL CONDITIONS OF TENDER

1. Sealed tenders, with the **"B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2"** clearly endorsed on the envelope, must be deposited in the **tender box** at the offices of the Stellenbosch Municipality, Plein Street, Stellenbosch.

2. The tender must be lodged by the Tenderer in the tender box in the Main Hall Entrance, Stellenbosch Municipal Offices, Plein Street, Stellenbosch

PLEASE NOTE:

2.1. Tenders that are deposited in the incorrect box will not be considered.

2.2. Mailed, telegraphic or faxed tenders will not be accepted.

2.3. Documents may only be completed in non-erasable ink.

2.4. The use of correction fluid/tape is not allowed.

2.4.1. In the event of a mistake having been made, it shall be crossed out in ink and be accompanied by an initial at each and every alteration.

2.4.2. Alterations or deletions not signed by the Tenderer may render the tender invalid.

2.5. All bids must be submitted in writing on the official forms supplied (not to be re-typed)

2.6. All prices shall be quoted in South African currency and be **INCLUSIVE of VAT.**

3. Where the value of an intended contract (or company turnover) will exceed R1 000 000, 00 (R1 million) it is the bidder's responsibility to be registered with the South African Revenue Service (SARS) for VAT purposes in order to be able to issue tax invoices. The municipality will deem the price above R 1 000 000,00 (R1 million) to be VAT inclusive even if it is indicated that no VAT is charged. Please ensure that provision is made for VAT in these instances. The TOTAL price tendered will remain fixed.

3.1 It is a requirement of this contract that the amount of value-added tax (VAT) must be shown clearly on each invoice.

3.2 The amended Value-Added Tax Act requires that a Tax Invoice for supplies in excess of R3 000 should, in addition to the other required information, also disclose the VAT registration number of the recipient, with effect from 1 March 2005. The VAT registration number of the Stellenbosch Municipality is **4700102181.**

3 Any Tender received after the appointed time for the closing of Tenders shall not be considered but shall be filed unopened with the other Tenders received or may be returned to the Tenderer at his request.

4 Tenders may not be telefaxed to the Municipality and therefore any tenders received by fax will **not** be considered.

5 Tenders shall be opened in public at the Stellenbosch Municipal Offices as soon as possible after the closing time for the receipt of tenders.

6 The Municipality shall have the right to summarily disqualify any Tenderer who, either at the date of submission of this tender or at the date of its award, is indebted to the Municipality in respect of any rental, levies, rates and/or service charges; ALTERNATIVELY;

6.1 That an agreement be signed whereby the Tenderer agrees that a percentage or fixed amount at the discretion of the Municipality, be deducted from payments due to him for this tender, until the debt is paid in full.

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6.2 The tenderer shall declare **all** the Municipal account numbers in the Stellenbosch Area for which the enterprise or the proprietors or directors in their personal capacity is/ are responsible or co-responsible.

7. Negotiations for a fair market related price

7.1 The award of the tender may be subject to price negotiation with the preferred tenderers.

8 This bid will be evaluated and adjudicated according to the following criteria:

8.1 Relevant specifications
8.2 Value for money
8.3 Capability to execute the contract
8.4 PPPFA & associated regulations

9 Service Level Agreement

The award of the tender is subject to the signing of a Service Level Agreement (SLA) between the successful bidder and Stellenbosch Municipality.

10 Inclusion as a standard clause in the tender specification documents where any asset is constructed

On practical completion date, a report or certificate should be issued indicating the total costs of the project attributable to each significant component as identified within the lowest asset hierarchy level (4) as specified within the infrastructure catalogue or Annexure A of the Stellenbosch Municipality's asset management policy as approved in 2014, if not contained in the catalogue.

11 Centralised Supplier Database

No Bids will be awarded to a bidder who is not registered on the Centralized Supplier Database (CSD).

The CSD supplier number starting with (MAAA) number is automatically generated by the Central Database System after successful registration and validation of a prospective service provider. This number is now a mandatory requirement, as referred to in regulation 14(1) *(b)* of the Municipal Supply Chain Management Regulations, as part of the listing criteria for accrediting a prospective service provider. Prospective suppliers should self – register on the CSD website at www.csd.gov.za Registration on the CSD will be compulsory in order to conduct business with the STELLENBOSCH MUNICIPALITY. Assistance with CSD Registration can be provided by contacting 021 808 8594 or Nicolene.Hamilton@stellenbosch.gov.za

Centralized Supplier Database No. MAAA……

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10. SPECIAL CONDITIONS OF CONTRACT

Settlement of Disputes:

Should the parties fail to resolve any dispute by way of mutual consultation, either party shall be entitled to refer the matter for mediation. Such referral shall be done by either party giving written notice to the other of its intention to commence with mediation. No mediation may be commenced unless such notice is given to the other party.

Irrespective whether the mediation resolves the dispute, the parties shall bear their own costs concerning the mediation and share the costs of the mediator and related costs equally.

Where the parties reach settlement of the dispute or any part thereof, the mediator shall record such agreement and on signing thereof by the parties the agreement shall be final and binding.

Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the parties, no reference shall be made by or on behalf of either party in any subsequent court proceedings, to any outcome of an amicable settlement by mutual consultation, or the fact that any particular evidence was given, or to any submission, statement or admission made in the course of amicable settlement by mutual consultation or mediation.

If the parties cannot reach an agreement, the Mediator must refer the matter to Arbitration.

Arbitration

Arbitrator will be appointed by mutual agreement as per the provisions of the Arbitration Act of 1965 as amended, nominated from the Association of Arbitrators (Southern Africa).

The Arbitrator must be a legal practitioner with more than 10 years legal experience. Must have a good knowledge of the Municipal Finance Management Act and other relevant Municipal Legislation, and may in addition be qualified in respect of the main nature of the Contract (Engineer, Quantity Surveyor, Accountant, etc.).

The Arbitrator shall hear arguments both in writing and oral representations and parties shall have the right to contend the position of the other party and shall have the right to defend its own position.

The ruling of the Arbitrator shall be executed, but the matter may thereafter be defended in court if parties still do not agree.

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11. MBD 4 – DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state[1].
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest.
3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid:

3.1.	**Full Name of bidder or his or her representative**	
3.2.	**Identity Number**	
3.3.	**Position occupied in the Company (director, shareholder [2] etc.)**	
3.4.	**Company Registration Number**	
3.5.	**Tax Reference Number**	
3.6.	**VAT Registration Number**	

3.7.	**Are you presently in the service of the state?**	**YES**		**NO**	
3.7.1.	If so, furnish particulars:				
3.8.	**Have you been in the service of the state for the past twelve months?**	**YES**		**NO**	
3.8.1.	If so, furnish particulars:				

[1] *MSCM Regulations: "in the service of the state" means to be –*

a. a member of –
i. any municipal council;
ii. any provincial legislature; or
iii. the National Assembly or the National Council of Provinces;
b. a member of the board of directors of any municipal entity;
c. an official of any municipality or municipal entity;
d. an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
e. an executive member of the accounting authority of any national or provincial public entity; or
f. an employee of Parliament or a provincial legislature.

[2] *"Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.*

3.9.	**Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?**	**YES**		**NO**	
3.9.1.	If so, furnish particulars:				
3.10.	**Are you aware of any relationship (family, friend, other) between a bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?**	**YES**		**NO**	
3.10.1.	If so, furnish particulars:				
3.11.	**Are any of the company's directors, managers, principal shareholders or stakeholders in the service of the state?**	**YES**		**NO**	
3.11.1.	If so, furnish particulars:				
3.12.	**Is any spouse, child or parent of the company's directors, managers, principal shareholders or stakeholders in the service of the state?**	**YES**		**NO**	
3.12.1.	If so, furnish particulars:				
3.13.	**Do you or any of the directors, trustees, managers, principal shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract?**	**YES**		**NO**	
3.13.1.	If so, furnish particulars:				

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3.14.	Please provide the following information on ALL directors/shareholders/trustees/members below:		
Full Name and Surname	**Identity Number**	**Personal Income Tax Number**	**Provide State[3] Employee Number**

NB:

a) PLEASE ATTACH CERTIFIED COPY(IES) OF ID DOCUMENT(S)

b) PLEASE PROVIDE PERSONAL INCOME TAX NUMBERS FOR ALL DIRECTORS / SHAREHOLDERS / TRUSTEES / MEMBERS, ETC.

4. DECLARATION

I, the undersigned (name) _____,
certify that the information furnished in paragraph 3 above is correct.

I accept that the state may act against me should this declaration prove to be false.

SIGNATURE		DATE	
NAME OF SIGNATORY			
POSITION			
NAME OF COMPANY			

[3] *MSCM Regulations: "in the service of the state" means to be –*

a. a member of –
  i. any municipal council;
  ii. any provincial legislature; or
  iii. the National Assembly or the National Council of Provinces;
b. a member of the board of directors of any municipal entity;
c. an official of any municipality or municipal entity;
d. an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
e. an executive member of the accounting authority of any national or provincial public entity; or
f. *an employee of Parliament or a provincial legislature.*

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12. MBD5 – DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (VAT INCLUDED)

For all procurement expected to exceed R10 million (VAT included), bidders must complete the following questionnaire:

1. Are you by law required to prepare annual financial statements for auditing?	**YES**		**NO**	
1.1. If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.				
2. Do you have any outstanding undisputed commitments for municipal services towards a municipality or any other service provider in respect of which payment is overdue for more than 30 days?	**YES**		**NO**	
2.1. If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days. 2.2. If yes, provide particulars.				
3. Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?	**YES**		**NO**	
3.1. If yes, furnish particulars				
4. Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?	**YES**		**NO**	
4.1 If yes, furnish particulars				

CERTIFICATION

I, the undersigned (name) _____, certify that the information furnished on this declaration form is correct.

I accept that the state may act against me should this declaration prove to be false.

SIGNATURE		DATE	
NAME (PRINT)			
CAPACITY			
NAME OF FIRM			

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13. MBD6.1 – PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022 – PURCHASES/SERVICES 80/20

NB:
Before completing this form, bidders must study the general conditions, definitions and directives applicable in respect of B-BBEE, as prescribed in the Preferential Procurement Regulations, 16 January 2023 and the Stellenbosch Preferential Procurement Policy 2025/2026

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution and any other applicable preference

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2

a) The value of this bid is estimated to not exceed R50 000 000 (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable; or

1.3 Points for this bid shall be awarded for:

(a) Price;

(b) B-BBEE Status Level of Contributor. and

(c) Locality of supplier

1.4 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	80
B-BBEE STATUS LEVEL OF CONTRIBUTOR	10
LOCALITY (See definitions)	10
Total points for Price, BBBEE and Locality (must not exceed 100)	**100**

1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.6 Failure on the part of a bidder to submit proof of Locality together with the bid, will be interpreted to mean that preference points for Locality are not claimed.

1.7 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at

any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

(a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

(b) "**B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

(c) **"Bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;

(d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);

(e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(f) **"Functionality"** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

(g) "**Locality**" means the local suppliers and/or service providers that business offices are within the Municipal area of Stellenbosch (WC024).

(h) **"Price"** includes all applicable taxes less all unconditional discounts;

(i) **"Proof of B-BBEE status level of contributor"** means:

1) B-BBEE Status level certificate issued by an authorized body or person;

2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;

3) Any other requirement prescribed in terms of the B-BBEE Act;

(j) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(k) "**Specific goals**" means specific goals as contemplated in section 2(1)(d) of the Act which may include contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender and disability including the implementation of programmes of the Reconstruction and Development Programme as published in Government Gazette No. 16085 dated 23 November 1994;

(l) **"Rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

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4. POINTS AWARDED FOR PRICE

4.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:
80/20 or 90/10

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \text{ or } \qquad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where

Ps = Points scored for price of bid under consideration

Pt = Price of bid under consideration

Pmin = Price of lowest acceptable bid

4.2 FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME-GENERATING PROCUREMENT

4.3 POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:
80/20 or 90/10

$$Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right) \text{ or } \qquad Ps = 90\left(1 + \frac{Pt - P\,max}{Pmax}\right)$$

Where

Ps = Points scored for price of bid under consideration

Pt = Price of bid under consideration

Pmax = Price of highest acceptable bid

5. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

5.1 In terms of Regulation 4 (2) and 5 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining a specific goal specified for the tender

5.2 The tendering conditions will stipulate the specific goals, as contemplated in section 2(1)(d)(ii) of the Preferential Procurement Act, be attained.

5.3 A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), must be allocated for specific goals. These goals are :

(a) contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability;

(b) Promotion of enterprises located in the municipal area (WCO24)

5.4 Regarding par 5.3 (a) at least 50% of the 20/10 points must be allocated to promote this goal and points will be allocated in terms of the BBBEE scorecard as follows.

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B-BBEE Status Level of Contributor	Number of Points for 80/20 Preference Points System	Number of Points for 90/10 Preference Points System
1	20	10
2	18	9
3	16	8
4	12	5
5	8	4
6	6	3
7	4	2
8	2	1
Non-compliant contributor	0	0

5.5 A tenderer must submit proof of its BBBEE status level contributor.

5.6 A tenderer failing to submit proof of BBBEE status level of contributor –

5.6.1 may only score in terms of the 80/90-point formula for price; and

5.6.2 scores 0 points out of 10/5 BBBEE status level of contributor, which is in line with section 2 (1) (d) (i) of the Act, where the supplier or service provider did not provide proof thereof.

5.7 Regarding par 5.3 (b) a maximum of 50% of the 20/10 points must be allocated to promote this goal. Maximum points will be allocated as follows.

Locality of supplier	Number of Points for 80/20 Preference Points System	Number of Points for 90/10 Preference Points System
Within the boundaries of the municipality	10	5
Outside of the boundaries of the municipality	0	0

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6. BID DECLARATION

6.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution and/or Locality must complete the following:

7. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1

7.1 B-BBEE Status Level of Contributor: . = ……(maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be substantiated by relevant proof of B-BBEE status level of contributor.)

7.2 Within the boundaries of Stellenbosch Municipality (WC024)?

YES		NO	

Business Address - ……

……

……

(Points claimed in respect of paragraph 7.2 must be substantiated by relevant proof that the business premises is situated in the Municipal area of Stellenbosch (WC024). A valid municipal account or proof of valid lease agreement, or sworn affidavit must be attached)

8. SUB-CONTRACTING

8.1 Will any portion of the contract be sub-contracted?

(***Tick applicable box***)

YES		NO	

8.1.1 If yes, indicate:

i) What percentage of the contract will be subcontracted.....……%
ii) The name of the sub-contractor……..
iii) The B-BBEE status level of the sub-contractor.....……..
iv) Whether the sub-contractor is an EME or QSE

(Tick applicable box)

YES		NO	

v) Specify, by ticking the appropriate box, if subcontracting with an enterprise

Designated Group: An EME or QSE which is at last 51% owned by:	**EME** √	**QSE** √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		

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Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

9. **DECLARATION WITH REGARD TO COMPANY/FIRM**

9.1 Name of company/firm:……

9.2 VAT registration number:……

9.3 Company registration number:……

9.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One person business/sole propriety
- ☐ Close corporation
- ☐ Company
- ☐ (Pty) Limited

[TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

……
……
……

9.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional service provider
- ☐ Other service providers, e.g. transporter, etc.

[*TICK APPLICABLE BOX*]

9.7 **MUNICIPAL INFORMATION**

Municipality where business is situated: ……

Registered Account Number: ……

Stand Number:……

9.8 Total number of years the company/firm has been in business:……

9.9 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contributor indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

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i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;

iv) If the B-BBEE status level of contributor/Locality points has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

(a) disqualify the person from the bidding process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution.

SIGNATURE OF BIDDER(S):			
WITNESS 1:		WITNESS 2:	
DATE:			
ADDRESS:			

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PLEASE COMPLETE IN FULL YOUR OWN AFFIDAVIT TO CLAIM POINTS

SWORN AFFIDAVIT – B-BBEE EXEMPTED MICRO ENTERPRISE – GENERAL (DRAFT EXAMPLE)
(DO NOT USE. USE NEW/APPLICABLE TEMPLATE)

I, the undersigned,

Full name & Surname	
Identity number	

Hereby declare under oath as follows:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.
2. I am a Member / Director / Owner (**Select one**) of the following enterprise and am duly authorized to act on its behalf: NB!

Enterprise Name:	
Trading Name (If Applicable):	
Registration Number:	
Vat Number (If applicable)	
Enterprise Physical Address:	
Type of Entity (CC, (Pty) Ltd, Sole Prop etc.):	
Nature of Business:	
Definition of "Black People"	As per the Broad-Based Black Economic Empowerment Act 53 of 2003 as Amended by Act No 46 of 2013 "Black People" is a generic term which means Africans, Coloureds and Indians – (a) who are citizens of the Republic of South Africa by birth or descent; or (b) who became citizens of the Republic of South Africa by naturalization- i. before 27 April 1994; or ii. on or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalization prior to that date;"

EXAMPLE – DO NOT USE

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Definition of "Black Designated Groups"	"Black Designated Groups means: (a) unemployed black people not attending and not required by law to attend an educational institution and not awaiting admission to an educational institution; (b) Black people who are youth as defined in the National Youth Commission Act of 1996; (c) Black people who are persons with disabilities as defined in the Code of Good Practice on employment of people with disabilities issued under the Employment Equity Act; (d) Black people living in rural and under developed areas; (e) Black military veterans who qualifies to be called a military veteran in terms of the Military Veterans Act 18 of 2011;"

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3. I hereby declare under Oath that:

- The Enterprise is_____% Black Owned using the flow-through principle as per Amended Code Series 100 of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,
- The Enterprise is_____% Black Female Owned as per Amended Code Series 100of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,
- The Enterprise is_____% Black Designated Group Owned as per Amended Code Series 100 of the Amended Codes of Good Practice issued under section 9 (1) of B-BBEE Act No 53 of 2003 as Amended by Act No 46 of 2013,
- Black Designated Group Owned % Breakdown as per the definition stated above:
    - Black Youth % =_____%
    - Black Disabled % =_____%
    - Black Unemployed % =_____%
    - Black People living in Rural areas % =_____%
    - Black Military Veterans % =_____%

- Based on the Audited Financial Statements/Financial Statements and other information available on the latest financial year-end of_____(DD/MM/YYYY), the annual TotalRevenue was R10,000,000.00 (Ten Million Rands) or less
- Please Confirm on the below table the B-BBEE Level Contributor, **by ticking the applicable box.**

NB!

100% Black Owned	**Level One** (135% B-BBEE procurement recognition level)	
At least 51% Black Owned	**Level Two** (125% B-BBEE procurement recognition level)	
Less than 51% Black Owned	**Level Four** (100% B-BBEE procurement recognition level)	

4. I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the Owners of the Enterprise which I represent in this matter.

5. The sworn affidavit will be valid for a period of 12 months from the date signed by commissioner.

Deponent Signature:_____

Date :_____

NB! ORIGINALLY CERTIFIED/ NOT COPY

_____

Commissioner of Oaths
Signature & stamp
Date:

EXAMPLE – DO NOT USE

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EXAMPLE OF POINT SCORING AND ALLOCATION OF PREFERENCE POINTS (80/20) WHERE LOCALITY AS A GOAL IS INCLUDED. STELLENBOSCH PREFERENTIAL PROCUREMENT POLICY.

BIDDER	PRICE	BBBEE LEVEL (VALID)	BUSINESS PREMISES (IN WC024)
TENDERER A	R 80 000	1	NO
TENDERER B	R 75 000	1	YES
TENDERER C	R 70 000	2	NO

BIDDER	PRICE POINTS (Out of 80)	BBBEE POINTS (Out of 10)	LOCALITY POINTS (Out of 10)	TOTAL POINTS (Out of 100)
TENDERER A	68.57	10	0	78.57
TENDERER B	74.29	10	10	94.29
TENDERER C	80	9	0	89

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14. MBD 8 – DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1. This Municipal Bidding Document must form part of all bids invited.
2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The bid of any bidder may be rejected if that bidder, or any of its directors have:
   3.1. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
   3.2. been convicted for fraud or corruption during the past five years;
   3.3. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
   3.4. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
4. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

4.1	Is the bidder or any of its directors listed on the National Treasury's database as a company or person prohibited from doing business with the public sector? *(Companies or persons who are listed on this database were informed in writing of this restriction by the National Treasury after the audi alteram partem rule was applied).*	**Yes**	**No**
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? *(To access this Register enter the National Treasury's website, www.treasury.gov.za, click on the icon "Register for Tender Defaulters" or submit your written request for a hard copy of the Register to facsimile number (012) 3265445).*	**Yes**	**No**
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	**Yes**	**No**

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4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	**Yes**	**No**
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	**Yes**	**No**
4.5.1	If so, furnish particulars:		

5. CERTIFICATION

I, the undersigned (full name), _____, certify that the information furnished on this declaration form true and correct.

I accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

SIGNATURE:		NAME (PRINT):	
CAPACITY:		DATE:	
NAME OF FIRM:			

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15. MBD 9 – CERTIFICATE OF INDEPENDENT BID DETERMINATION

1. This Municipal Bidding Document (MBD) must form part of all bids invited.

2. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).[4] Collusive bidding is a *per se* prohibition meaning that it cannot be justified under any grounds.

3. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

   3.1. take all reasonable steps to prevent such abuse;

   3.2. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and

   3.3. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

4. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

CERTIFICATE OF INDEPENDENT BID DETERMINATION:

In response to the invitation for the bid made by:

STELLENBOSCH MUNICIPALITY

I, the undersigned, in submitting the accompanying bid, hereby make the following statements that I certify to be true and complete in every respect:

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

[4] *Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.*

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5.1. has been requested to submit a bid in response to this bid invitation;

5.2. could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and

5.3. provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[5] will not be construed as collusive bidding.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   7.1. prices;
   7.2. geographical area where product or service will be rendered (market allocation)
   7.3. methods, factors or formulas used to calculate prices;
   7.4. the intention or decision to submit or not to submit, a bid;
   7.5. the submission of a bid which does not meet the specifications and conditions of the bid; or
   7.6. bidding with the intention not to win the bid.

8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.

9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

SIGNATURE:		NAME (PRINT):	
CAPACITY:		DATE:	
NAME OF FIRM:			

[5] *Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.*

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16. MBD 10 – CERTIFICATE FOR PAYMENT OF MUNICIPAL SERVICES

DECLARATION IN TERMS OF CLAUSE 112(1) OF THE MUNICIPAL FINANCE MANAGEMENT ACT (NO.56 OF 2003)

I, _____, _____ (full name and ID no.), hereby acknowledge that according to SCM Regulation 38(1)(d)(i), the Municipality may reject the tender of the tenderer if any municipal rates and taxes or municipal service charges owed by the Tenderer or any of its directors/members/partners to the Stellenbosch Municipality, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months.

I declare that I am duly authorised to act on behalf of _____ (name of the firm) and hereby declare, that to the best of my personal knowledge, neither the firm nor any director/member/partner of said firm is in arrears on any of its municipal accounts with any municipality in the Republic of South Africa, for a period longer than 3 (three) months.

I further hereby certify that the information set out in this schedule and/or attachment(s) hereto is true and correct. The Tenderer acknowledges that failure to properly and truthfully complete this schedule may result in the tender being disqualified, and/or in the event that the tenderer is successful, the cancellation of the contract.

PHYSICAL BUSINESS ADDRESS(ES) OF THE TENDERER	MUNICIPAL ACCOUNT NUMBER

FURTHER DETAILS OF THE BIDDER'S Director / Shareholder / Partners, etc.:

Director / Shareholder / partner	Physical address of the Business	Municipal Account number(s)	Physical residential address of the Director / shareholder / partner	Municipal Account number(s)

NB: Please attach certified copy (ies) of ID document(s) and Municipal Accounts If the entity or any of its Directors/Shareholders/Partners, etc. rents/leases premises, a copy of the rental/lease agreement or sworn affidavit must be submitted with this tender.

- **PLEASE SUBMIT MUNICIPAL ACCOUNTS FOR THE FOLLOWING TWO MONTHS AFTER BID CLOSURE TO THE RELEVANT SCM PRACTITIONER SHOULD THE BID NOT BE AWARDED YET.**

Signature	**Position**	**Date**

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17. COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (ACT 130 OF 1993)

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (ACT 130 OF 1993)	
Stellenbosch Municipality has legal duty in terms of Section 89 of the said Act to ensure that all contractors with whom agreements are entered into for the execution of work are registered as employers in accordance with the provisions of this Act and that all the necessary assessments have been paid by the contractor. In order to enter into this agreement, the following information is needed regarding the above-mentioned:	
Contractor's registration number with the office of the Compensation Commissioner:	
NOTE: **A copy of the latest receipt together with a copy of the relevant assessment OR a copy of a valid Letter of Good Standing must be handed in, in this regard.**	

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

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18. CONTRACT OF TEMPORARY EMPLOYMENT AS COMMUNITY LIASON OFFICER

Construction Contract No.: B/SM 17/26

PROJECT: THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH – PHASE 2

AGREEMENT made between the CONTRACTOR
and the Community Liaison Officer… ..... ,
hereafter referred to as the CLO, for the appointment and employment of a CLO for the duration of the work in respect of the above named construction contract.

1. THE PARTIES HAVE AGREED THAT

The CLO will be employed by the CONTRACTOR on a temporary basis for the duration of the work from the date of signing this agreement to the date of practical completion as defined in the Contract, subject to all the conditions set out below.

2. THE DUTIES OF THE COMMUNITY LIAISON OFFICER SHALL BE:

1. to keep the community informed on the progress of the project;
2. to keep the Contractor informed on relevant Community affairs and possible grievances;
3. to manage the recruitment of workers from the Sub-Council Job-Seekers Database;
4. to assist the Contractor's supervisory staff in the management of the workers.

3. THE FOLLOWING CONDITIONS OF EMPLOYMENT SHALL APPLY:

The Conditions of Temporary Employment as applicable on this Contract for the workers recruited from the Community shall apply equally to the CLO, except that the rate of remuneration shall be R5,000.00 per month. These conditions that apply are listed below as they appear in the Contract of Temporary Employment:

3.1 If required to work on a statutory public holiday or Sunday the payment will be double the amount stated in the previous paragraph.

3.2 Maximum hours of work:

(i) 9¼ hours per day
(ii) 45 hours per week;
(iii) 5 days per week;
(iv) 5 hours without an interval, whereupon there shall be an interval of at least 30 minutes;
(v) A spread-over period of 12 hours.

3.3 The CLO shall be entitled to payment where he is prevented from working by reasons which are within the control of the Contractor.

3.4 On days when it is raining the Contractor may, before 9 a.m., decide not to open the site and there will be no pay.

If the Contractor closes the site between 9 a.m. and 1 p.m., the CLO will be paid half the daily wage.

If the site works later than 1 p.m., the CLO will be paid the full daily wage.

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3.5 Workers and the CLO will not be permitted to work under conditions of:
(i) undisciplined or unruly behavior;
(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) criminal actions by the employee;
(v) strike action or political stayaways.

3.6 Workers, including the CLO, may be dismissed after two official written warnings for the following behavior:

(i) undisciplined or unruly behavior;
(ii) insubordination to Team Leader, Supervisors or Management;
(iii) abuse of intoxicating substances;
(iv) willful or negligent damage to or loss of machines or equipment.

The Contractor shall ensure that he has statements from at least two witnesses concerning any of the above situations.
The Contractor shall inform the CLO within 24 hours of any warning issued to workers employed from the Job-Seekers Database.

3.7 The CLO will be paid on a Friday afternoon every two weeks, one week in arrears.

3.8 The CLO shall be given a statement with each payment on which is recorded:

(i) the name of the Contractor;
(ii) the CLO's name;
(iii) the number of days worked by the CLO;
(iv) the rate per day;
(v) the details of any deductions made;
(vi) the actual amount paid to the CLO.

3.9 No deduction shall be made from the remuneration except where the CLO consents in writing or unless the Contractor is permitted or required to do so by law or the order of any competent court.

3.10 The CLO shall be supplied free of charge with all health and safety equipment required by the Occupation Health and Safety Act. The equipment shall remain the property of the Contractor.

3.11 The Contractor must give the CLO at least one week's notice of the termination of the Contract of Temporary Employment. If this is not done, the CLO must be paid earnings for five days. This condition does not apply if the CLO is dismissed.

3.12 At the end of the period of temporary employment, the Contractor shall provide a Certificate of Service recording the Contractor's name, the CLO's name and address, the period of service, the type of work on which the CLO was engaged and the rate of remuneration on termination.

4. TERMINATION OF AGREEMENT

4.1 If the CLO can no longer perform and execute his/her duties as detailed in this agreement, this agreement will be terminated without prejudice to any rights under this agreement.

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5. THE CONDITIONS OF THIS AGREEMENT

5.1 The parties expressly declare that this agreement contains all the conditions negotiated between them, and no condition or stipulation not contained herein shall be binding upon the parties.

6. THUS AGREED AND SIGNED BY THE PARTIES:

Contractor:

……..

.

Signature:

……..

.

Date:

……..

.

Community Liaison officer: ……..

Signature:

……..

.

Date:

……..

.

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19. PROPOSED KEY PERSONNEL CV

1. PROPOSED KEY PERSONNEL

Demonstrated experience of the bidder's key personnel to be directly involved with this contract will be evaluated based on the information supplied by the bidder below. Failure to complete the table below may result in the tender being considered non-responsive.

- **Contract Manager** must have a BTech or equivalent (NQF level 7 or NQF 8 qualification in the Built Environment) qualification in Building Science, Construction Management, or Quantity Surveying, and more than 5 years' experience in similar building projects, with a minimum of 2 projects valued at more than R10 million completed in the last 5 years.
- **(Site Agent)** must have a National Diploma or equivalent qualification in Construction Management, and more than 5 years' experience in similar building projects. A minimum of 2 building projects valued at over R13.5 million must have been successfully completed within the last 5 years. The Construction Manager must be full-time on site for the duration of the construction.
- **Occupational Health and Safety Officer** to have a minimum NQF 5 in Occupational Health and Safety or equivalent qualification, complete with professional registration as a Construction Health and Safety Officer with the South African Council for the Project and Construction Management Professions.

Tenderers shall attach all relevant qualifications of listed proposed key personnel and provide proof of authenticity for said qualifications.

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Name & Surname	Qualification	Total Years' Experience	Qualification Attached (Yes/No)	CV Attached (Yes/No)	Relevant Projects Experience (Yes/No)
Contracts Manager					
Construction Manager (Site Agent) – Civil					
Construction Manager (Site Agent) – Electrical					
Occupational Health & Safety Officer					

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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20. FINANCIAL REFERENCES

Financial Statements

Notes to tenderer:
1. The minimum acceptable credit rating applicable to tenderers for this project is a C credit rating. Bank Codes will be requested over a period of 180 days on a pro-rata basis.
2. The tenderer's banking details as they appear below shall be completed.
3. In the event that the tenderer is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

I/We agree, if required, to furnish an audited copy of the latest set of financial statements together with my/our Directors' and Auditors' report for consideration by the Employer.

Details of Company's Bank

I/We hereby authorise the Employer/Employer Agent to approach all or any of the following banks for the purposes of obtaining a financial reference:

DESCRIPTION OF BANK DETAIL	BANK DETAILS APPLICABLE TO TENDERER'S HEAD OFFICE
Name of bank	
Branch name	
Branch code	
Street address	
Postal address	
Name of manager	
Telephone number	
Fax number	
Account number	

Tenderer's Tax Details

Tenderer's VAT vendor registration number: .....

Tenderer's SARS tax reference number: .....

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21. ESTIMATED MONTHLY EXPENDITURE

1. ESTIMATED MONTHLY EXPENDITURE

The Tenderer shall state below the estimated value of work to be completed every month, basedon his preliminary programme and his tendered unit rates.

The amount for contingencies must not be included.

MONTH	VALUE (Excl. VAT)	NOTES
(November 2025) 1	R_____	Procurement of materials
(December 2025) 2	R_____	
(January 2026) 3	R_____	Construction Start
(February 2026) 4	R_____	
(March 2026) 5	R_____	
(April 2026) 6	R_____	
(May 2026) 7	R_____	
(June 2026) 8	R_____	Practical Completion
(July 2026) 9	R_____	
(August 2026) 10	R_____	
(September 2026) 11	R_____	Final Completion
SUB TOTAL (excl. VAT)	R_____	
VAT @15%	R_____	
TOTAL	R_____	

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22. PROPOSED DEVIATIONS AND QUALIFICATIONS BY TENDERER

The Tenderer should record any **proposed** deviations or qualifications he may wish to make to the Tender Documents in this Returnable Schedule. Alternatively, a tenderer may state such proposed deviations and qualifications in a covering letter attached to his tender and reference such letter in this schedule.

The Tenderer's attention is drawn to clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the Employer's handling of material deviations and qualifications.

If no deviations or modifications are desired, the schedule hereunder is to be marked **NIL** and signed by the Tenderer.

PAGE	CLAUSE OR ITEM	DESCRIPTION

Attach additional pages if mores space is required.

Number of sheets appended by the tenderer to this schedule (If nil, enter NIL)	

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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23. CERTIFICATE OF INSURANCE COVER

Note to Tenderer:

In the event of the Tenderer being a joint venture/consortium, the details of the individualmembers must also be provided.

The Tenderer shall provide the following details of this insurance cover:

(i) Name of Tenderer:.....

(ii) Period of Validity: .....

(i) Value of Insurance:

- Insurance for Works and Contractor's equipment

  Company: .....

  Value: .....

- Insurance for Contractor's personnel

  Company: .....

  Value: .....

- General public liability

  Company: .....

  Value: .....

- SASRIA

  Company: .....

  Value: .....

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24. PRELIMINARY CONSTRUCTION PROGRAMME (FOR INFORMATION PURPOSES ONLY)

PRELIMINARY CONSTRUCTION PROGRAMME (FORINFORMATION PURPOSES ONLY)

The Tenderer shall attach a preliminary programme, as indicated below, to this Form in a Portable Document Format (PDF). This programme shall:

- be in the form of a bar chart (Gantt chart) or similar acceptable time/activity form reflecting the proposed sequence and tempo of execution of the various activities and the quantities that will be carried out every week under each of the elements, comprising the work for this contract;
- also indicate the point where the Tenderer intends to commence work operations and the direction in which the work will proceed;
- be in accordance with the information provided in the Schedule of Constructional Plant, Estimated monthly expenditure, and with all other aspects of the Tender; and
- indicate planned working hours.

Details of the preliminary programme shall be appended to this Form.

Number of sheets, appended by the Tenderer to this Form..... *[If NIL, enter NIL]*

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25. RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications issued by the Employer before the submission of thisTender offer, amending the Tender Documents, have been taken into account in this Tender offer:

	Date	Title or details
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Attach additional pages if more space is required.

Signed: Date: ……..

Name: Position: ……

SIGNED ON BEHALF OF TENDERER: .....

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26. LETTER IF INTENT TO PROVIDE A PERFORMANCE BOND

It is hereby agreed that a Performance Bond drafted exactly as set out in the attached examples (Form of Guarantee) will be provided by the Surety named below:

Name of Surety (Bank or Insurer) Address: ……..

……..

……..

Signed: ……..

Name: ……..

Capacity: ……..

On behalf of Tenderer (name of tenderer) ……..

Date: ……..

CONFIRMED BY Surety's Authorised representative

Signature(s): ……..

Name (print): ……..

Capacity ……..

On behalf of Surety (Bank or Insurer) ……..

Date: ……..

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27. COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1: Name of enterprise: .....

Section 2: VAT registration number, if any: .....

Section 3: CIDB registration number, if any:.....

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

*Complete only if sole proprietor or partnership and attach separate page if more than 3 partners.

Section 5: Particulars of companies and close corporations

Company registration number: .....

Close corporation number: .....

Tax reference number: .....

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Section 6: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently, or has been within the last 12 months, in the service of any of the following:

☐	a member of any municipal council	☐	an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No 1 of 1999)
☐	a member of any provincial legislature	☐	a member of an accounting authority of any national or provincial public entity
☐	a member of the National Assembly or the National Council of Province	☐	an employee of Parliament or a provincial legislature
☐	a member of the board of directors of any municipal entity		
☐	an official of any municipality or municipal entity		

If any of the above boxes are marked, disclose the following:

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*Insert separate page if necessary.

Section 7: Record of spouses, children and parents in the service of the state

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent or a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently, or has been within the last 12 months, in the service of any of the following:

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□	a member of any municipal council	□	an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No 1 of 1999)
□	a member of any provincial legislature	□	a member of an accounting authority of any national or provincial public entity
□	a member of the National Assembly or the National Council of Province	□	an employee of Parliament or a provincial legislature
□	a member of the board of directors of any municipal entity		
□	an official of any municipality or municipal entity		

*

Name of spouse, child or parent	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*Insert separate page if necessary.

The undersigned, who warrants that he/she is duly authorised to do so on behalf of the enterprise:

(i) authorises the Employer to obtain a tax clearance certificate from the South African RevenueServices that my/our tax matters are in order;

(ii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act, 2004;

(iii) confirms that no partner, member, director or other person, who wholly or partly exercises, ormay exercise, control over the enterprise, has within the last five years been convicted of fraud or corruption;

(iv) confirms that I/we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the Tenderers or those responsible for compiling the Scope of Work that could cause or be interpreted as a conflictof interest; and

(v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

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Signed: Date: .....

Name: Position: .....

Enterprise name: .....

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28. HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

Tenderers are to note the requirements of the Occupational Health and Safety Act No. 85 of 1993 and the Construction Regulations 2014 of the Act. The tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

In this regard the tenderer shall prepare and attach a Health and Safety Plan in respect of the Works in order to demonstrate the necessary competencies and resources to perform the construction work all in accordance with the Act and Regulations. Such Health and Safety Plan shall cover inter-alia the following details:

(1) Management Structure, Site Supervision and Responsible Persons including a succession plan.
(2) Contractor's induction training programme for employees, sub-contractors and visitors to the Site.
(3) Health and safety precautions and procedures to be adhered to in order to ensure compliance with the Act, Regulations and Safety Specifications.
(4) Regular monitoring procedures to be performed.
(5) Regular liaison, consultation and review meetings with all parties.
(6) Site security, welfare facilities and first aid.
(7) Site rules and fire and emergency procedures.

Tenderers are to note that the Contractor is required to ensure that all sub-contractors or others engaged in the performance of the contract also comply with the above requirements.

The tenderer shall also take into account the additional requirements stated in the Project Specifications when drawing up the Health and Safety Plan for the contract.

Details of the Health and Safety Plan shall be appended to this Form.

Number of sheets, appended by the tenderer to this Form. (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:……

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29. FORM OF INDEMNITY

INDEMNITY

Given by (Name of Company) _____

of (registered address of Company) _____

a company incorporated with limited liability according to the Company Laws of the Republic of South Africa (hereinafter called the Contractor), represented herein by (Name of Representative) _____

_____in his capacity as (Designation) _____

of the Contractor, is duly authorized hereto by a resolution dated _____ /20___,

to sign on behalf of the Contractor.

WHEREAS the Contractor has entered into a Contract dated _____ / 20_____, with the Municipality who require this indemnity from the Contractor.

NOW THEREFORE THIS DEED WITNESSES that the Contractor does hereby indemnify and hold harmless the Municipality in respect of all loss or damage that may be incurred or sustained by the Municipality by reason of or in any way arising out of or caused by operations that may be carried out by the Contractor in connection with the aforementioned contract; and also in respect of all claims that may be made against the Municipality in consequence of such operations, by reason of or in any way arising out of any accidents or damage to life or property or any other cause whatsoever; and also in respect of all legal or other expenses that may be incurred by the Municipality in examining, resisting or settling any such claims; for the due performance of which the Contractor binds itself according to law.

SIGNATURE OF CONTRACTOR:	
DATE:	
SIGNATURE OF WITNESS 1:	
DATE:	
SIGNATURE OF WITNESS 2:	
DATE:	

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PART B – SPECIFICATIONS AND PRICING SCHEDULE

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30. ARCHITECT DRAWINGS

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

DRAWING LIST CALCUTTA OFFICE

Drawing series	Drawing Sub-Series	Drawing Number	Drawing Name	Current Revision	Current Revision Date	Drawn By	Checked By
0000-COUNCIL							
0000-COUNCIL	0000-COUNCIL	A-1000	SITE PLAN	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-1001	GROUND FLOOR PLAN	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-1002	GROUND FLOOR DRAINAGE PLAN	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-1003	GROUND FLOOR ELECTRICAL PLAN	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-1004	ROOF PLAN	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-2000	BUILDING SECTIONS	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-3000	GENERAL ELEVATIONS	A	06/23/2025	GP	Checker
0000-COUNCIL	0000-COUNCIL	A-4000	DOOR & WINDOW SCHEDULE	A	06/23/2025	GP	Checker
4000-SCHEDULES							
4000-SCHEDULES	4600-FINISHES SHEDULE	A-4600	FINISHES SCHEDULE	A	06/23/2025	GP	Checker
4000-SCHEDULES	4600-FINISHES SHEDULE	A-4601	FINISHES SCHEDULE 2	A	06/23/2025	GP	Checker
6000-CEILING PLANS AND TILING LAYOUTS							
6000-CEILING PLANS AND TILING LAYOUTS	6000-CEILING PLANS	A-6000	CEILING PLAN	A	06/23/2025	GP	Checker
6000-CEILING PLANS AND TILING LAYOUTS	6200-TILING LAYOUTS	A-6200	FLOOR FINISH PLAN	A	06/23/2025	GP	Checker
8000-DETAILS							
8000-DETAILS	8000-GENERAL DETAILS	A-8000	PLANTER DETAIL	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8001	KITCHEN CABINETS	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8002	ABLUTIONS DETAIL	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8003	OFFICE CABINETS	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8004	OFFICE ABLUTION	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8005	ELECTRICAL FIXTURES	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8010	OFFICES SIGNAGE	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8011	OFFICES SIGNAGE SITE	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8012	TERRAIN SIGNAGE	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8013	TERRAIN SIGNAGE 02	A	06/23/2025	GP	Checker
8000-DETAILS	8000-GENERAL DETAILS	A-8014	TERRAIN SIGNAGE 03	A	06/23/2025	GP	Checker

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CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	01	AR	01	

STELLENBOSCH

nuvorm (Pty) Ltd - Reg no. 2021 / 815005 / 07

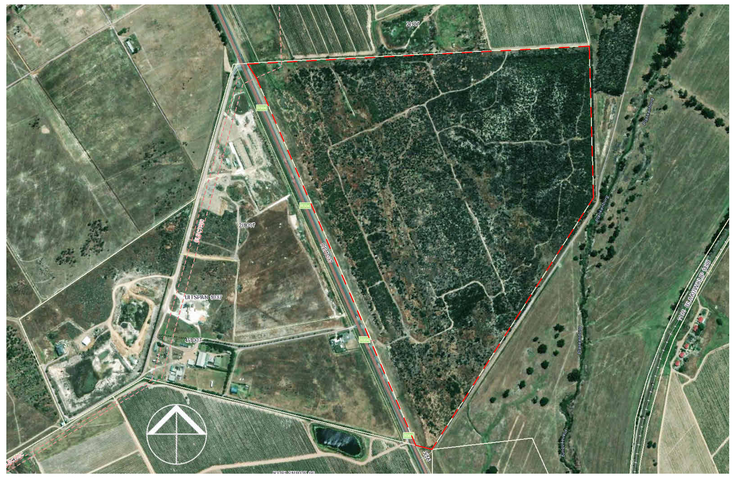
CALCUTTA MEMORIAL PARK

FARM NO 29
STELLENBOSCH

DRAWING LIST

SCALE: @ A4

nuvorm
unit 305 | oude postkantoor | c/o bird & plein street | stellenbosch
studio@nuvorm.com



LOCALITY DIAGRAM

WATER SUPPLY KEY	
	NEW 110MM ⌀ uPVC CLASS 12 WATER PIPE
	NEW 50MM ⌀ uPVC CLASS 12 WATER PIPE
	NEW 110MM ⌀ uPVC CLASS 16 FIRE PIPE
	NEW 25MM ⌀ HDPE PN 16 WATER ERF CONNECTION
	FIRE HYDRANT
	ISOLATION VALVE
	NEW 10 KL WATER TANK & PUMP
CT	CONSERVANCY TANK REFER TO DETAIL DRAWING: **3667.00.00.GZA.06.D001**

SITE INFORMATION	
PORTION AREA	396500 m²
DWELLING FOOTPRINT	318.85 m²
TOTAL COVERAGE	0.080 %

BUILDING WORKS KEY	
NEW DOMESTIC BUILDING WORKS	
MASTER PLAN DEVELOPMENT	

*** PROPOSED NEW STRUCTURES:**

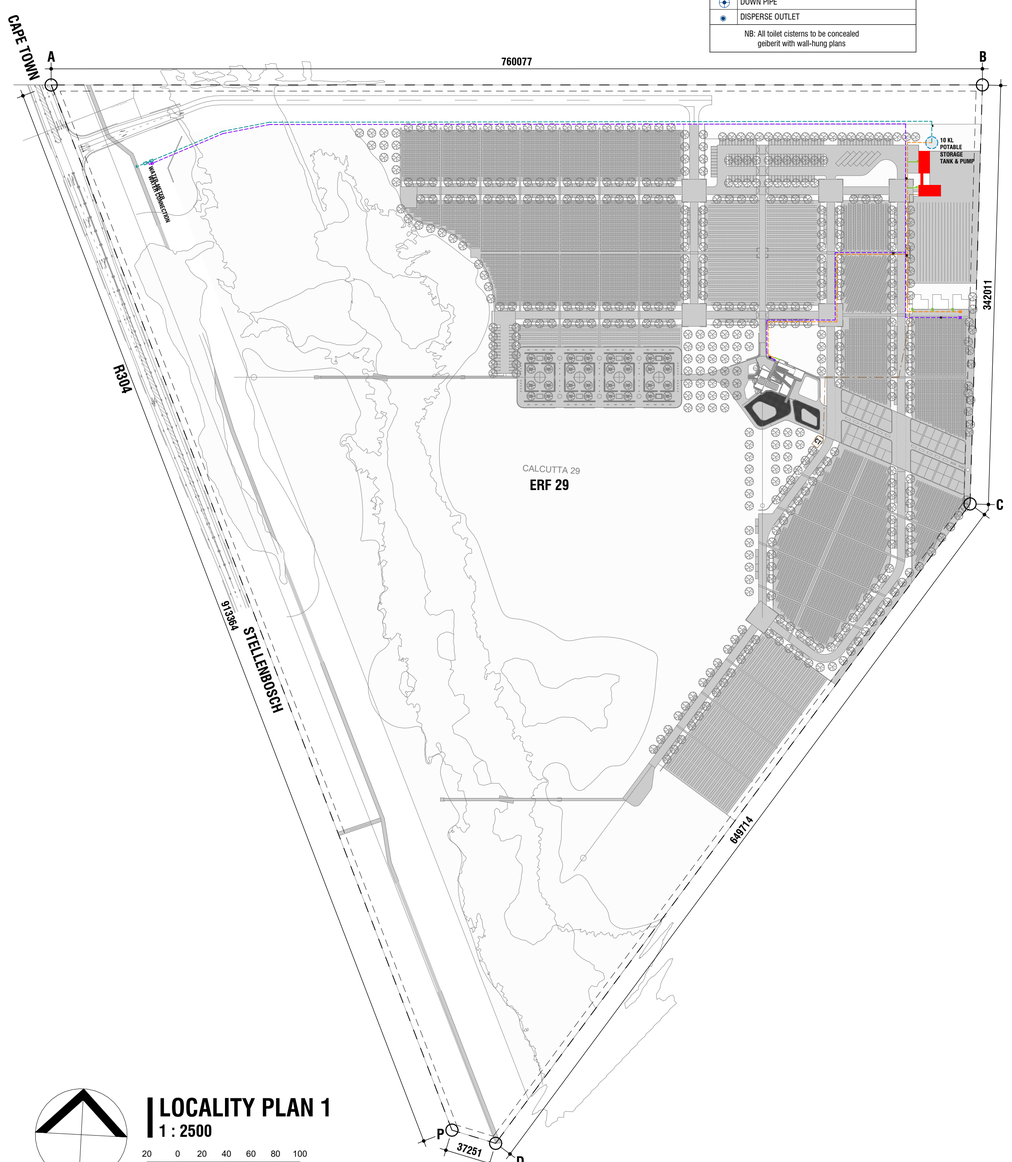
NOTE: NEW WORK ILLUSTRATED IN RED.

DRAINAGE KEY	
	110Ø PVC PIPE (WASTE WATER)
	75Ø PVC PIPE (GREY WATER)
	110Ø PVC PIPE (STORMWATER)
	FULLBORE OUTLET
	FLOOR DRAIN OUTLET
	CONCEALED DOWN PIPE
	DOWN PIPE
	SUBSOIL INLET CAP
	DOWN PIPE
	DISPERSE OUTLET

NB: All toilet cisterns to be concealed geiberit with wall-hung plans

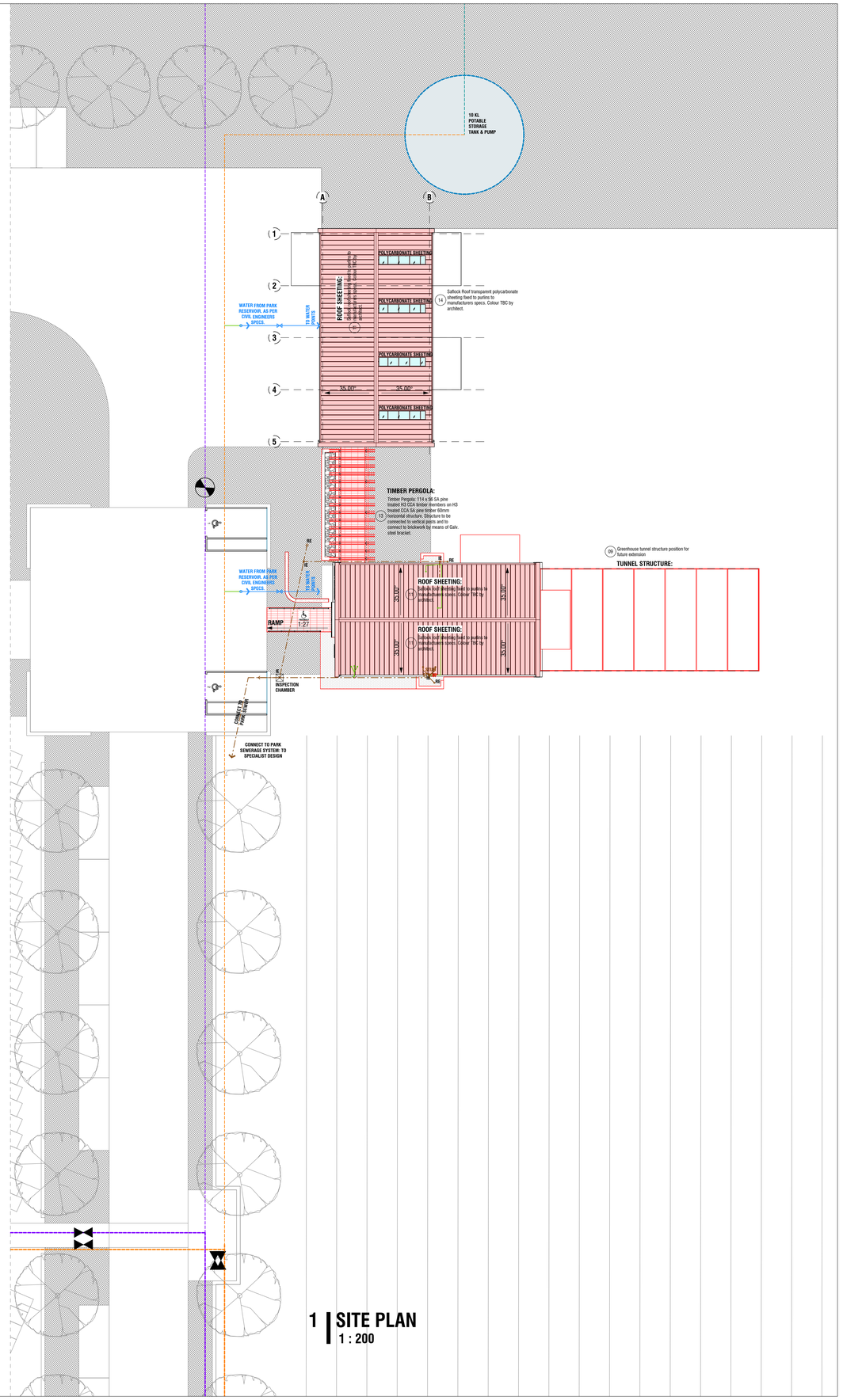
AREA SCHEDULE (GLA)	
Name	Area
STORAGE SHED	166.26 m²
DRY STORAGE	72.40 m²
ABLUTIONS	14.53 m²
OPEN OFFICE	58.51 m²
RESTROOM	6.88 m²
TOTAL AREA: 5	318.60 m²

CALCUTTA - PARK PARKING CALCULATIONS	
PARKING BAYS	
STAFF PARKING	5
DISABLED PARKING	2



LOCALITY PLAN 1
1 : 2500

20 0 20 40 60 80 100
SCALE 1:2500 m



1 SITE PLAN
1 : 200

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Unit 305 Oude Postkantoor
c/o Plein and, Bird Street
Stellenbosch

studio@nuvorm.com

REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

1. All work is to be done in accordance with the National building Regulations.
2. All materials and workmanship are to comply with the relevant S.A.B.S. codes and or the specified international codes where applicable in the - Architectural specifications. Where relevant South African National Standards, British Standards, BS codes of practice, or Agrément Certificates applicable to the design exists, the recommendations and requirements of such documents to be considered a minimum standard for the works.
3. The contractor shall in all aspects of the works comply with the provisions of the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The contractor shall set up, document and maintain a quality assurance and quality control system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Specification. Should the Contractor or any of his sub-contractors be certified to the SANS 9000 family of standards then monitor these works accordingly.
5. This drawing must be read in conjunction with all the relevant drawings, schedules and specifications from nuvorm and all other consultants related to the project.
6. All portions of the works related to any service or consultants information is to be done in accordance with the National Building Regulations.
7. This drawing is not to be scaled. Figured dimensions to be used. All dimensions are in millimeters unless otherwise stated.
8. All dimensions and levels must be checked on site by the contractor before putting work in hand.
9. All work to be executed by competent persons qualified for the specific trade.
10. This drawings is copyright reserved and remains the property of nuvorm (Pty) Ltd

CLIENT

ARCHITECT

CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

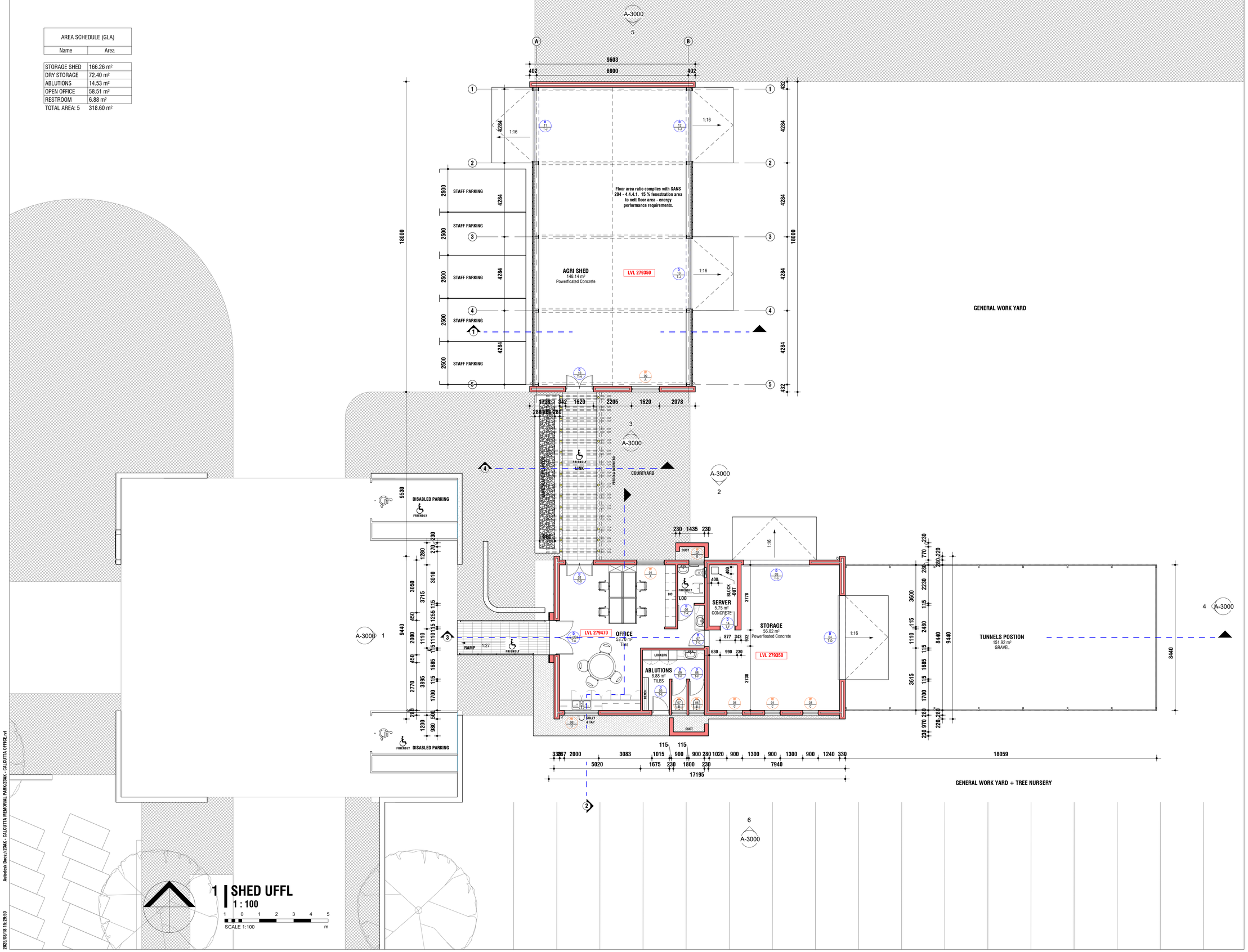
SITE PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-1000	A

TENDER

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AREA SCHEDULE (GLA)	
Name	Area
STORAGE SHED	166.26 m²
DRY STORAGE	72.40 m²
ABLUTIONS	14.53 m²
OPEN OFFICE	58.51 m²
RESTROOM	6.88 m²
TOTAL AREA: 5	318.60 m²



1 | SHED UFFL
1 : 100

SCALE 1:100

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c/o Plein and, Bird Street
Stellenbosch

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

1. All work is to be done in accordance with the National building Regulations.
2. All materials and workmanship are to comply with the relevant S.A.B.S. codes and or the specified international codes where applicable in the – Architectural specifications. Where relevant South African National Standards, British Standards, BS codes of practice, or Agrément Certificates applicable to the design exists, the recommendations and requirements of such documents to be considered a minimum standard for the works.
3. The contractor shall in all aspects of the works comply with the provisions of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The contractor shall set up, document and maintain a quality assurance and quality control system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Specification. Should the Contractor or any of his sub-contractors be certified to the SANS 9000 family of standards then monitor these works accordingly.
5. This drawing must be read in conjunction with all the relevant drawings, schedules and specifications from nuvorm and all other consultants related to the project.
6. All portions of the works related to any service or consultants information is to be done in accordance with the National Building Regulations.
7. This drawing is not to be scaled. Figured dimensions to be used. All dimensions are in millimeters unless otherwise stated.
8. All dimensions and levels must be checked on site by the contractor before putting work in hand.
9. All work to be executed by competent persons qualified for the specific trade.
10. This drawings is copyright reserved and remains the property of nuvorm (Pty) Ltd

CLIENT

ARCHITECT

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BIGEN

FARM NO 29
STELLENBOSCH

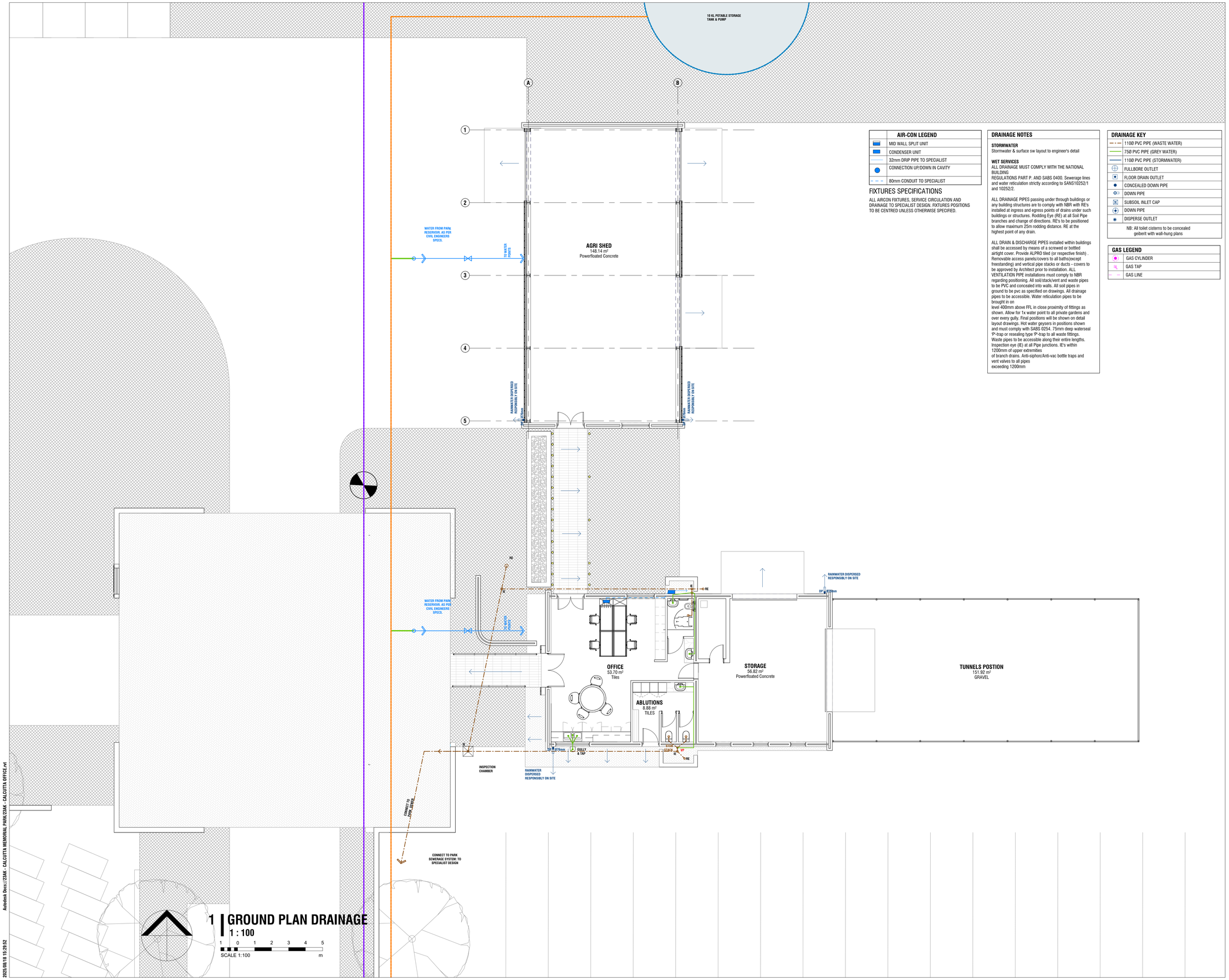
STELLENBOSCH

GROUND FLOOR PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-1001	A

TENDER

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1 | GROUND PLAN DRAINAGE
1 : 100

1 0 1 2 3 4 5
SCALE 1:100 m

AIR-CON LEGEND	
	MID WALL SPLIT UNIT
	CONDENSER UNIT
	32mm DRIP PIPE TO SPECIALIST
	CONNECTION UP/DOWN IN CAVITY
	80mm CONDUIT TO SPECIALIST

FIXTURES SPECIFICATIONS

ALL AIRCON FIXTURES, SERVICE CIRCULATION AND DRAINAGE TO SPECIALIST DESIGN. FIXTURES POSITIONS TO BE CENTRED UNLESS OTHERWISE SPECIFIED.

DRAINAGE NOTES

STORMWATER
Stormwater & surface sw layout to engineer's detail

WET SERVICES
ALL DRAINAGE MUST COMPLY WITH THE NATIONAL BUILDING
REGULATIONS PART P, AND SABS 0400. Sewerage lines and water reticulation strictly according to SANS10252/1 and 10252/2.

ALL DRAINAGE PIPES passing under through buildings or any building structures are to comply with NBR with RE's installed at ingress and egress points of drains under such buildings or structures. Rodding Eye (RE) at all Soil Pipe branches and change of directions. RE's to be positioned to allow maximum 25m rodding distance. RE at the highest point of any drain.

ALL DRAIN & DISCHARGE PIPES installed within buildings shall be accessed by means of a screwed or bottled airtight cover. Provide ALPRO tiled (or respective finish) . Removable access panels/covers to all baths(except freestanding) and vertical pipe stacks or ducts - covers to be approved by Architect prior to installation. ALL VENTILATION PIPE installations must comply to NBR regarding positioning. All soil/stack/vent and waste pipes to be PVC and concealed into walls. All soil pipes in ground to be pvc as specified on drawings. All drainage pipes to be accessible. Water reticulation pipes to be brought in on
level 400mm above FFL in close proximity of fittings as shown. Allow for 1x water point to all private gardens and over every gully. Final positions will be shown on detail layout drawings. Hot water geysers in positions shown and must comply with SABS 0254. 75mm deep waterseal 'P'-trap or resealing type 'P'-trap to all waste fittings. Waste pipes to be accessible along their entire lengths. Inspection eye (IE) at all Pipe junctions. IE's within 1200mm of upper extremities
of branch drains. Anti-siphon/Anti-vac bottle traps and vent valves to all pipes
exceeding 1200mm

DRAINAGE KEY

	110Ø PVC PIPE (WASTE WATER)
	75Ø PVC PIPE (GREY WATER)
	110Ø PVC PIPE (STORMWATER)
	FULLBORE OUTLET
	FLOOR DRAIN OUTLET
	CONCEALED DOWN PIPE
	DOWN PIPE
	SUBSOIL INLET CAP
	DOWN PIPE
	DISPERSE OUTLET

NB: All toilet cisterns to be concealed
geiberit with wall-hung plans

GAS LEGEND	
	GAS CYLINDER
	GAS TAP
	GAS LINE

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Stellenbosch
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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

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ARCHITECT

CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

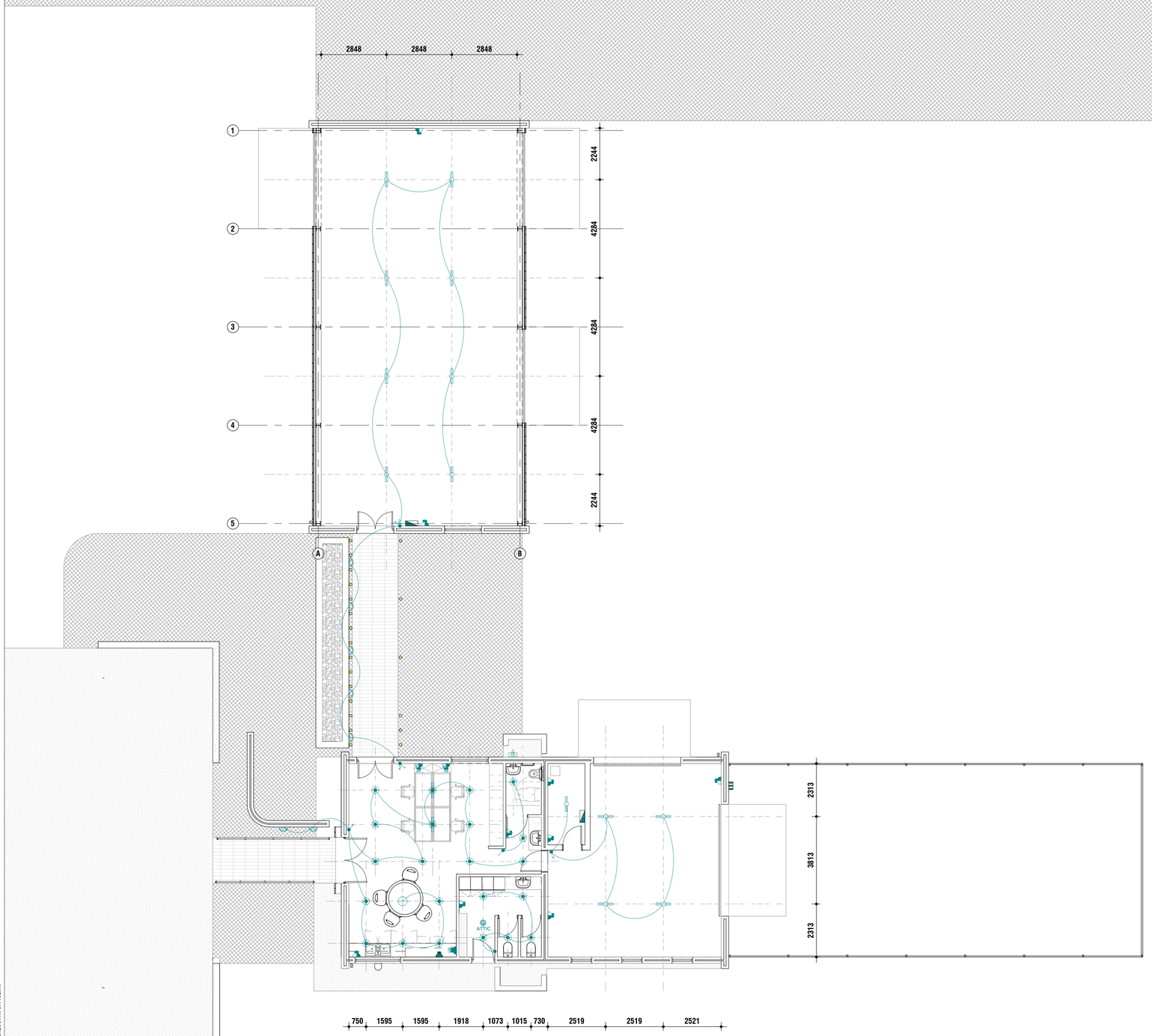
STELLENBOSCH

GROUND FLOOR DRAINAGE PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-1002	A

TENDER

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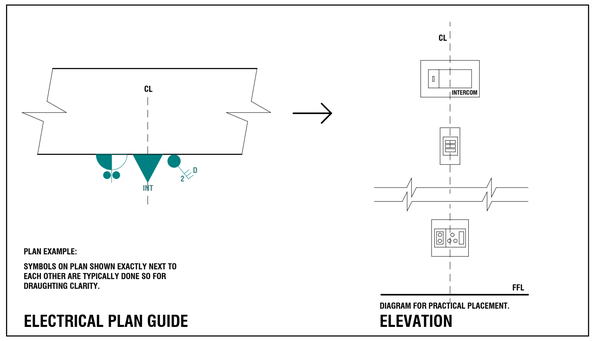


ELECTRICAL LEGEND

	DISTRIBUTION BOARD 1500mm ABOVE FLOOR LEVEL
	DOUBLE TUBE FLUORESCENT LIGHT FITTING
	LED TRACKLIGHT TO BE DETERMINED
	CEILING MOUNTED LIGHT FITTING
	CEILING MOUNTED DOWNLIGHTER
300XL	WALL/SURFACE MOUNTED LIGHT FITTING 240mm ABOVE FLOOR LEVEL (UNLESS SHOWN OTHERWISE ON PLAN)
	LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
2	TWO-WAY LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
	DOUBLE LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
	ISOLATOR SWITCH FOR OVEN / FIRE PLACE
	DOUBLE 15 AMP PLUGPOINT 340mm ABOVE FLOOR LEVEL
	DOUBLE 15 AMP PLUGPOINT 1050mm ABOVE FFL
USB	DOUBLE 15 AMP PLUGPOINT 340mm ABOVE FLOOR LEVEL + **USB**
USB	DOUBLE 15 AMP PLUGPOINT 1050mm ABOVE FFL + **USB**
WP	DOUBLE 15 AMP WATERPROOF PLUGPOINT 250mm ABOVE FFL
	FOOT LIGHT 340mm ABOVE FLOOR LEVEL
	FLUSH MOUNT WATERPROOF EXTERNAL POWER POINT
G	HOT WATER CYLINDER POINT / GAS GEYSER

ELECTRICAL INSTALLATION SPEC:

The electrical contractor is to calculate the total load required and allow therefore in the installation (where applicable 3 Phase connection to be provided)
The existing electrical council connection, the required connection and the electrical loads as calculated are to be submitted to architect before any work begins.
To be carried out in strict accordance with plans issued by architect or electrical consultant and all applicable by-laws and regulations. All conduits to be laid in concrete surface bed, concrete slabs and roof construction and built into walls where necessary. Conduits must be fixed to the switches and socket casings with two lock nuts.
Plugs and switch height refer to legend. ALL TO LINE UP VERTICALLY and HORIZONTALLY.
Make allowance for taking delivery, storing and erecting all the fittings. No electrical conduit may penetrate through any water or damp proofing. All switches, plugs and cover plates to be of same colour and make, unless otherwise specified.
Positions for Electrical points to be marked out on site and approved by Architect before commencing with electrical installation
Refer to Mentis plaster mesh spec. for cut walls. Overlap cut lines with 150mm both sides of cutlines
No chasing of walls after plastering will be allowed, any affected wall to be completely re-finished at the electrical contractors account.
EARTHING
Any additional and new installation must be properly earthed per standard regulations including all hot and cold water pipes. Earth leakage unit to be provided.
LIGHTNING PROTECTION (WHERE SPECIFIED)
Lightning protection by specialist to incorporate air termination conductor runs, down conductor bonding and earth terminations - all in accordance with SABS code 03 (1985). Conduits to be provided to avoid surface mountings - layout to be submitted to architect for approval prior installation.
TELEPHONE POINTS
The electrician must make arrangements with Telkom and third parties to ensure the most convenient points for telephone incoming lines and boxes are established. This should be confirmed with Architect. 25mm Conduiting to be taken from this point to telephone boards and points in positions indicated on plans fitted with switch boxes and coverplates to confirmed heights. Draw wires are to be left in the conduiting and clearly marked. Provide cover plates to 100 x 75 telephone outlets.
INTERCOM POINTS
Provide intercom points and connect in series with 25mm diameter conduits. Draw-wires and draw-boxes to be provided. Position confirmed with Architect.
T.V. CONNECTIONS
For aerial and satellite dishes only provide 25mm diameter conduit from switchboxes (confirm position), with cover plates linked together to central point from which conduit must lead to aerial outlet box. Position of aerial and dish to be confirmed with architect.
ELECTRICAL SWITCH AND PLUGS
ALL switch gear & plug heights TO BE CONFIRMED
All conduits to be 19mm (to be confirmed with and put in writing by specialist).
Switch gear and covers to be used in conjunction with home automation.
Multi-gang surround to be used behind beds and where needed.
GEYSERS / HOT WATER SYSTEMS
Geysers to be installed according to manufacturer's specification.
All geysers are to be installed in series. The installation needs to accommodate loadsharing.
All warm water systems to be designed by specialist. If a ringmain is required, the layout should be designed, drawn and specified by specialist for approval by architect. A plantroom layout should accompany this drawing / specification. This includes the suggested specification for the swimming pool.
SWITCH GEAR
Legrand Arteor, colour and sample to be approved by Architect before order is placed.
DISTRIBUTION BOARDS
All cable clusters to be grouped, colour marked and labelled to architect's satisfaction.



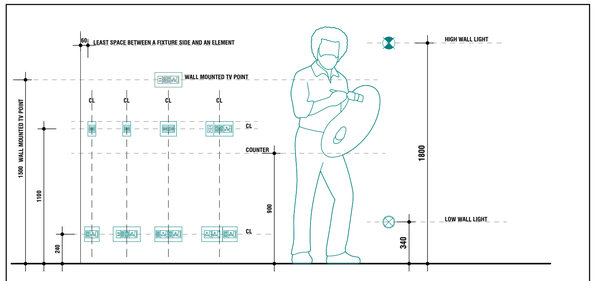
PLAN EXAMPLE:

SYMBOLS ON PLAN SHOWN EXACTLY NEXT TO EACH OTHER ARE TYPICALLY DONE SO FOR DRAUGHTING CLARITY.

ELECTRICAL PLAN GUIDE

DIAGRAM FOR PRACTICAL PLACEMENT.

ELEVATION



ALL FIXTURES AND FITTINGS TO LINE UP: OVER / UNDER
SYMBOLS ON PLAN SHOWN EXACTLY NEXT TO EACH OTHER ARE TYPICALLY DONE SO FOR DRAUGHTING CLARITY. REFER TO ABOVE DIAGRAM FOR PRACTICAL PLACEMENT.

ELECTRICAL FIXTURES SWATCH

1 | GROUND PLAN ELECTRICAL
1 : 100

SCALE 1:100

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FARM NO 29
STELLENBOSCH

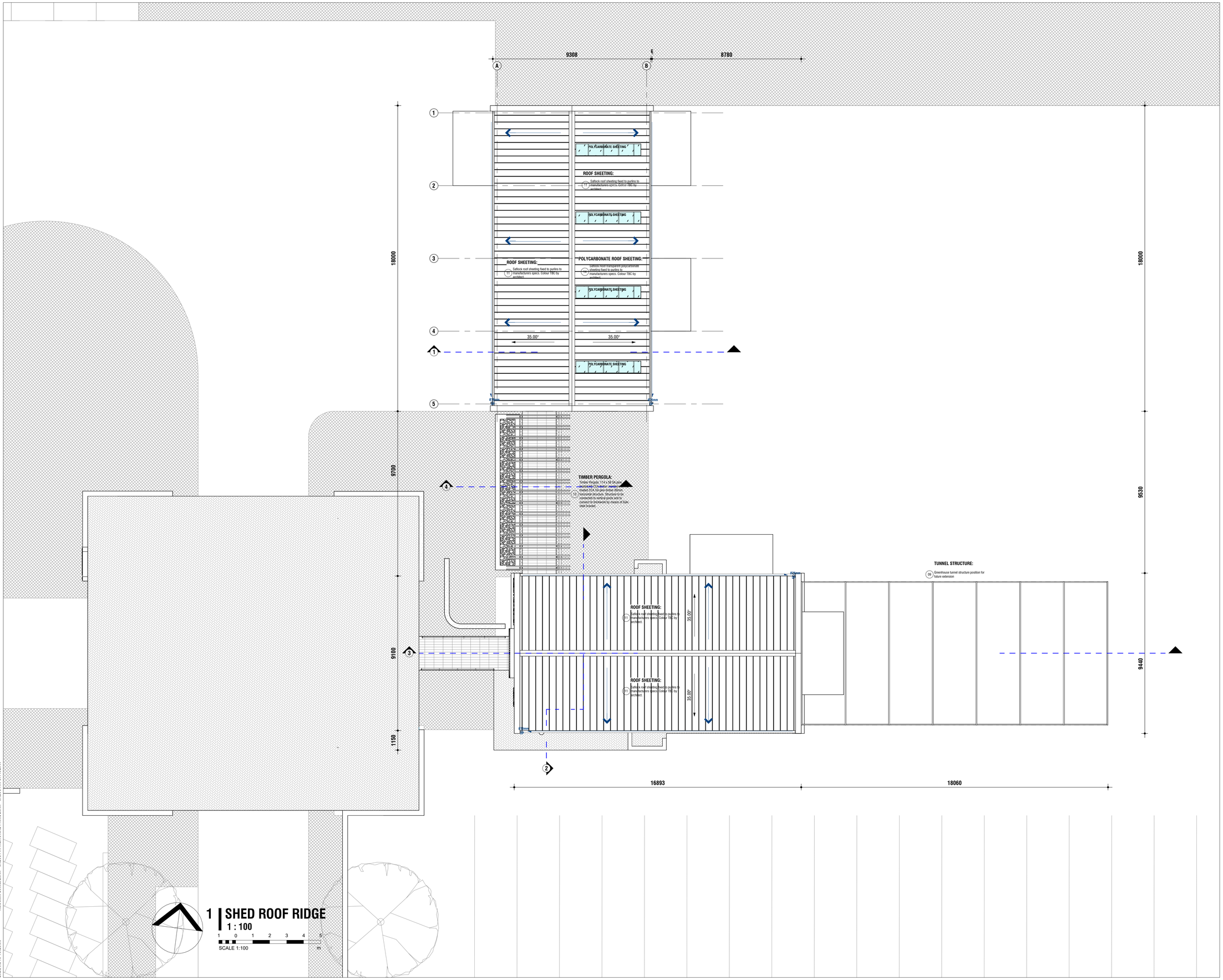
STELLENBOSCH

GROUND FLOOR ELECTRICAL PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-1003	A

TENDER

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15	50 x 76mm SAP purlins fixed to 152 SAP trusses to Engineers design. 135mm Aerolite on ceilings.
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20	Steel handrail 1m high
21	Glass printed information board fixed by means of specialised bolts to wall, to specialist specifications.

CALCUTTA MEMORIAL PARK

BIGEN

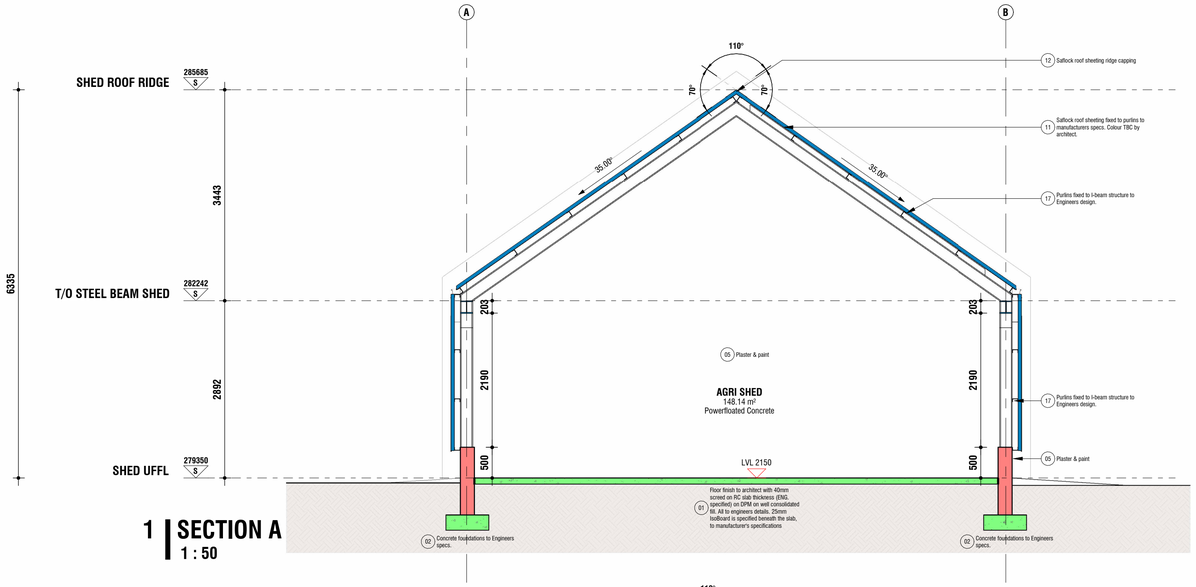
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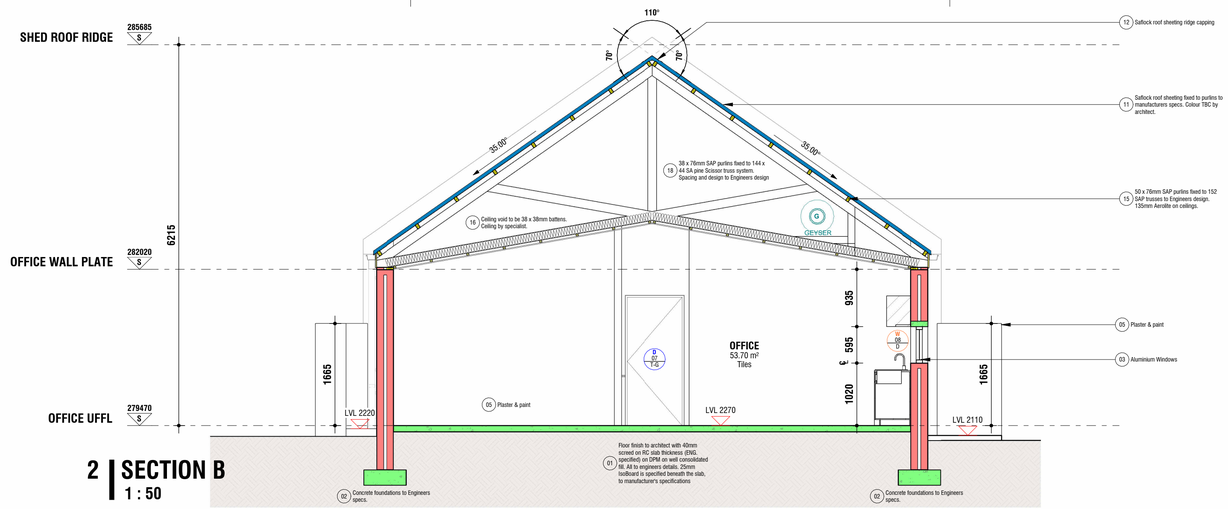
ROOF PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
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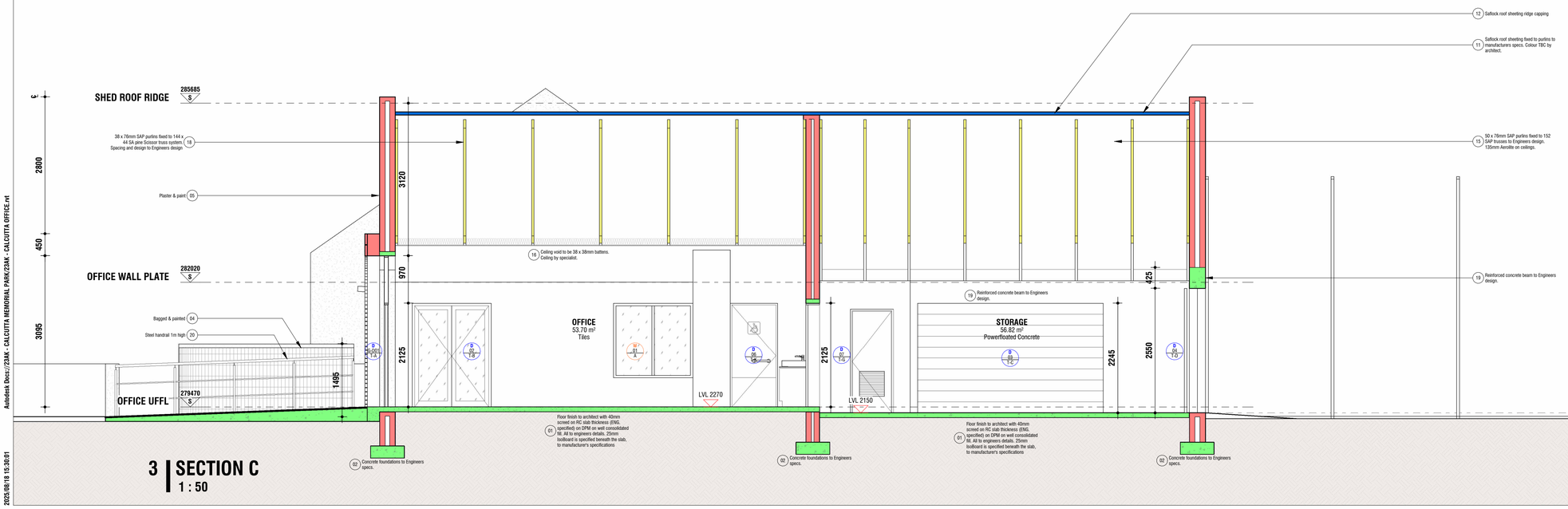
TENDER



1 | SECTION A
1 : 50



2 | SECTION B
1 : 50



3 | SECTION C
1 : 50

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CALCUTTA MEMORIAL PARK

BIGEN

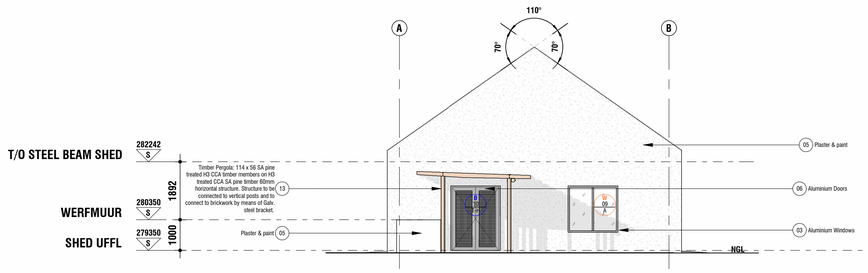
FARM NO 29
STELLENBOSCH

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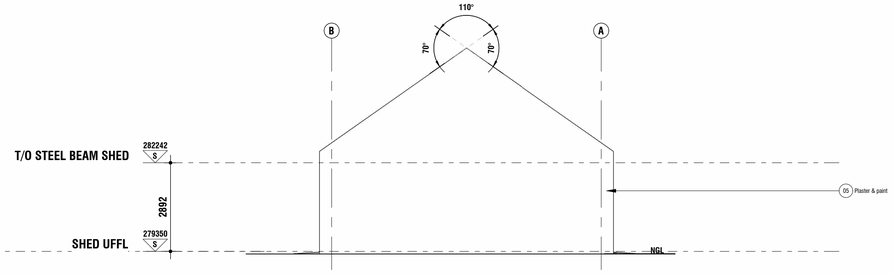
BUILDING SECTIONS

CODE	PHASE	DISCIPLINE	NUMBER	REV
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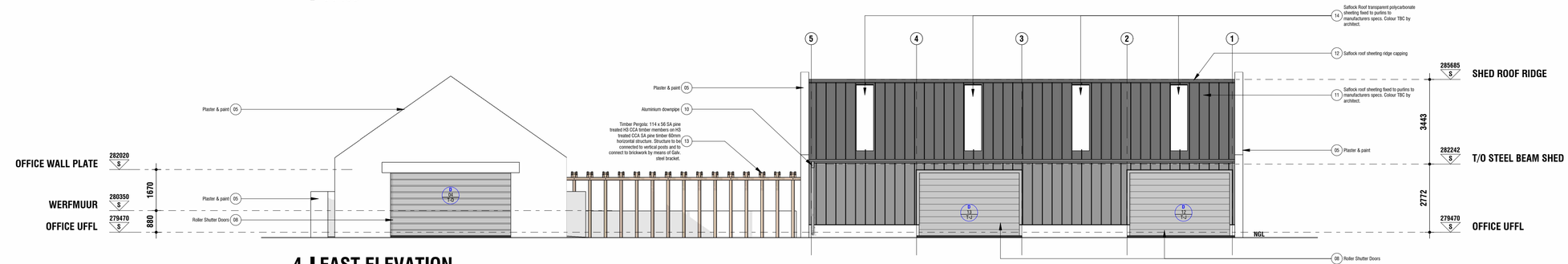
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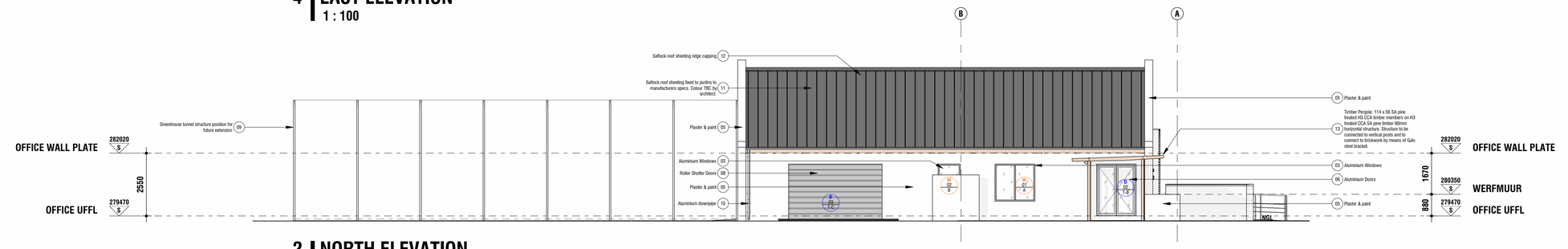
3 | SHED SOUTH ELEVATION
1 : 100



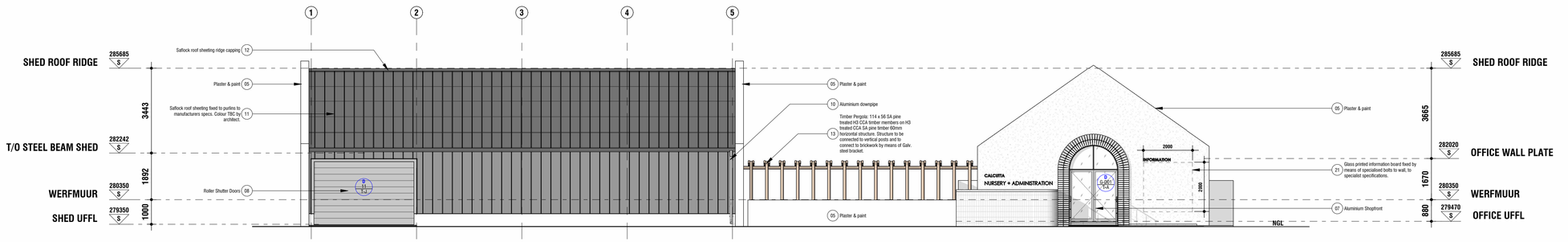
5 | SHED NORTH ELEVATION
1 : 100



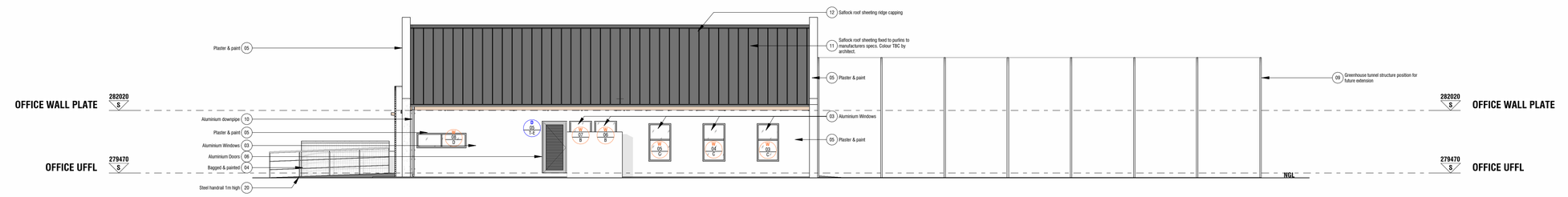
4 | EAST ELEVATION
1 : 100



2 | NORTH ELEVATION
1 : 100



1 | WEST ELEVATION
1 : 100



6 | SOUTH ELEVATION
1 : 100

1 0 1 2 3 4 5
SCALE 1:100 m

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CALCUTTA MEMORIAL PARK
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FARM NO 29
STELLENBOSCH

STELLENBOSCH

GENERAL ELEVATIONS

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-3000	A

TENDER

DOOR MATRIX

DOOR NUMBER	D 01	D 02	D 03	D 04	D 05	D 06	D 07	D 08	D 09	D 10	D 11	D 12	D 13
DOOR TYPE	A	B	C	D	E	F	G	F	F	H	J	J	J
NOTES													

DOOR TYPES

All aluminium doors to be powder coated col: Dark Grey Umber

All doors viewed as from outside

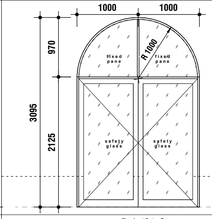
Opening sections and hanging orientation indicated by broken lines

All dimensions to be checked on site before manufacture

Dimesions taken to and from centre of frame elements except for outer dimensions which are taken from the outside of the frame

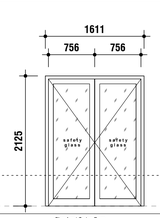
SAFETY GLASS 1.0/E

A



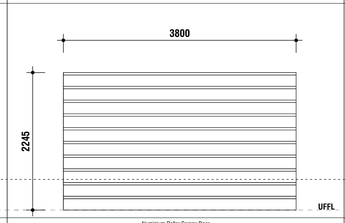
FRAMING TYPE	Shopfront Swing Door
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	2000 x 3095mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Solid pane safety glass
DOOR NUMBERS	01

B



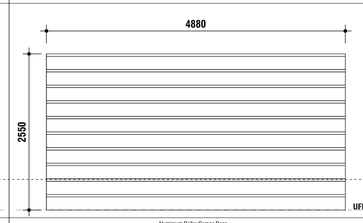
FRAMING TYPE	Shopfront Swing Door
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	1611 x 2125mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Solid pane safety glass
DOOR NUMBERS	02

C



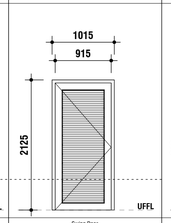
FRAMING TYPE	Aluminium Roller Garage Door
GLAZING TYPE	NA
OVERALL DIMENSION (mm)	3800 x 2245mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Aluminium overhead garage door - colour and detail to be specified by architect.
DOOR NUMBERS	03

D



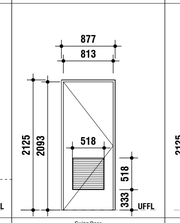
FRAMING TYPE	Aluminium Roller Garage Door
GLAZING TYPE	NA
OVERALL DIMENSION (mm)	4880 x 2550mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Aluminium overhead garage door - colour and detail to be specified by architect.
DOOR NUMBERS	04

E



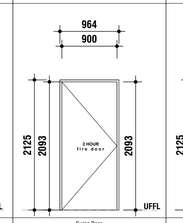
FRAMING TYPE	Swing Door
GLAZING TYPE	N/A
OVERALL DIMENSION (mm)	915 x 2125mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Tamper proof security accessories + Vermin proof
DOOR NUMBERS	05

F



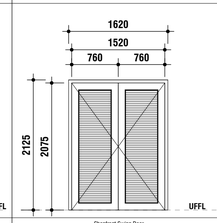
FRAMING TYPE	Swing Door
GLAZING TYPE	N/A
OVERALL DIMENSION (mm)	813 x 2125mm
QUANTITY OF TYPE	2
SPECIAL NOTES	Supawood Internal doors - Single rebate. Vent panel (Painted: Colour to be selected)
DOOR NUMBERS	08,09

G



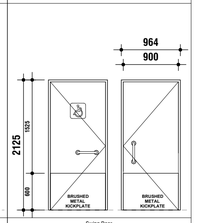
FRAMING TYPE	Swing Door
GLAZING TYPE	N/A
OVERALL DIMENSION (mm)	946 x 2125mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Solid core Internal fire door - Double rebate. (Painted: Colour to be selected)
DOOR NUMBERS	07

H



FRAMING TYPE	Shopfront Swing Door
GLAZING TYPE	N/A
OVERALL DIMENSION (mm)	1620 x 2125mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Tamper proof security accessories + Vermin proof
DOOR NUMBERS	10

K



FRAMING TYPE	Swing Door
GLAZING TYPE	N/A
OVERALL DIMENSION (mm)	900 x 2125mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Supawood Internal doors - Single rebate. kick plate Disbaled metal handles (Painted: Colour to be selected)
DOOR NUMBERS	06

DOOR TYPES

All aluminium doors to be powder coated col: Dark Grey Umber

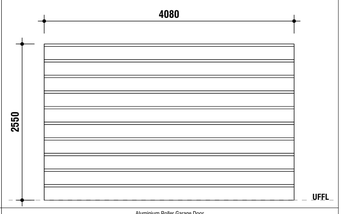
All doors viewed as from outside

Opening sections and hanging orientation indicated by broken lines

All dimensions to be checked on site before manufacture

Dimesions taken to and from centre of frame elements except for outer dimensions which are taken from the outside of the frame

J



FRAMING TYPE	Aluminium Roller Garage Door
GLAZING TYPE	NA
OVERALL DIMENSION (mm)	4080 x 2550mm
QUANTITY OF TYPE	3
SPECIAL NOTES	Aluminium overhead garage door - colour and detail to be specified by architect.
DOOR NUMBERS	11,12,13

Door Schedule
1 : 50

WINDOW MATRIX

WINDOW NUMBER	W 01	W 02	W 03	W 04	W 05	W 06	W 07	W 08	W 09
WINDOW TYPE	A	B	C	D	E	F	G	G	F
HEAD HEIGHT ABOVE T.O.C.	2125	2125	2125	1530	2125	2125	2125	2125	2125
NOTES									

WINDOW TYPES

All aluminium windows to be powder coated col: CHARCOAL

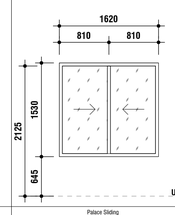
All windows viewed as from outside

Dimesions taken to and from centre of frame elements except for outer dimensions which are taken from the outside of the frame

Opening sections and hanging orientation indicated by broken lines

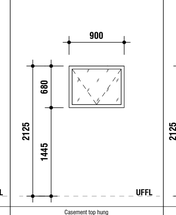
All dimensions to be checked on site before manufacture

A



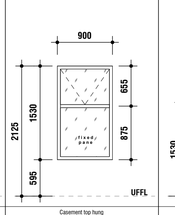
FRAMING TYPE	Palace Sliding
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	1620 x 1530mm
QUANTITY OF TYPE	2
SPECIAL NOTES	Tamper-proof security accessories. Architect to confirm from the manufacturer
WINDOW NUMBERS	01,09

B



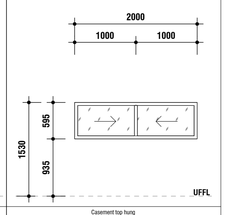
FRAMING TYPE	Casement top hung
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	900 x 680mm
QUANTITY OF TYPE	3
SPECIAL NOTES	Tamper-proof security accessories. Architect to confirm from the manufacturer
WINDOW NUMBERS	02,06,07

C



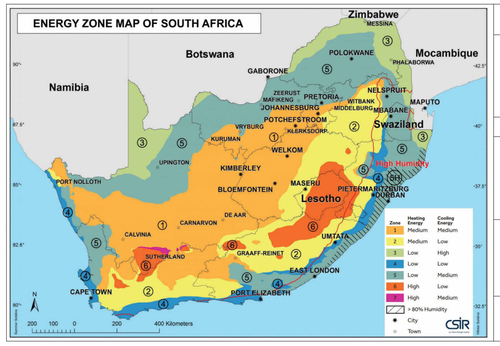
FRAMING TYPE	Casement top hung
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	900 x 680mm
QUANTITY OF TYPE	3
SPECIAL NOTES	Tamper-proof security accessories. Architect to confirm from the manufacturer
WINDOW NUMBERS	03,04,05

D



FRAMING TYPE	Casement top hung
GLAZING TYPE	Single Clear
OVERALL DIMENSION (mm)	2000 x 959mm
QUANTITY OF TYPE	1
SPECIAL NOTES	Tamper-proof security accessories. Architect to confirm from the manufacturer
WINDOW NUMBERS	08

Window Schedule
1 : 50



ENERGY CLASSIFICATION SHED

CLASS OF OCCUPANCY	D3
TOWN	STELLENBOSCH
ZONE	2

FENESTRATION

GROUND STOREY	166 m²
GROUND STOREY GLAZED AREA	12.22 m²
% FENESTRATION AREA TO NETT FLOOR AREA	7.36%
FIRST STOREY	NA

FENESTRATION AREA TO NET FLOOR AREA FALLS BELOW 20% THRESHOLD AS PER SANS 10400 XA (2021).

In accordance with requirements of Clause 5

ENERGY CLASSIFICATION

CLASS OF OCCUPANCY	G1
TOWN	STELLENBOSCH
ZONE	2

FENESTRATION

GROUND STOREY	152 m²
GROUND STOREY GLAZED AREA	18.82 m²
% FENESTRATION AREA TO NETT FLOOR AREA	12.38%
FIRST STOREY	NA

FENESTRATION AREA TO NET FLOOR AREA FALLS BELOW 20% THRESHOLD AS PER SANS 10400 XA (2021).

In accordance with requirements of Clause 5

FENESTRATION NOTES

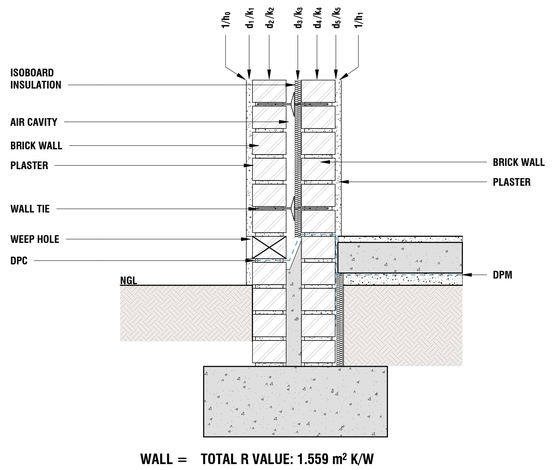
HOUSE: CALCATTA OFFICE SPACE

ROOM/STOREY DESCRIP.	**Netto Floor Area (m²)**	152	Conductance Constant	1,4	Max. allowable Conductance	**212,80**	Actual Cond.	**148,67**	Pass
GROUND FLOOR	**Climatic Zone**	4	Solar Heat Gain Constant	0,13	Max. allowable Solar Heat Gain	**19,76**	Actual SHG	**11,87**	Pass

SIZES OF GLAZING ELEMENTS **CONDUCTANCE (A1 x U1) + ...** **SOLAR HEAT GAIN (A1 X S1 X E1) + ...**

	ID. Window Door	Glazing Element Width	Height	A m²	Glass Type 1 to 7	Glass Description	Thermal break framing Y/N	U U-Value (page 14) (Table 6)	Actual Conduct. of glazing elements	S SHGC (page 14) (Table 6)	P Hor. dim shade devise If lintol to shade device > 0.5m then P / 2	H Vert dim base of glazing element to bot shade device	P/H	Orientation	E Solar expose factor per P/H per orientation	Actual Solar Heat Gain
1	D01	2	2,88	5,76	1	Single - Clear	N	7,9	45,50	0,81	0,16	2,88	0,06	W	1,3	6,07
2	D02	1,611	2,125	3,42	1	Single - Clear	N	7,9	27,04	0,81	0,16	2,125	0,08	N	0,65	1,80
3	W01	1,62	1,53	2,48	1	Single - Clear	N	7,9	19,58	0,81	0,16	1,53	0,10	N	0,65	1,30
4	W02	0,9	0,68	0,61	1	Single - Clear	N	7,9	4,83	0,81	0,16	0,68	0,24	N	0,48	0,24
5	W03	0,9	1,53	1,38	1	Single - Clear	N	7,9	10,88	0,81	0,16	1,53	0,10	S	0,49	0,55
6	W04	0,9	1,53	1,38	1	Single - Clear	N	7,9	10,88	0,81	0,16	1,53	0,10	S	0,49	0,55
7	W05	0,9	1,53	1,38	1	Single - Clear	N	7,9	10,88	0,81	0,16	1,53	0,10	S	0,49	0,55
8	W06	0,9	0,68	0,61	1	Single - Clear	N	7,9	4,83	0,81	0,16	0,68	0,24	S	0,42	0,21
9	W07	0,9	0,68	0,61	1	Single - Clear	N	7,9	4,83	0,81	0,16	0,68	0,24	S	0,42	0,21
10	W08	2	0,595	1,19	1	Single - Clear	N	7,9	9,40	0,81	0,16	0,595	0,27	S	0,42	0,40
				18,82	m²		Total Conductance		**148,67**						Total Solar Heat Gain	**11,87**
									Pass							Pass

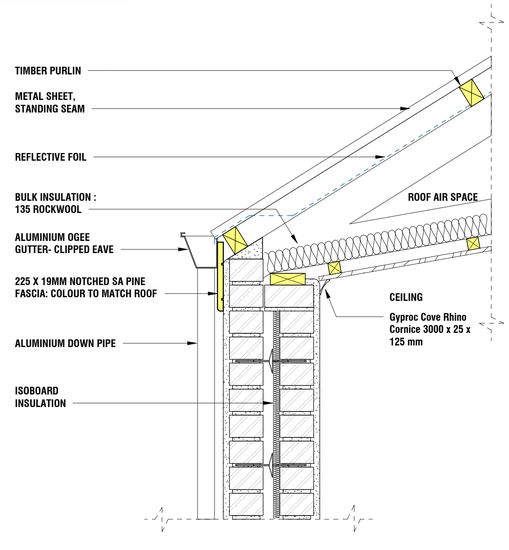
FENESTRATION CALCULATIONS: OFFICE



WALL = **TOTAL R VALUE: 1.559 m² K/W**
In accordance with requirements of Clause 5,5

FLOOR = **TOTAL R VALUE: 1 m² K/W**
In accordance with requirements of Clause 5,4

GENERAL CAVITY WALL + FLOOR



TOTAL R VALUE: 6.8 m² K/W
In accordance with requirements of Clause 5,6

TIMBER ROOF

nuvorm

architecture | urban design | landscape architecture | interior design

Unit 305 Oude Postkantoor
c/o Plein and, Bird Street
Stellenbosch

studio@nuvorm.com

REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

1. All work is to be done in accordance with the National building Regulations.
2. All materials and workmanship are to comply with the relevant S.A.B.S. codes and or the specified international codes where applicable in the - Architectural specifications. Where relevant South African National Standards, British Standards, BS codes of practice, or Agrément Certificates applicable to the design exists, the recommendations and requirements of such documents to be considered a minimum standard for the works.
3. The contractor shall in all aspects of the works comply with the provisions of the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The contractor shall set up, document and maintain a quality assurance and quality control system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Specification. Should the Contractor or any of his sub-contractors be certified to the SANS 9000 family of standards then monitor these works accordingly.
5. This drawing must be read in conjunction with all the relevant drawings, schedules and specifications from nuvorm and all other consultants related to the project.
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7. This drawing is not to be scaled. Figured dimensions to be used. All dimensions are in millimeters unless otherwise stated.
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CLIENT

ARCHITECT

CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

DOOR & WINDOW SCHEDULE

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	A-4000	A

TENDER

Autodesk Docs://23AK - CALCUTTA MEMORIAL PARK/23AK - CALCUTTA OFFICE.rvt
2025/08/18 15:30:10

	OFFICE	AGRI SHED
ROOF:	Saflok 700 concealed-fix roof sheeting in 0.50 mm Colorplus Slate with a cover width of 700 mm shall be installed at a minimum pitch of 2°. Sheets shall be fixed using Saflok 700 clips at 333 mm centres. Clips to be fastened to 38 x 76 mm timber purlins using 10g x 38 mm SS wafer-head screws, or to min. 1.6 mm steel purlins using 10-16 x 22 mm self-drilling tek screws with washers.	Saflok 700 concealed-fix roof sheeting in 0.50 mm Colorplus Slate with a cover width of 700 mm shall be installed at a minimum pitch of 2°. Sheets shall be fixed using Saflok 700 clips at 333 mm centres. Clips to be fastened to 38 x 76 mm timber purlins using 10g x 38 mm SS wafer-head screws, or to min. 1.6 mm steel purlins using 10-16 x 22 mm self-drilling tek screws with washers. Polycarbonate sheeting shall match the Saflok 700 profile, 0.8–1.0 mm thick, in clear or bronze tint. Fix using same clips and spacing, with oversized predrilled holes and UV-resistant washers.
PAVING:	REFER TO 6200 - FLOOR FINISHES	
DOORS FRAMES:	VERSAWOOD JAMBLINERS; Versawood jamb liners shall be primed with Dulux Woodguard Pink Primer and finished with two coats of Dulux Luxurious Silk in Moon Grey, applied according to the manufacturer's specifications for preparation, application, and drying times.	
BRICK ARCH:	The Cabricos Rustic Blend Piazza PB Smooth Slim Pavers shall be laid in a specified arch pattern, with each paver carefully aligned and levelled. All pavers are to be fixed using white cement mortar, ensuring a strong bond. Jointing The joints between the pavers shall be flush jointed with white cement, with mortar compacted evenly into the joints, ensuring a neat finish. Rendering The pavers shall be rendered with white cement, with a smooth, uniform finish to match the aesthetic requirements. The rendering should be applied to the surface in accordance with manufacturer's specifications to achieve a consistent texture and colour.	

TENDER

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MODEL REVISION

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-4600	A

STELLENBOSCH

studio@nuvorm.com

CALCUTTA MEMORIAL PARK

FARM NO 29
STELLENBOSCH
FINISHES SCHEDULE

nuvorm

	OFFICE	AGRI SHED	OFFICE STORE
SKIRTINGS	Endura-Shadowline skirting 15x94mm (CSP) be primed with Dulux Woodguard Pink Primer and finished with two coats of Dulux Luxurious Silk in Moon Grey, applied according to the manufacturer's specifications for preparation, application, and drying times.		
CORNICE	Gyproc Cove Rhino Cornice 3000 x 25 x 125 mm Paint to be waterbased, to match the wall colour		
EXTERNAL PLASTER & PAINT	Textured Plaster and Paint Finish Specification External walls to receive a textured plaster finish with a lightly floated texture. After proper curing and surface preparation, apply one coat of appropriate masonry primer followed by two coats of Dulux Weatherguard Fine Textured paint in white (exact shade to be specified). All work to be done in accordance with Dulux manufacturer's specifications, ensuring an even, durable finish.	Textured Plaster for all external walls Colours to match.	
INTERNAL PLASTER & PAINT	Internal walls to be finished with two coats of Dulux Luxurious Silk in Cottage White, over one coat of Dulux Universal Undercoat or appropriate primer. Surfaces to be clean, dry, and properly prepared. All work to be carried out in accordance with Dulux manufacturer's specifications for application and drying times.	Colours to match.	
PLASTERED CEILING	Ceiling Finish Specification – Timber Brandering Ceilings to be constructed from 9.5 mm plastered ceiling board fixed to 38 x 38 mm timber brandering at 400 mm centres. All board joints to be taped and skimmed with a suitable jointing compound, then finished with a smooth skim coat plaster over the entire surface. After drying and proper surface preparation, apply one coat of primer followed by two coats of Dulux Luxurious Silk in Cottage White (or other specified colour), in accordance with Dulux manufacturer's specifications. Finish to be smooth, uniform, and free of defects.	Sisolation	Ceiling Finish Specification – Fixed to Timber Purlins Below LAMBDABOARD Ceiling to be constructed from 9.5 mm plastered ceiling board fixed directly to timber purlins (minimum size 38 x 76 mm) below insulation board. Lambdaboard insulation (minimum 30–40 mm thick, or as specified for thermal performance) shall be installed above the ceiling board, between or above purlins, secured in accordance with manufacturer's guidelines. Ceiling board as per general spec.

TENDER

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MODEL REVISION

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-4601	A

STELLENBOSCH

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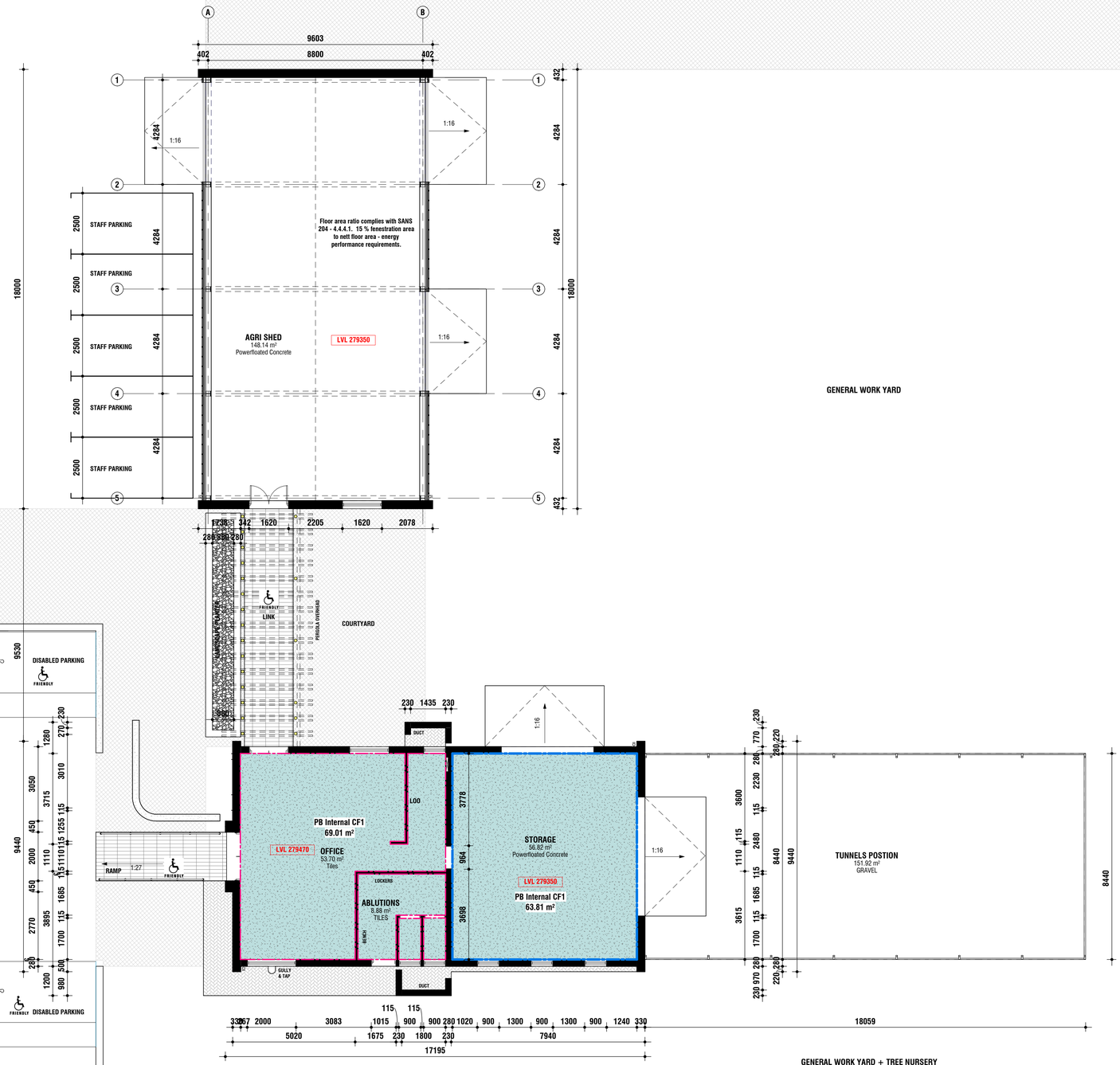
CALCUTTA MEMORIAL PARK

FARM NO 29
STELLENBOSCH
FINISHES SCHEDULE 2

nuvorm

CEILING FINISH KEY			
KEY	CODE	FINISH	IMAGE
	CF1	FLUSH PLASTERED CEILING BOARD - FIXED TO 38 X 38 PINE BRANDERING SYSTEM SKIMMED AND PAINTED AS **WHITE** PER PAINT SPECIFICATIONS	
	CF2	CONCRETE SKIMMED AND PAINTED AS **WHITE** PER PAINT SPECIFICATIONS	

CEILING FINISH LEGEND
1 : 50



CEILING PLAN
1 : 100

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architecture | urban design | landscape architecture | interior design

Unit 305 Oude
Postkantoor
c/o Plein and, Bird Street
Stellenbosch

studio@nuvorm.com

REVISIONS

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FARM NO 29
STELLENBOSCH

STELLENBOSCH

CEILING PLAN

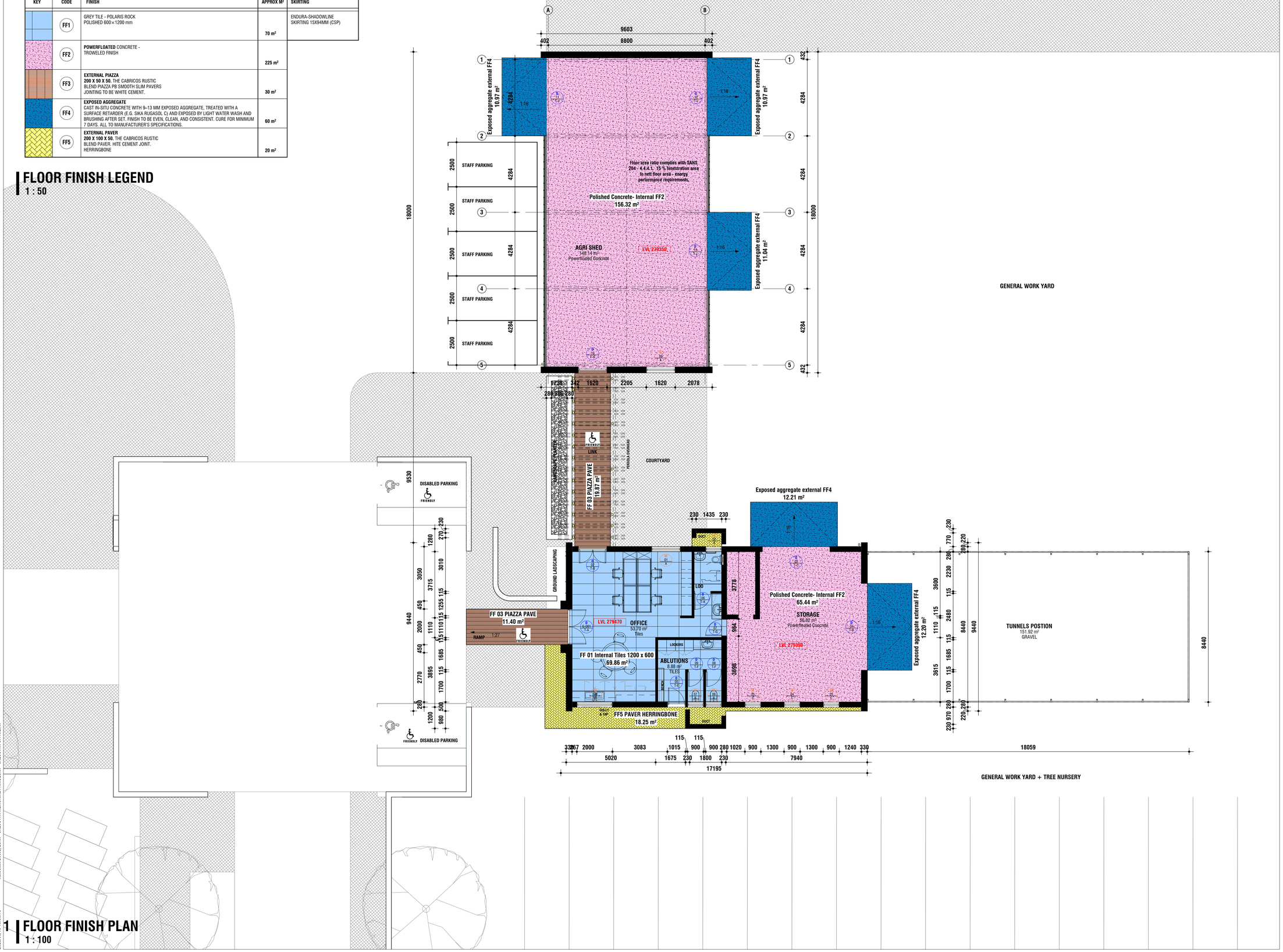
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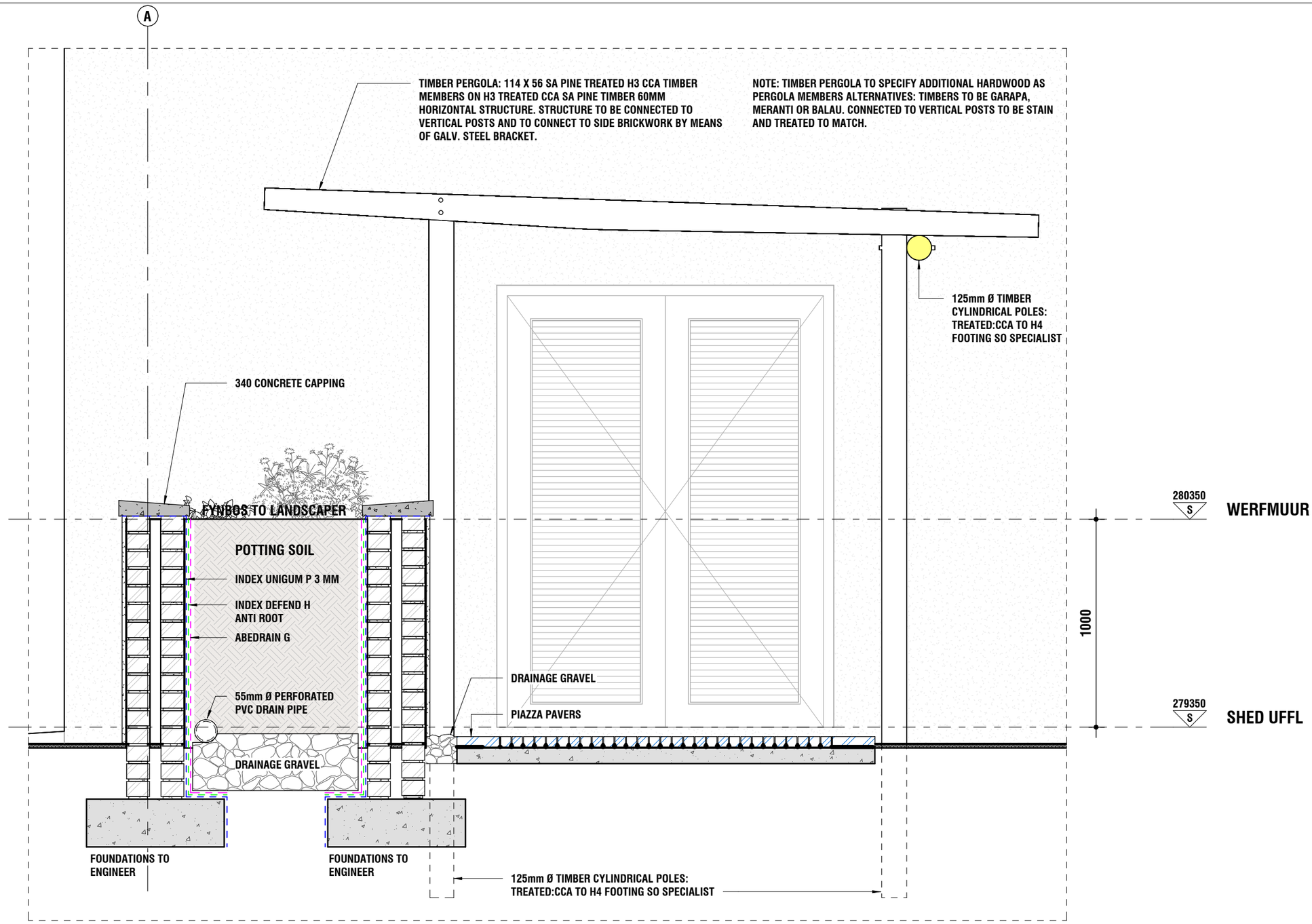
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FLOOR FINISH KEY				
KEY	CODE	FINISH	APPROX M²	SKIRTING
	FF1	GREY TILE - POLARIS ROCK POLISHED 600×1200 mm	70 m²	ENDURA-SHADOWLINE SKIRTING 15X94MM (CSP)
	FF2	**POWERFLOATED** CONCRETE - TROWELED FINISH	225 m²	
	FF3	**EXTERNAL PIAZZA** **200 X 50 X 50.** THE CABRICOS RUSTIC BLEND PIAZZA PB SMOOTH SLIM PAVERS JOINTING TO BE WHITE CEMENT.	30 m²	
	FF4	**EXPOSED AGGREGATE** CAST IN-SITU CONCRETE WITH 9–13 MM EXPOSED AGGREGATE, TREATED WITH A SURFACE RETARDER (E.G. SIKA RUGASOL C) AND EXPOSED BY LIGHT WATER WASH AND BRUSHING AFTER SET. FINISH TO BE EVEN, CLEAN, AND CONSISTENT. CURE FOR MINIMUM 7 DAYS. ALL TO MANUFACTURER'S SPECIFICATIONS.	60 m²	
	FF5	**EXTERNAL PAVER** **200 X 100 X 50.** THE CABRICOS RUSTIC BLEND PAVER. HITE CEMENT JOINT. HERRINGBONE	20 m²	

FLOOR FINISH LEGEND
1 : 50


A
B
9603
402
8800
402
1
2
3
4
5
18000
Exposed aggregate external FF4
10.97 m²
4284
1:16
2500
STAFF PARKING
Floor area ratio complies with SANS 204 - 4.4.4.1. - 15 % fenestration area to nett floor area – energy performance requirements.
Polished Concrete- Internal FF2
156.32 m²
AGRI SHED
148.14 m²
Powerfloated Concrete
LVL 279350
Exposed aggregate external FF4
11.04 m²
GENERAL WORK YARD
432
FF38
342
1620
2205
1620
2078
280 280 280
FF 03 PIAZZA PAVE
19.87 m²
COURTYARD
PISCIA STONES
GROUND LADSCAPING
DISABLED PARKING
FRIENDLY
9530
9440
Exposed aggregate external FF4
12.21 m²
230 1435 230
POST
FF 03 PIAZZA PAVE
11.40 m²
RAMP
1:27
LVL 279470
OFFICE
53.70 m²
Tiles
LOO
3778
Polished Concrete- Internal FF2
65.44 m²
STORAGE
56.88 m²
Powerfloated Concrete
LVL 279350
964
3698
FF 01 Internal Tiles 1200 x 600
69.86 m²
ABLUTIONS
8.88 m²
TILES
LOCKERS
SEAT
BENCH
SHOWER
SHOWER
SHOWER

REVIEW



4 | PLANTER BOX SECTIONS
1 : 20

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MODEL REVISION

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8000	A

STELLENBOSCH
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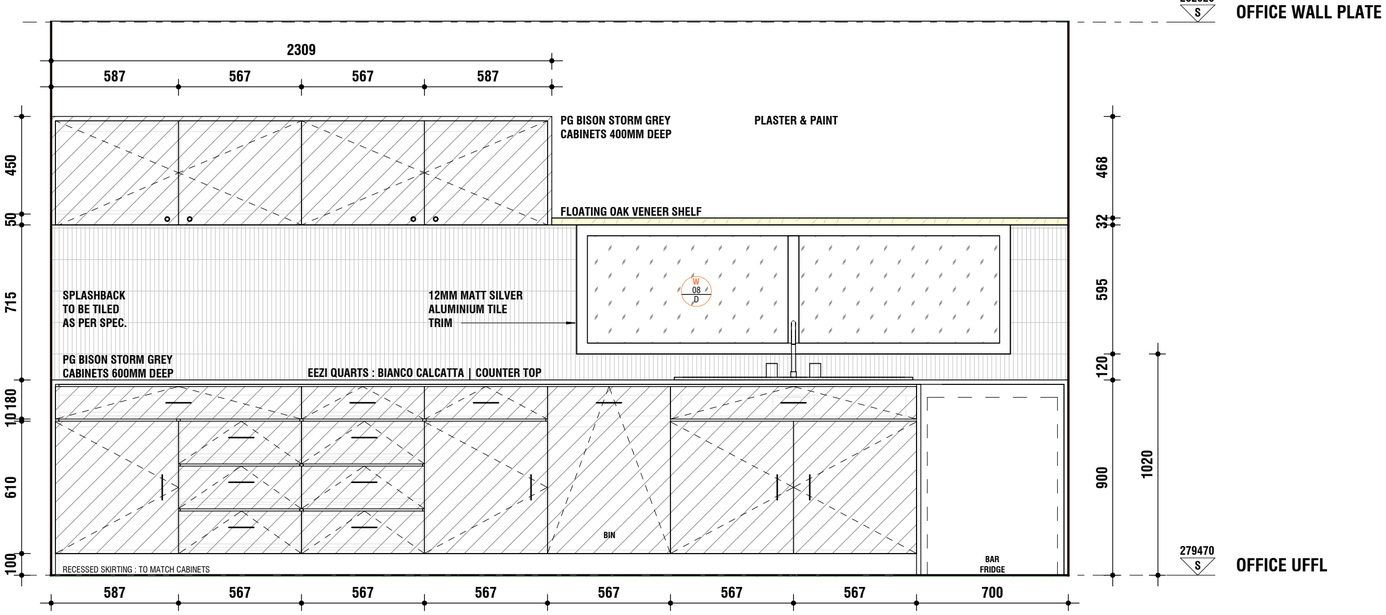
CALCUTTA MEMORIAL PARK
FARM NO 29
STELLENBOSCH
PLANTER DETAIL

nuvorm

	OFFICE	
KITCHEN CABINETS	Finish: PG Bison Melawood – texture Storm Grey 16mm or 18mm PG Bison Melawood in Storm Grey. Edged with 1mm or 2mm matching edging, applied with PUR glue. Carcasses: 16mm white PG Bison BisonLam. Backs to be 3.2mm or 6mm hardboard, or 16mm board where needed. Hinges: Clip-on concealed hinges with soft-close. Use Blum, Grass, or Hettich. 110° standard opening. Drawers: Full-extension undermount soft-close runners (Blum/Grass/Hettich). 30kg standard, 50kg for heavy use. Feet and Plinths: 100–150mm adjustable plastic feet. Clip-on plinths in moisture-resistant board or aluminium. Assembly: Confirmat screws or dowels. Backs rebated and fixed. Install level and secure. No visible fixings.	
SINK	Nouveau Nvn621 Sink Double End Bowl 1160X460X149mm With Bsw Satin Stainless Steel - Franke	
TAP	Delinia Loa Kitchen Mixer Tap Brushed Nickel H36.1Cm Spout Reach 25Cm	
COUNTER	Eezi Quarts : Bianco Calcatta | Counter Top	
BACKSPLASH	Wall tile ceramic tropical mist 300x600mm Promax Polished Silver Anodized Straight Edge Trim - 2500 x 10mm	 

	OFFICE	
CABINETS HANDELS	SQUARE HANDLE BLACK 128MM SKU: CHBH13	
CABINETS KNOBS	CONCAVE KNOB BLACK 35MM SKU: CHBK37	
BIN	Double Pull Out Bin with Front Connector, 2 x 20 Litre	

3 | KITCHEN SPECS
1 : 1



2 | KITCHEN CABINETS ELEVATION
1 : 20

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Stellenbosch

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REVISIONS

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

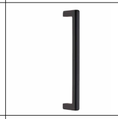
KITCHEN CABINETS

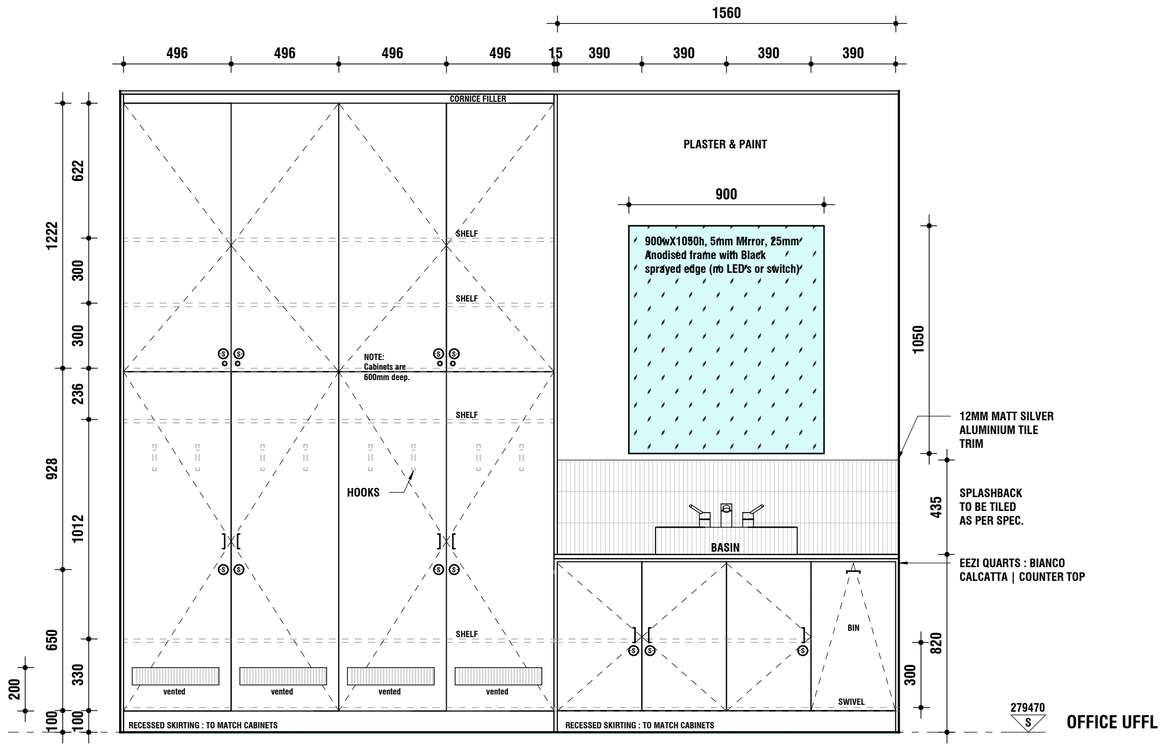
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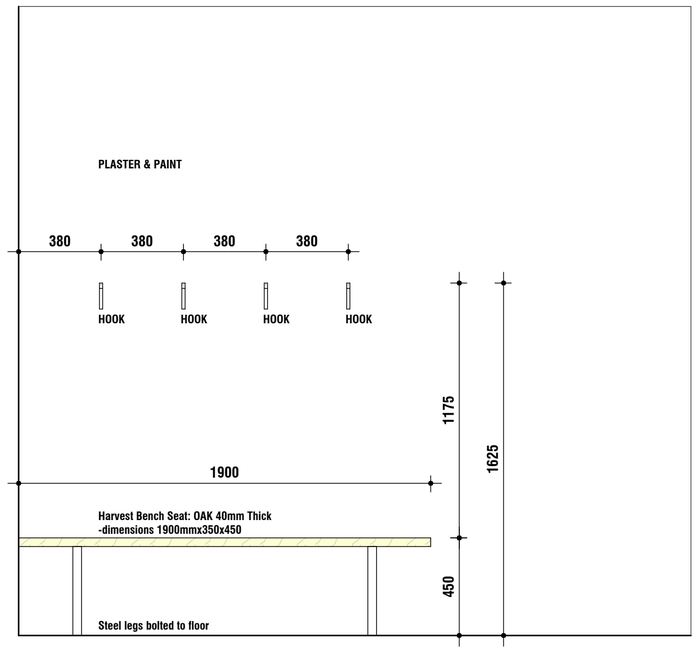
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	ABLUTIONS	
LOCKER CABINETS	**Finish: PG Bison Melawood – texture Storm Grey** **16mm or 18mm PG Bison Melawood in Storm Grey. Edged with 1mm or 2mm matching edging, applied with PUR glue.** **Carcasses:** **16mm white PG Bison BisonLam. Backs to be 3.2mm or 6mm hardboard, or 16mm board where needed.** **Hinges:** **Clip-on concealed hinges with soft-close. Use Blum, Grass, or Hettich. 110° standard opening.** **Drawers:** **Full-extension undermount soft-close runners (Blum/Grass/Hettich). 30kg standard, 50kg for heavy use.** **Feet and Plinths:** **100–150mm adjustable plastic feet. Clip-on plinths in moisture-resistant board or aluminium.** **Assembly:** **Confirmat screws or dowels. Backs rebated and fixed. Install level and secure. No visible fixings.**	
BASIN	**Sensea Studio Rectangular Ceramic Freestanding Basin Matt White W50cmxD36cmxH12cm**	
TAP	**Amalfi Zimbani Stainless Steel Tall Basin Mixer**	
COUNTER	**Eezi Quarts : Bianco Calcatta | Counter Top**	
BACKSPLASH	**Wall tile ceramic tropical mist 300x600mm** **Promax Polished Silver Anodized Straight Edge Trim - 2500 x 10mm**	 

	ABLUTIONS		Q
CABINETS HANDELS	**SQUARE HANDLE BLACK 128MM** **SKU: CHBH13**		
CABINETS KNOBS	**CONCAVE KNOB BLACK 35MM** **SKU: CHBK37**		
SECURITY Ⓢ	**CHROME CAM LOCK - 30MM**		
BIN	**Tilt-Out Bin + Steel Waste bin - 29 x 30 x 30 cm - WB 001-Grey.** **SKU: HHH-WB001-grey**		
HOOKS	**HAT AND COAT HOOK BLACK ALU** **SKU: H058BLK**		**12**
TOILET	**Verdi Atlas White Toilet, Soft Close Seat & Bottom Water Supply** **SKU BE1WH9109**		
PAPER TOWEL DISPENSER	**Ticra Manual Paper Towel Dispenser - Matt Black Steel** **SKU: PHTIC30**		
TOILET ROLL HOLDER	**Ticra Toilet Roll Holder - 2 Roll Holder** **SKU: BLA04**		
ATTIC GEYSER	**Superline 400 DUAL 100 Litres** **SKU: DSG-100-5**		



1 | ABLUTIONS CABINETS ELEVATION
1 : 20



3 | BENCH ELEVATION DETAIL
1 : 20

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c/o Plein and, Bird Street
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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

ABLUTIONS DETAIL

CODE	PHASE	DISCIPLINE	NUMBER	REV
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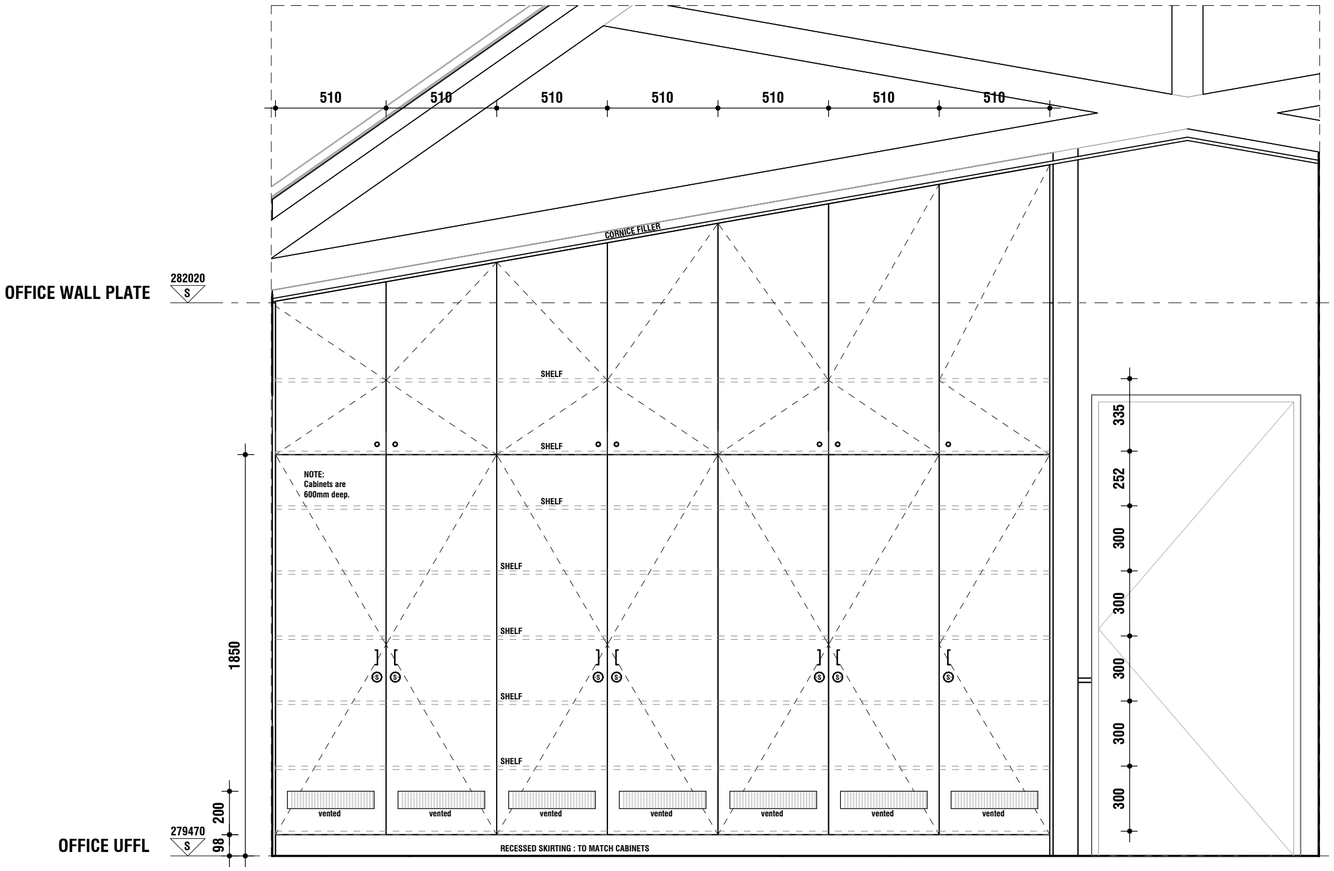
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	OFFICE	
LOCKER CABINETS	**Finish: PG Bison Melawood – texture Storm Grey** **16mm or 18mm PG Bison Melawood in Storm Grey. Edged with 1mm or 2mm matching edging, applied with PUR glue.** **Carcasses:** **16mm white PG Bison BisonLam. Backs to be 3.2mm or 6mm hardboard, or 16mm board where needed.** **Hinges:** **Clip-on concealed hinges with soft-close. Use Blum, Grass, or Hettich. 110° standard opening.** **Drawers:** **Full-extension undermount soft-close runners (Blum/Grass/Hettich). 30kg standard, 50kg for heavy use.** **Feet and Plinths:** **100–150mm adjustable plastic feet. Clip-on plinths in moisture-resistant board or aluminium.** **Assembly:** **Confirmat screws or dowels. Backs rebated and fixed. Install level and secure. No visible fixings.**	

	OFFICE		Q
CABINETS HANDELS	**SQUARE HANDLE BLACK 128MM** **SKU: CHBH13**		
CABINETS KNOBS	**CONCAVE KNOB BLACK 35MM** **SKU: CHBK37**		
SECURITY Ⓢ	**CHROME CAM LOCK - 30MM**		

2 | OFFICE CABINETS
1 : 1



1 | OFFICE CABINETS
1 : 20

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

OFFICE CABINETS

CODE	PHASE	DISCIPLINE	NUMBER	REV
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TENDER

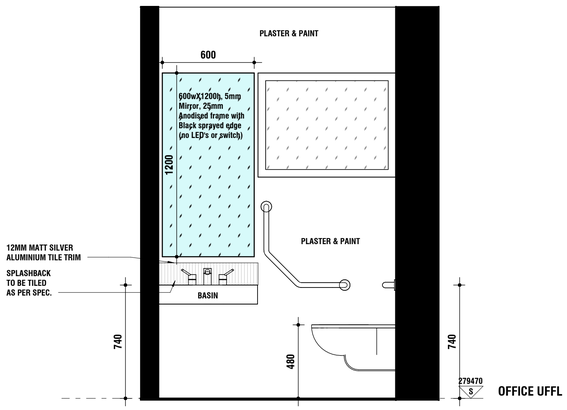
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	OFFICE - ABLUTION	
WC - PARAPLEGIC	**Toilet Wall-Hung Duravit DuraStyle Rimless 370mmx700mm White Alpin** **Toilet Seat Duravit DuraStyle Standard Elongated with Extended Hinge Shaft and Stainless Steel Hinges White Alpin** **SKU: CHBH13**	
PARAPLEGIC WC CISTERN & ACTUATOR PLATE	Geberit Kombifix element for wall-hung WC, 109 cm, with Sigma concealed cistern 8 cm **Code: 110.798.00.1** Geberit Mambo actuator plate for stop-and-go flush, screwable **Code: 115.751.00.1** in brushed stainless steel finish	
TOILET ACCESSORIES	**Brabantia Toilet Accessory Set 3-Piece – Matt Black** **SKU: B25B280603/1**	

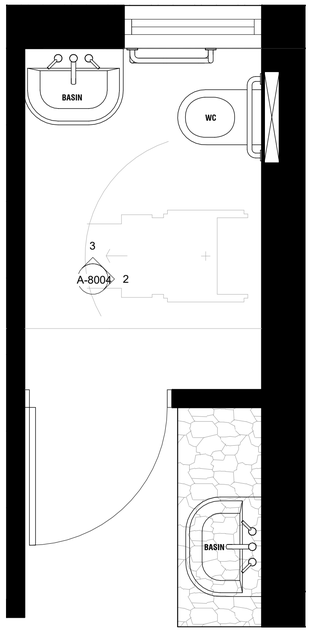
	OFFICE - ABLUTION	
PARAPLEGIC HAND WASH BASIN	Duravit Vero wall mounted basin with 1 taphole in centre in white alpine finish with wall hung brackets included for installation on wall **Code: 045460** **Size: 600 x 470mm**	
PARAPLEGIC WHB TAP	Hansgrohe Decor Single lever basin mixer 70 with extra long handle without waste set **Code: 31910223** **Size: 70(h)mm**	
PARAPLEGIC BASIN WASTE SET	Gio Plumbing Bath Waste 40mm with Plug Chrome **Code: GIO-BTW101** **Size: 40mmØ**	
SHELF	**Sensea studio shelf forged black 20cm** **SKU 81492428**	

	OFFICE - ABLUTION	
STRAIGHT GRAB RAIL	PLUMLINE PARAPLEGIC SS STRAIGHT UNIVERSAL GRAB RAIL 500mm **Code: 038609** **ex PLUMBLINK**	
SIDE DOGLEG GRAB RAIL	SS GROG02B GRAB RAIL PARAPLEGIC SIDE DOGLEG TWICE BENT 45 DEGREE 2 FLANGE **Code: 001609** **ex PLUMBLINK**	
CABINETS HANDELS	**SQUARE HANDLE BLACK 128MM** **SKU: CHBH13**	
SECURITY Ⓢ	**CHROME CAM LOCK - 30MM**	

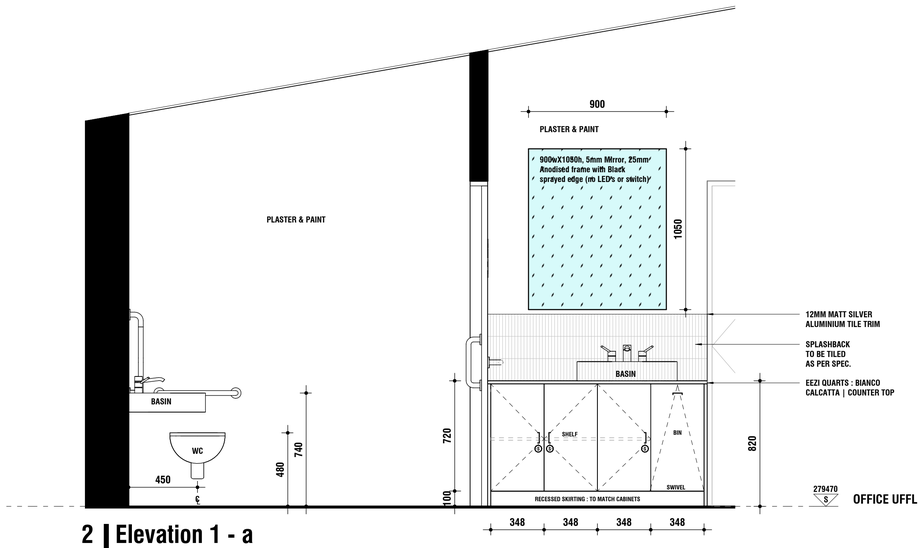
4 | ABLUTIONS SANWARE
1 : 1



3 | Elevation 1 - d
1 : 20



1 | ABLUTION PLAN
1 : 20



2 | Elevation 1 - a
1 : 20

	ABLUTIONS	
LOCKER CABINETS	**Finish: PG Bison Melawood – texture Storm Grey** **16mm or 18mm PG Bison Melawood in Storm Grey. Edged with 1mm or 2mm matching edging, applied with PUR glue.** **Carcasses:** **16mm white PG Bison BisonLam. Backs to be 3.2mm or 6mm hardboard, or 16mm board where needed.** **Hinges:** **Clip-on concealed hinges with soft-close. Use Blum, Grass, or Hettich. 110° standard opening.** **Drawers:** **Full-extension undermount soft-close runners (Blum/Grass/Hettich). 30kg standard, 50kg for heavy use.** **Feet and Plinths:** **100–150mm adjustable plastic feet. Clip-on plinths in moisture-resistant board or aluminium.** **Assembly:** **Confirmat screws or dowels. Backs rebated and fixed. Install level and secure. No visible fixings.**	
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TAP	**Amalfi Zimbani Stainless Steel Tall Basin Mixer**	
COUNTER	**Eezi Quarts : Bianco Calcatta | Counter Top**	
BACKSPLASH	**Wall tile ceramic tropical mist 300x600mm** **Promax Polished Silver Anodized Straight Edge Trim - 2500 x 10mm**	 
BIN	**Tilt-Out Bin + Steel Waste bin - 29 x 30 x 30 cm - WB 001-Grey.** **SKU: HHH-WB001-grey**	

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REVISIONS

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

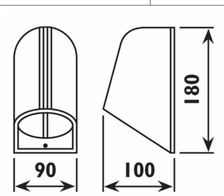
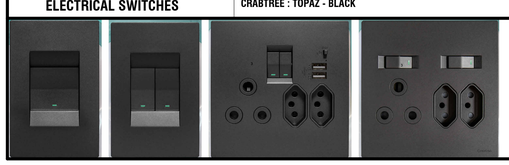
OFFICE ABLUTION

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8004	A

REVIEW

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ELECTRICAL FITTINGS

KEY	DESCRIPTION	SPEC.	COLOUR	LIGHT SOURCE	COLOUR TEMP (K)	DIMMED / SWITCHED	MOUNTING
	DOUBLE TUBE FLUORESCENT LIGHT FITTING: VAPOUR PROOF	Spazio Fluorescent Fitting 7829.7.236 Flatproof for 2 x 22W LED Tubes 4ft Tube 2 X 18W Grey	GREY	LED	COOL	SWITCHED	
							
	PENDANT	Brightstar PEN866/36 BLACK 36W LED Suspended or Surface Mount LED Panel IP20 Matt Black SKU: PEN866/36 BLACK	MATT BLACK	LED		SWITCHED	
							
	CEILING MOUNTED DOWNLIGHTER	Panto Aluminium Round Tilt GU10 Downlight SKU ELC-57/BL-GU	MATT BLACK	LED	4000K	SWITCHED	SURFACE
							
	PENDANT	Brightstar PEN970 BLACK Metal Pendant Sand Black and Copper with White Inner SKU:PEN970 BLACK	MATT BLACK	LED		SWITCHED	
							
	FOOT LIGHT 340mm ABOVE FLOOR LEVEL	Radiant KH06-BL, KH06-W Foot Light 240V - Outdoor Surface indirect E27 60W - 90x180mm (Multiple Colours/Finishes)	BLACK	LED		SWITCHED	WALL
							
	ELECTRICAL SWITCHES	CRABTREE : TOPAZ - BLACK					
							

ELECTRICAL LEGEND

	DISTRIBUTION BOARD 1500mm ABOVE FLOOR LEVEL
	DOUBLE TUBE FLUORESCENT LIGHT FITTING
	LED TRACKLIGHT TO BE DETERMINED
	CEILING MOUNTED LIGHT FITTING
	CEILING MOUNTED DOWNLIGHTER
	WALL/SURFACE MOUNTED LIGHT FITTING 240mm ABOVE FLOOR LEVEL (UNLESS SHOWN OTHERWISE ON PLAN)
	LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
2	TWO-WAY LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
	DOUBLE LIGHT SWITCH 1050 mm ABOVE FLOOR LEVEL
	ISOLATOR SWITCH FOR OVEN / FIRE PLACE
	DOUBLE 15 AMP PLUGPOINT 340mm ABOVE FLOOR LEVEL
	DOUBLE 15 AMP PLUGPOINT 1050mm ABOVE FFL
USB	DOUBLE 15 AMP PLUGPOINT 340mm ABOVE FLOOR LEVEL + **USB**
USB	DOUBLE 15 AMP PLUGPOINT 1050mm ABOVE FFL + **USB**
	DOUBLE 15 AMP WATERPROOF PLUGPOINT 250mm ABOVE FFL
	FOOT LIGHT 340mm ABOVE FLOOR LEVEL
	FLUSH MOUNT WATERPROOF EXTERNAL POWER POINT
	HOT WATER CYLINDER POINT / GAS GEYSER

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REV	DATE	DRAWN	DESCRIPTION
A	06/23/2025	GP	Tender Set

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CALCUTTA MEMORIAL PARK

BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

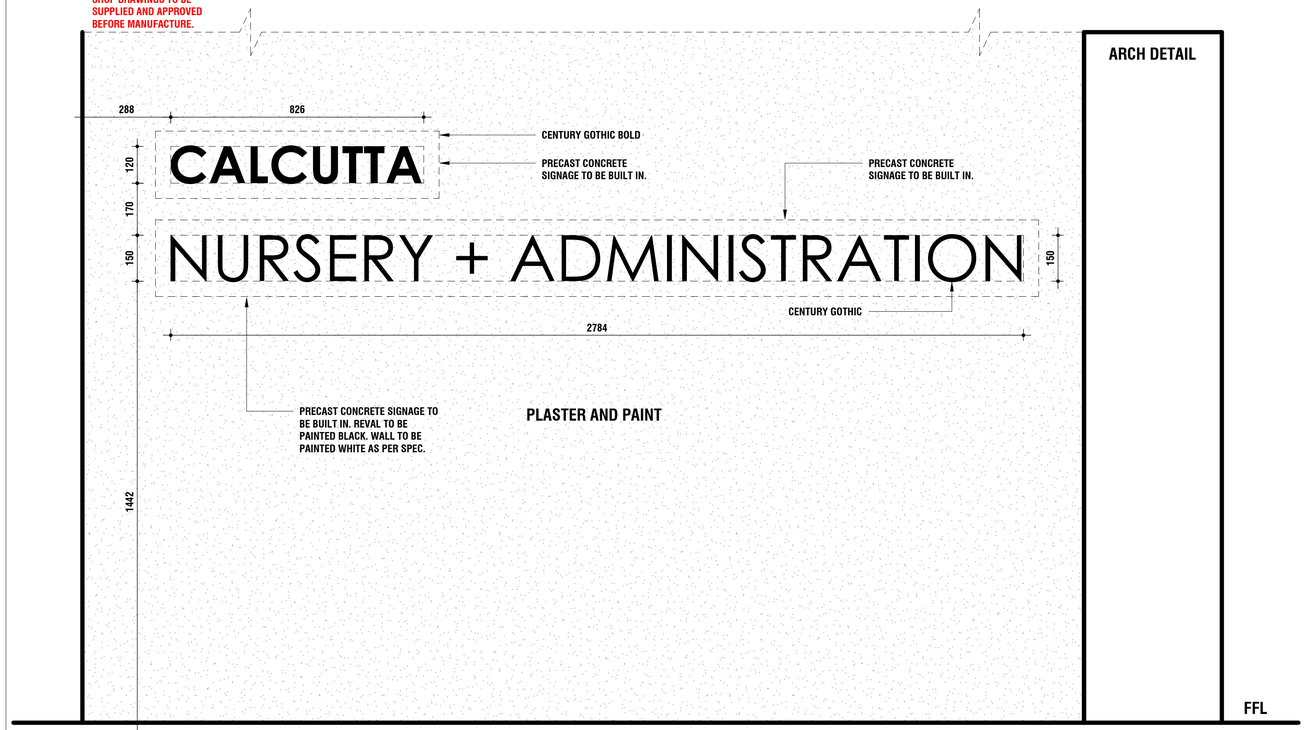
ELECTRICAL FIXTURES

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8005	A

TENDER

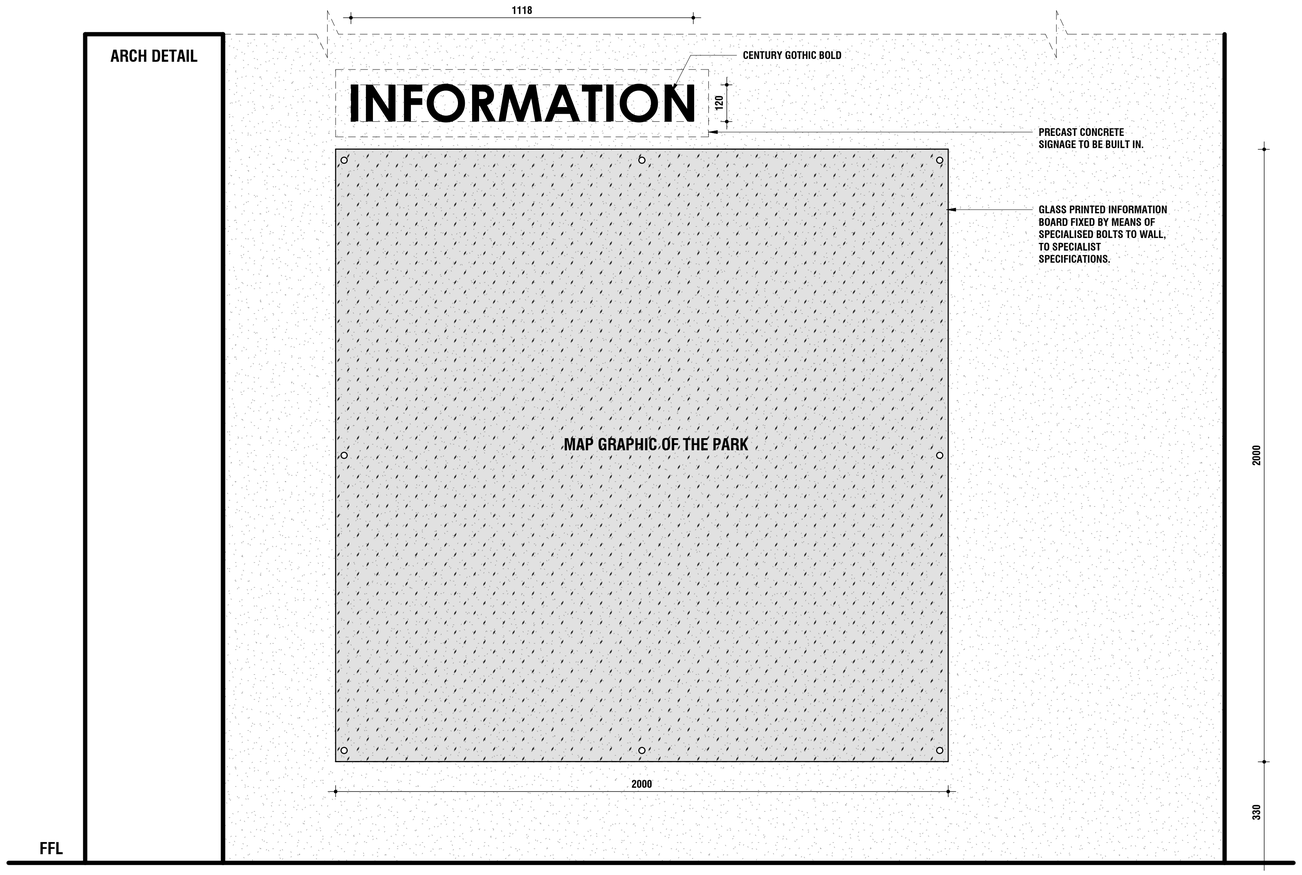
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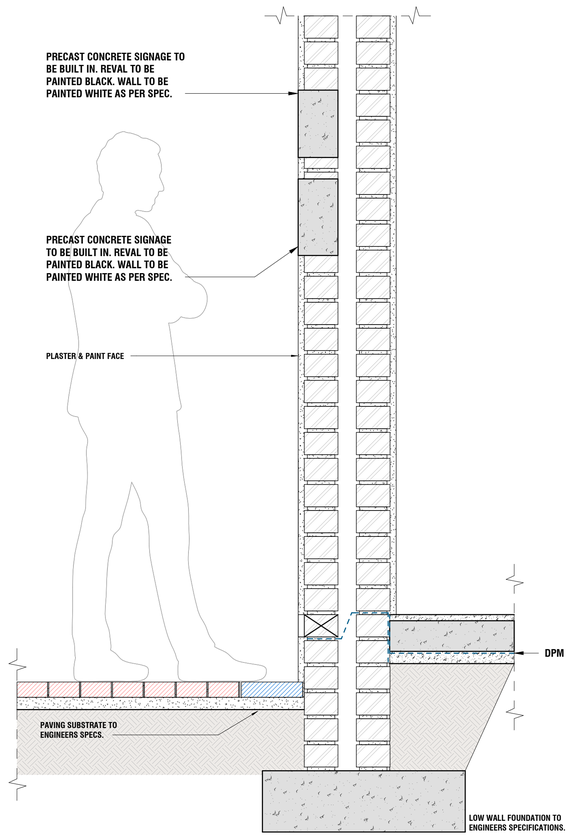


1 | OFFICE FACADE SIGNAGE DETAIL
1 : 10

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INFORMATION BOARD DETAIL



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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

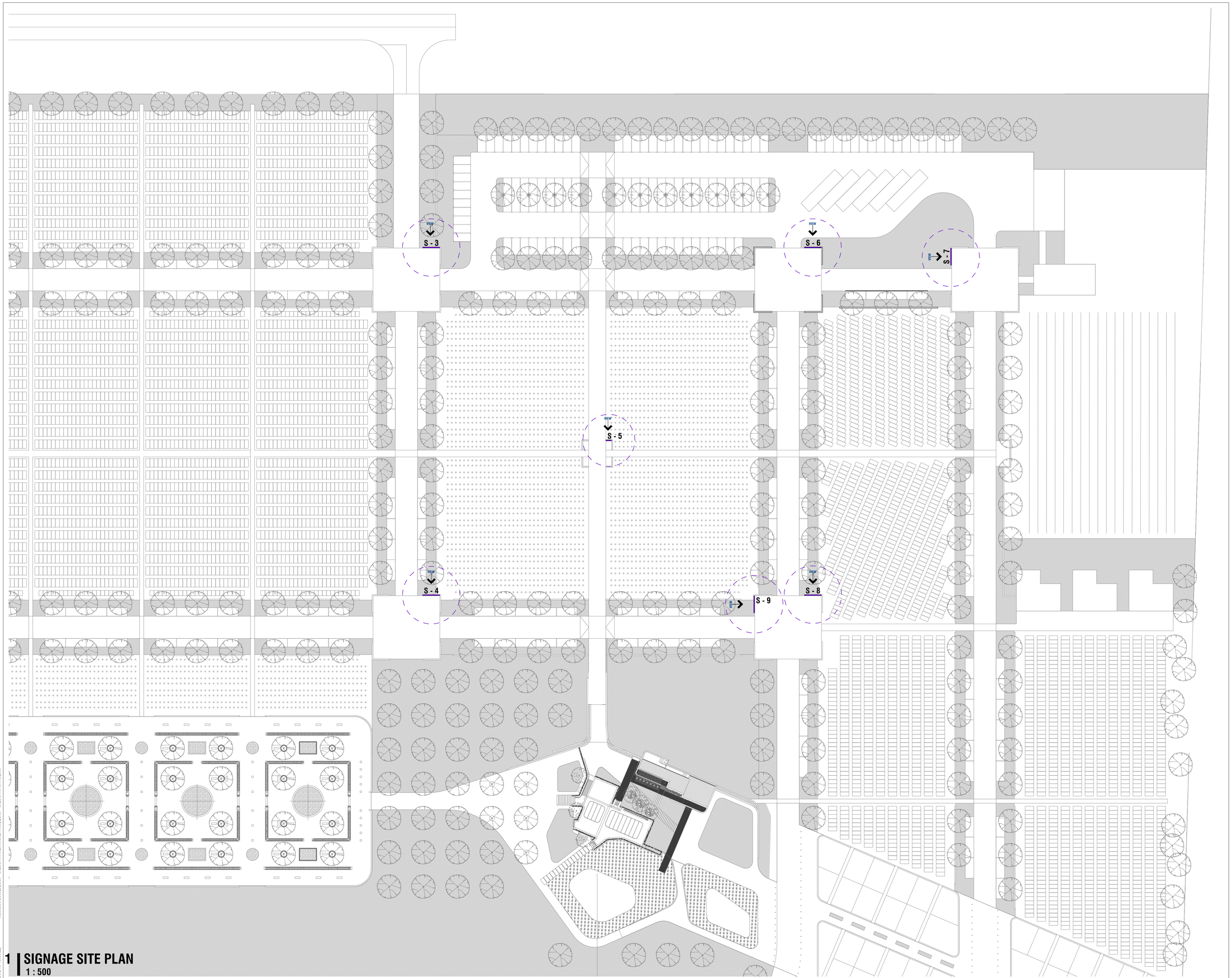
STELLENBOSCH

OFFICES SIGNAGE

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8010	A

TENDER

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1 SIGNAGE SITE PLAN
1 : 500

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FARM NO 29
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STELLENBOSCH

OFFICES SIGNAGE SITE

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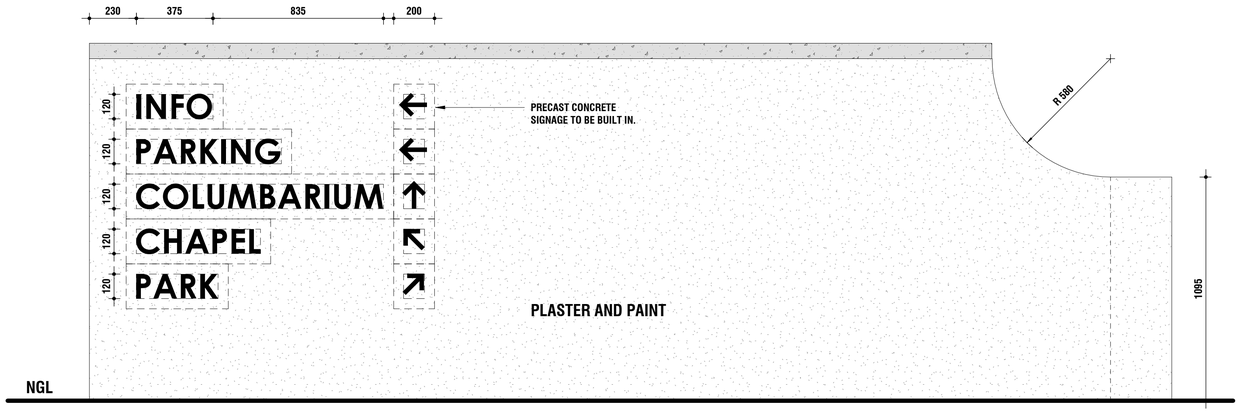
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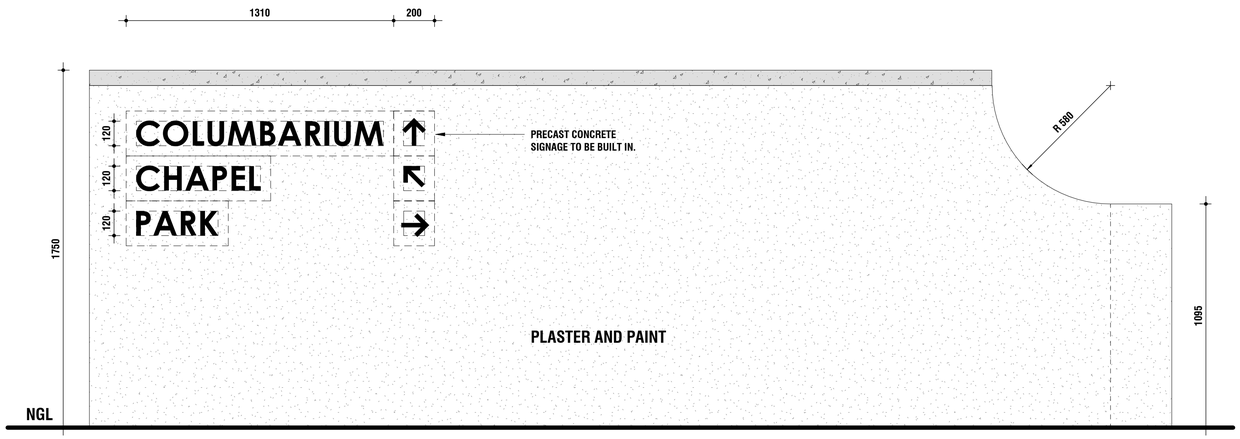
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PRECAST CONCRETE BLOCKS TO BE CENTURY GOTHIC BOLD FONT.

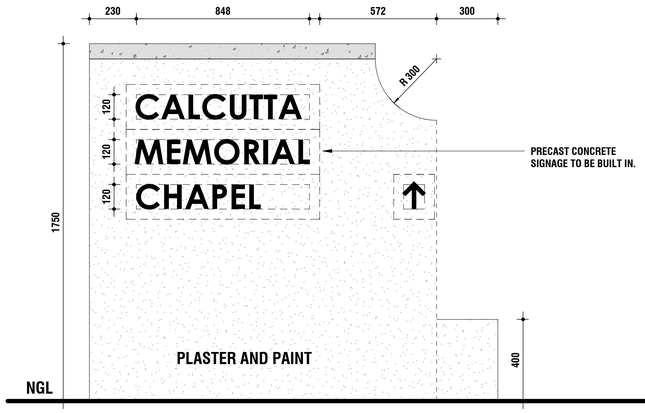
PRECAST CONCRETE SIGNAGE TO BE BUILT IN. REVAL TO BE PAINTED BLACK. WALL TO BE PAINTED WHITE AS PER SPEC.



SIGN WALL S-3

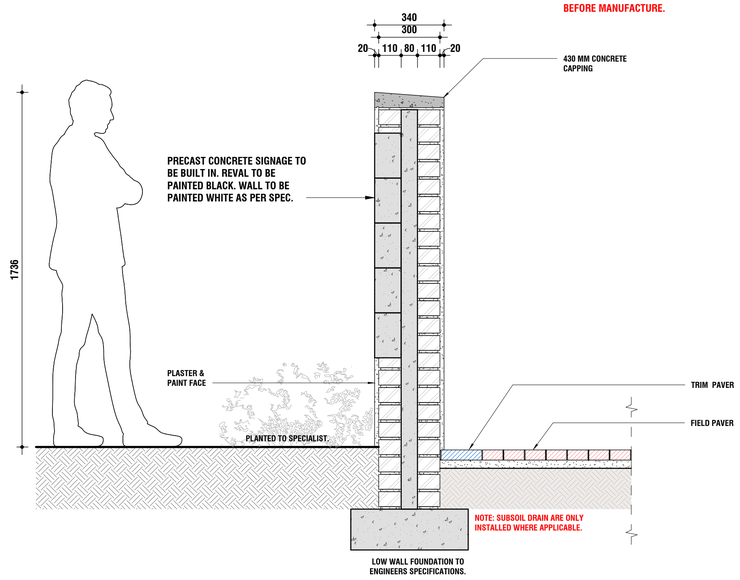


SIGN WALL S-4



SIGN WALL S-5

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1 | TERRAIN SIGNAGE DETAIL
1 : 15

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

TERRAIN SIGNAGE

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8012	A

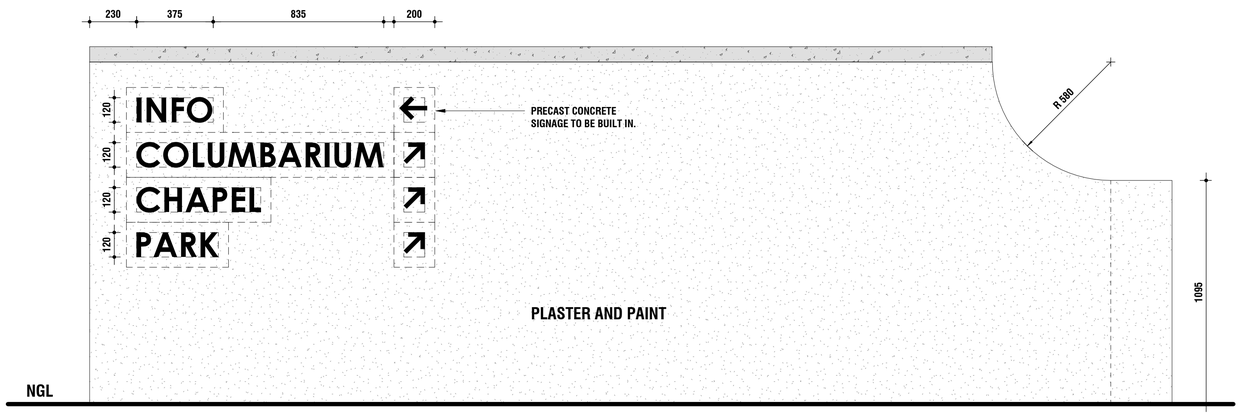
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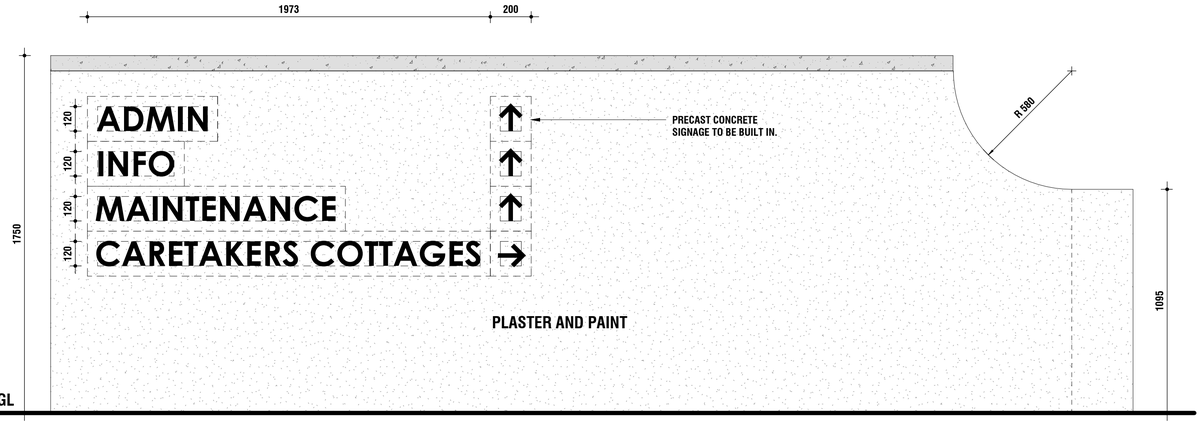
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PRECAST CONCRETE BLOCKS TO BE CENTURY GOTHIC BOLD FONT.

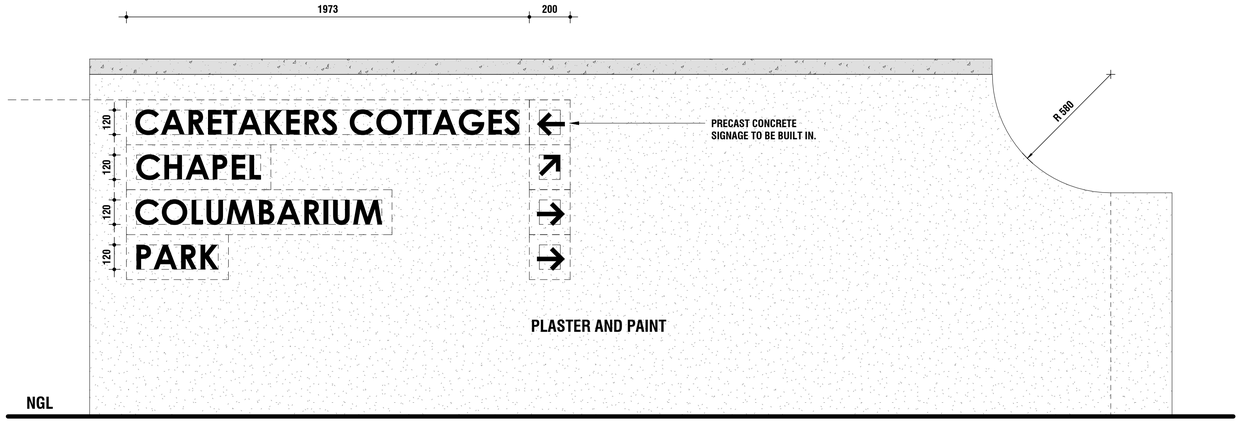
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SIGN WALL S-6



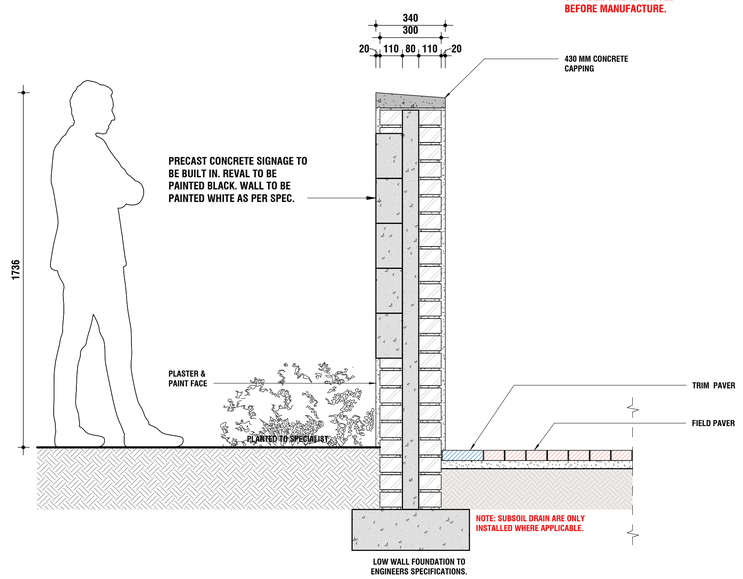
SIGN WALL S-7



SIGN WALL S-8

1 | TERRAIN SIGNAGE DETAIL 01
1 : 15

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CALCUTTA MEMORIAL PARK

BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

TERRAIN SIGNAGE 02

CODE	PHASE	DISCIPLINE	NUMBER	REV
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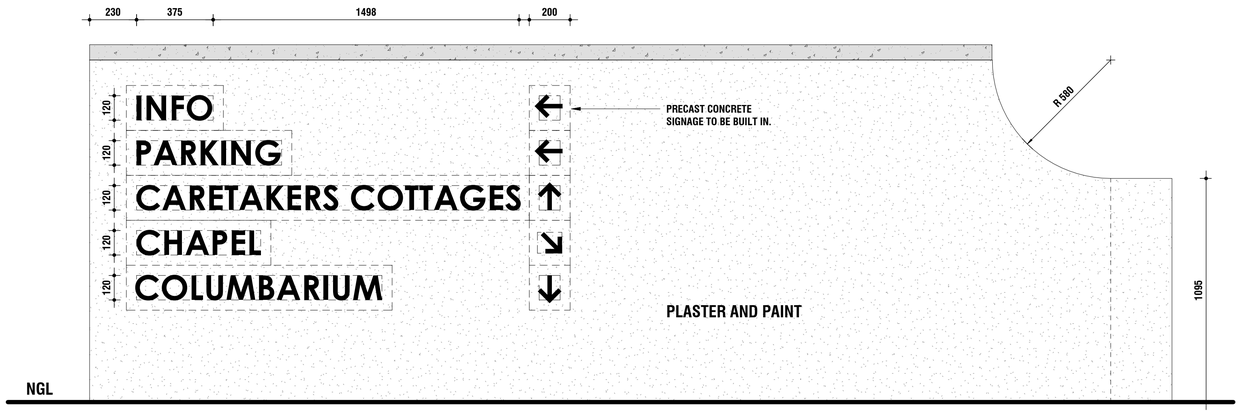
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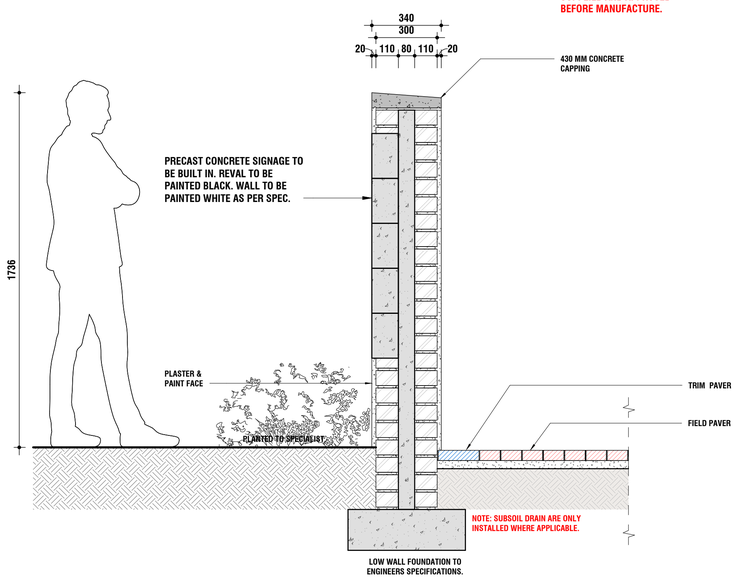
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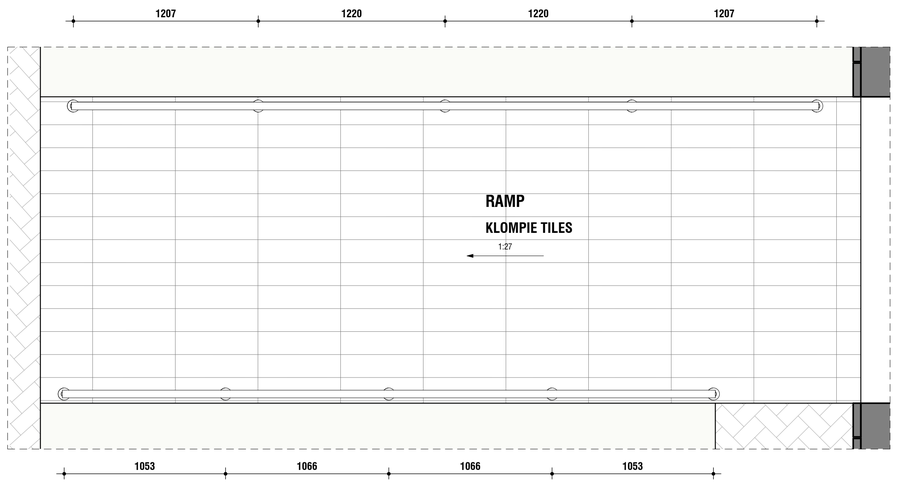


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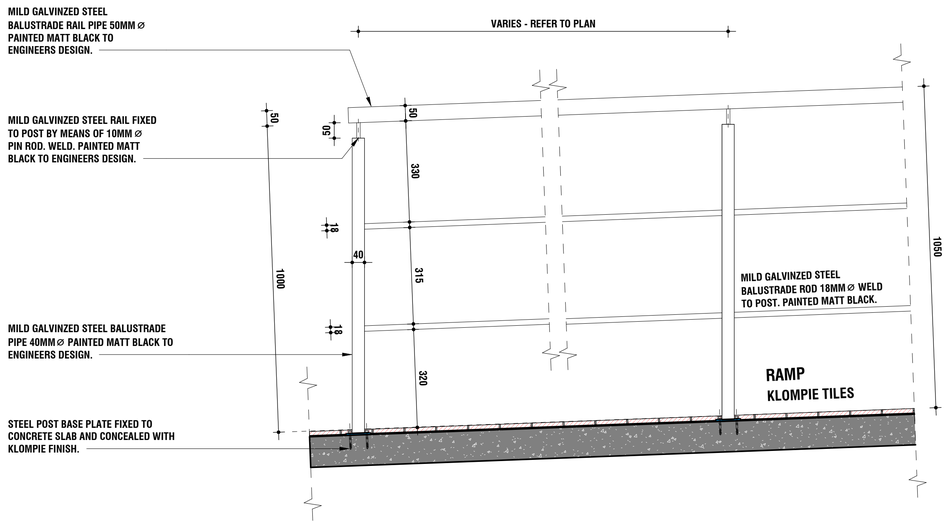
1 | TERRAIN SIGNAGE DETAIL 02
1 : 15

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2 | RAILINGS PLAN
1 : 20



3 | RAILINGS DETAIL
1 : 10

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

TERRAIN SIGNAGE 03

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK			A-8014	A

TENDER

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DRAWING LIST CALCUTTA SITE + ENTRY WALLS

Drawing series	Drawing Sub-Series	Drawing Number	Drawing Name	Current Revision	Current Revision Date	Drawn By	Checked By
1000-PLANS							
1000-PLANS	1000-GENERAL ARRANGEMENT PLANS	E-1002	SITE BOUNDARY LAYOUT & DETAILS	B	06/23/2025	GP	Checker
1000-PLANS	1000-GENERAL ARRANGEMENT PLANS	E-1003	SITE WALL TYPES	A	06/23/2025	GP	Checker

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CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	01	AR	01	

STELLENBOSCH

nuvorm (Pty) Ltd - Reg no. 2021 / 815005 / 07

CALCUTTA MEMORIAL PARK

FARM NO 29
STELLENBOSCH

DRAWING LIST

SCALE: @ A4

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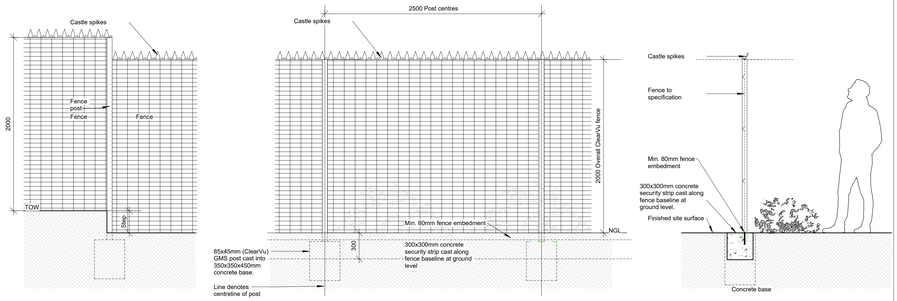


CALCUTTA - PARK PARKING CALCULATIONS	
PARKING BAYS	PROPOSED
GENERAL PARKING	460
♿ DISABLED PARKING	9

CALCUTTA - CHAPEL SEATING -	150
PARKING REQUIRED	25
♿ DISABLED PARKING	3

WATER SUPPLY KEY
NEW 110MM ⌀ uPVC CLASS 12 WATER PIPE
NEW 90MM ⌀ uPVC CLASS 12 WATER PIPE
NEW 110MM ⌀ uPVC CLASS 16 FIRE PIPE
NEW 25MM ⌀ HDPE PN 16 WATER ERF CONNECTION
FIRE HYDRANT
ISOLATION VALVE
NEW 10 KL WATER TANK & PUMP
CONSERVANCY TANK REFER TO DETAIL DRAWING: 3667.00.00.GZA.00.0001

1 | SITE PLAN - BOUNDARY LAYOUT
1 : 1100



NOTE: ALL POSITIONS AND CO-ORDINATES TO BE CONFIRMED ON SITE PRIOR TO INSTALLATION AND DISCREPANCIES TO BE CONFIRMED WITH ARCHITECT

Full Spec:

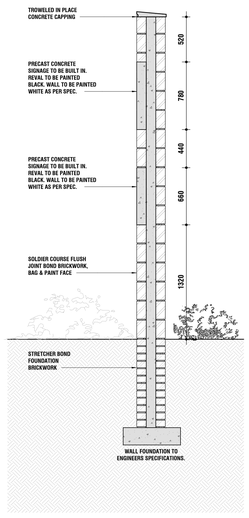
Panel
2500mm(w) x 2100mm(h) high security 3mm welded mesh panel with 3-D reinforcing bends
Aperture 76mm x 12mm
Core wire coating ZincAlu consisting of 95% Zinc and 5% Aluminium
Additional coating PVC (black)
PVC wire diameter 3.4mm

Post
Panels secured with metal security fixators bolted through posts and firmly secured with tamperproof shear-nuts
PVC coating to match panels

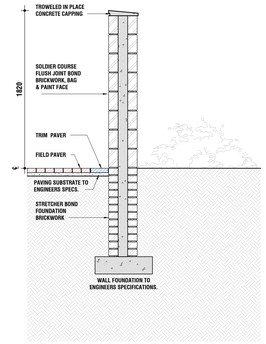
Guidelines to be specified in tender:

C.2.2. **INTERNAL**
- Fencing between any two erven or between internal erf boundaries will be limited to 2.0m.
- Internal fencing must be black 2.0m high Clearvu (or similar approved) fence.
- Security equipment, other than Clearvu or similar approved anti-climb spikes, to detect and deter intruders will not be installed on top of the fence line but integrated into the posts and restricted to within 2.0m height of the fence.
- Gates to be steel framed with Clearvu or similar approved infill panels to match the fence.

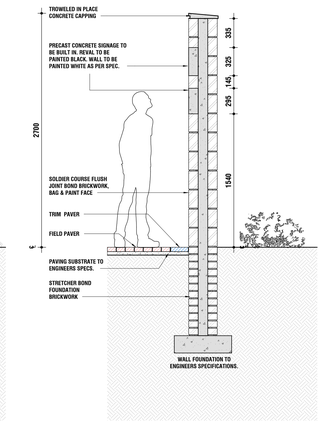
2 | FENCE TYPE 1 (FT1) DETAILS
1 : 25

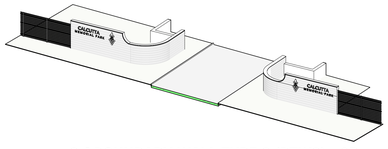


8 | BOUNDARY WALL TYPE 1 (BTW1) DETAIL
1 : 25



9 | BOUNDARY WALL TYPE 2 (BTW2) DETAILS
1 : 25

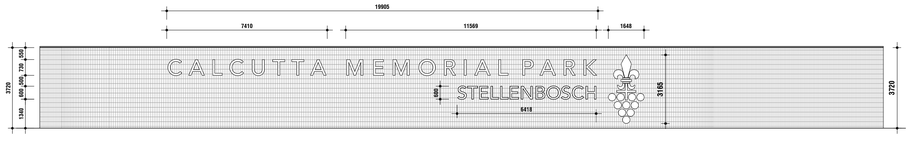




3 | BOUNDARY WALL TYPE 2 (BTW2) - 3D



4 | BOUNDARY WALL TYPE 1 (BTW1) - 3D



5 | BOUNDARY WALL TYPE 1 (BTW1) - ELEVATION
1 : 100



6 | BOUNDARY WALL TYPE 2 (BTW2) - ELEVATION 1
1 : 100



7 | BOUNDARY WALL TYPE 2 (BTW2) - ELEVATION 2
1 : 100

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	31/07/2025	GP	Revision 1
B	06/23/2025	GP	Tender set

1. All work is to be done in accordance with the National building Regulations.
2. All materials and workmanship are to comply with the relevant S.A.B.S. codes and or the specified international standard. Where there is no such standard, the requirements of the local authority, the recommendations of the Model Standards, SO codes of practice, or Approved Certificates applicable to the design exists, the recommendations and requirements of such documents to be considered a minimum standard for the works.
3. All machinery and plant to be used on the site must comply with the requirements of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The contractor shall set up, document and maintain a quality assurance and quality control system, in accordance with SANS ISO 9001:2000, able to be checked to the satisfaction of the Architect, that all materials and workmanship are correct and in accordance with the requirements of the Specification. Should the Contractor or any of his sub-contractors be certified to the SANS 9000 family of standards then invertor these works accordingly.
5. This drawing must be read in conjunction with all the relevant drawings, schedules and specifications from nuvorm and all consultants forming part of the contract.
6. All portions of the works related to any service or consultants information is to be done in accordance with the National Building Regulations.
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8. All dimensions and levels must be checked on site by the contractor before putting work in hand.
9. All work to be executed by competent persons qualified for the specific trade.
10. This drawings is copyright reserved and remains the property of nuvorm (Pty) Ltd

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CALCUTTA MEMORIAL PARK
BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

SITE BOUNDARY LAYOUT & DETAILS

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	E-1002	B

TENDER

Author: Rev:/23AK - CALCUTTA MEMORIAL PARK/23AK - CALCUTTA ENTRY WALLS + WALKWAYS.rvt
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DRAWING LIST CALCUTTA COLUMBARIUM

Drawing series	Drawing Sub-Series	Drawing Number	Drawing Name	Current Revision	Current Revision Date	Drawn By	Checked By
1000-PLANS							
1000-PLANS	1000-GENERAL ARRANGEMENT PLANS	D-1020	COLUMBARIUM PLAN	B	06/23/2025	GP	Checker
1000-PLANS	1000-GENERAL ARRANGEMENT PLANS	D-1021	COLUMBARIUM PARTIAL PLAN	B	06/23/2025	GP	Checker
2000-SECTIONS							
2000-SECTIONS	2000-GENERAL SECTIONS	D-2000	BUILDING CROSS SECTION / ELEVATIONS	B	06/23/2025	GP	Checker
2000-SECTIONS	2000-GENERAL SECTIONS	D-2001	BUILDING CROSS SECTION / ELEVATIONS 1	B	06/23/2025	GP	Checker
2000-SECTIONS	2000-GENERAL SECTIONS	D-2002	BUILDING CROSS SECTION / ELEVATIONS 2	B	06/23/2025	GP	Checker

Autodesk Docs://23AK - CALCUTTA MEMORIAL PARK/23AK - CALCUTTA PARK ELEMENTS.rvt
2025/08/18 16:37:18

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	01	AR	01	

STELLENBOSCH

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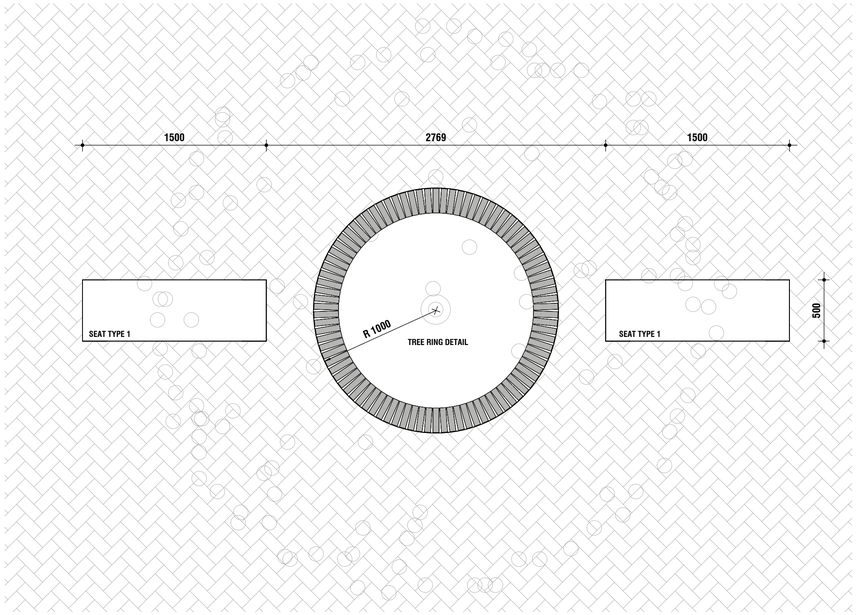
CALCUTTA MEMORIAL PARK

FARM NO 29
STELLENBOSCH

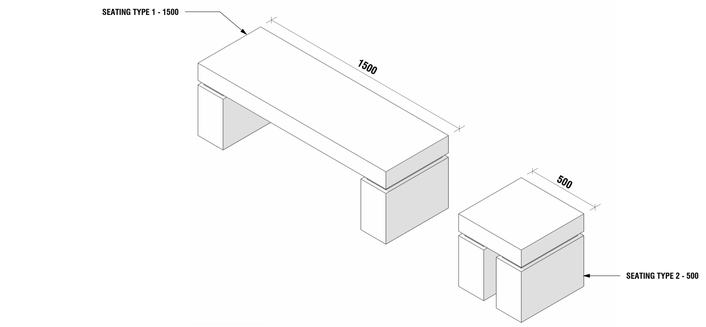
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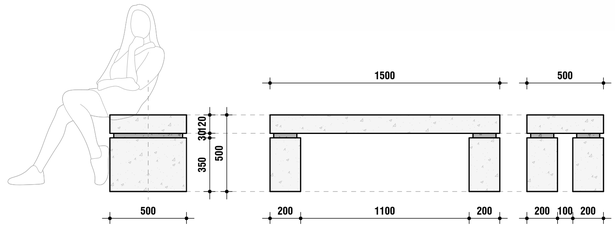
SCALE: @ A4

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studio@nuvorm.com



2 | COLUMBARIUM PLAN - Callout 1
1 : 25

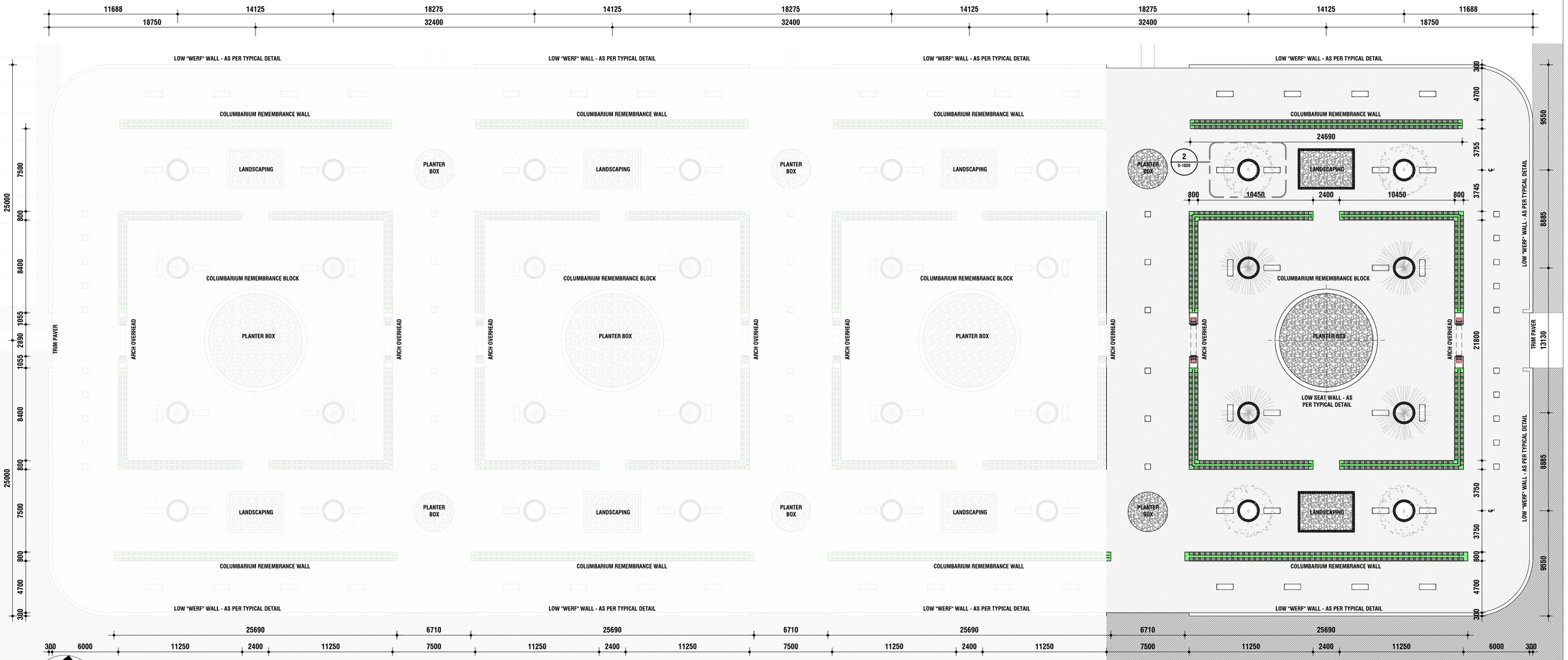




3 | SEATING DETAILS
1 : 20



WHITE TERAZZO CONCRETE



1 | COLUMBARIUM PLAN
1 : 200

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	05/24/2024	GP	COUNCIL SET
B	08/23/2025	GP	Tender Updates

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BIGEN

FARM NO 29
STELLENBOSCH

STELLENBOSCH

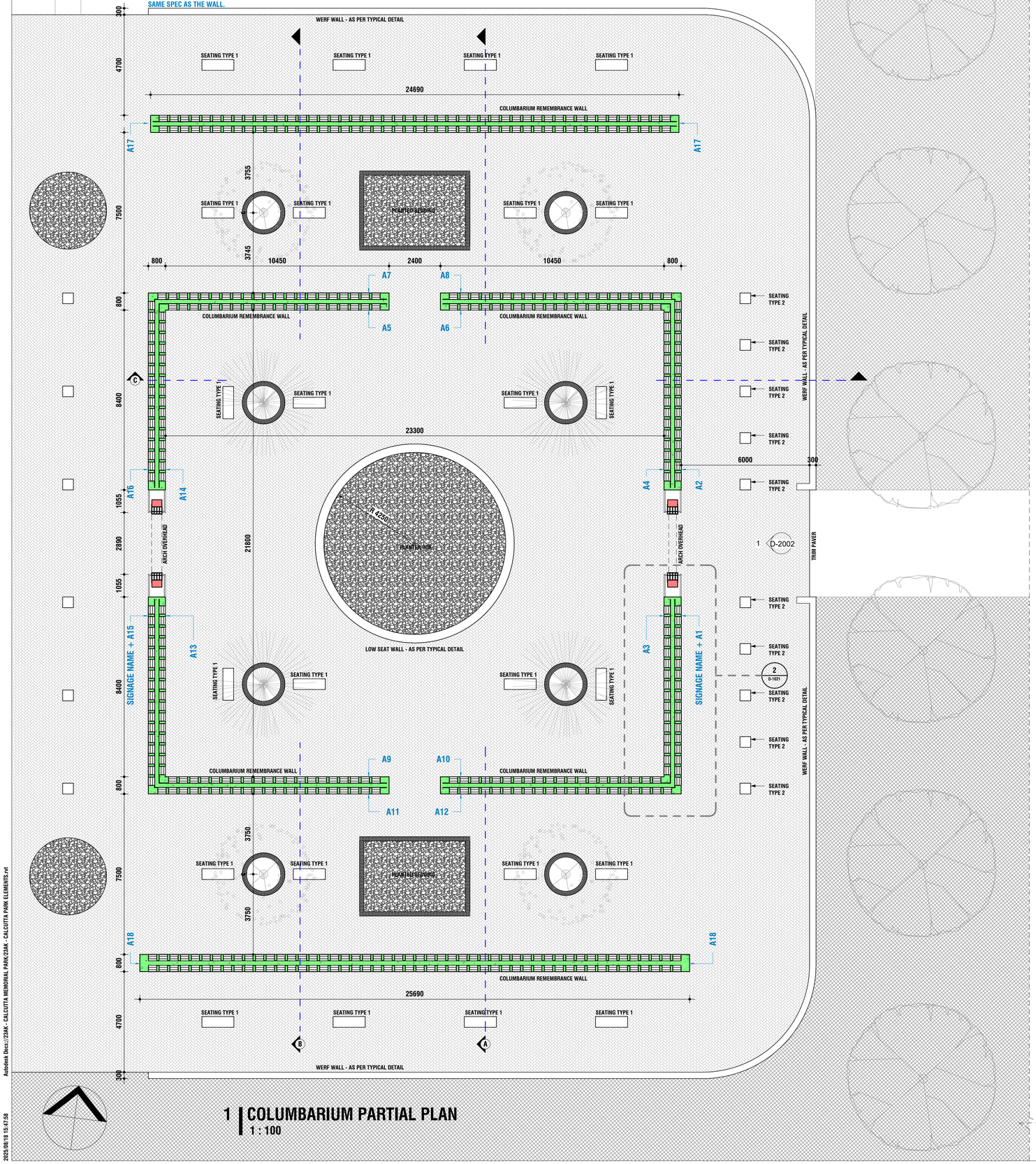
COLUMBARIUM PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
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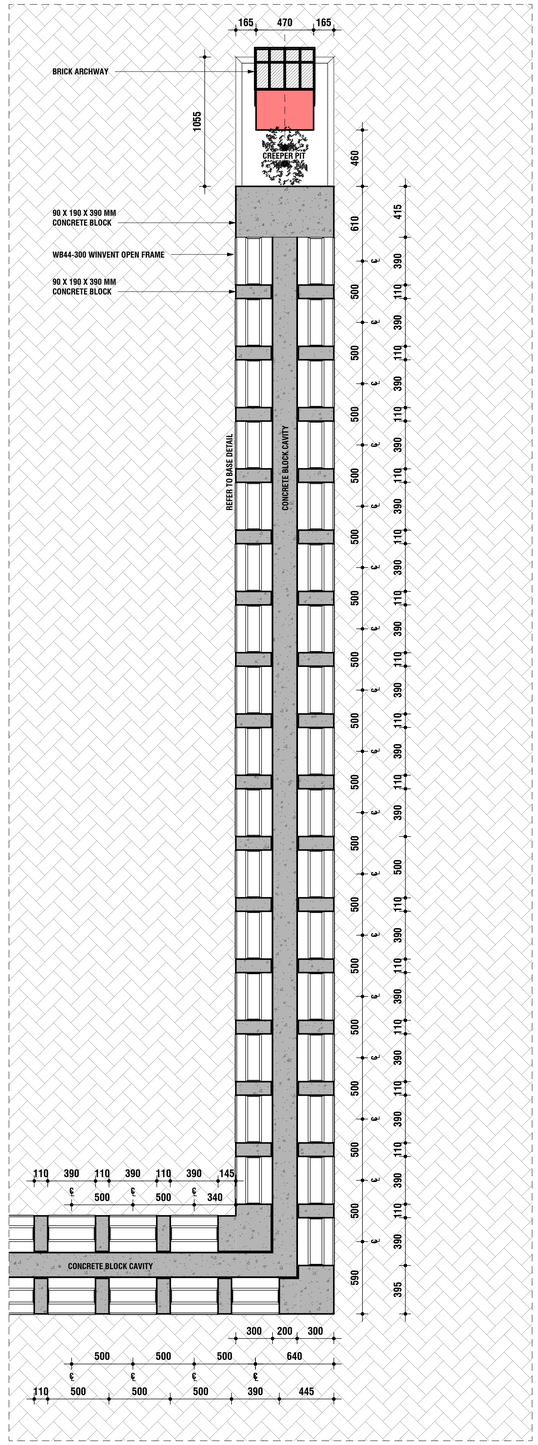
TENDER

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PRECAST CONCRETE SIGNAGE NOTE: CONCRETE BLOCKS TO BE BUILT FACE FLUSH INTO THE WALL - CENTURY GOTHIC BOLD FONT. REVEAL PAINTED BLACK AND FACE PAITED SAME SPEC AS THE WALL.



1 | COLUMBARIUM PARTIAL PLAN
1 : 100



2 | COLUMBARIUM PARTIAL PLAN - CALLOUT 1
1 : 25

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	05/24/2024	GP	COUNCIL SET
B	08/23/2025	GP	Tender Updates

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FARM NO 29
STELLENBOSCH

STELLENBOSCH

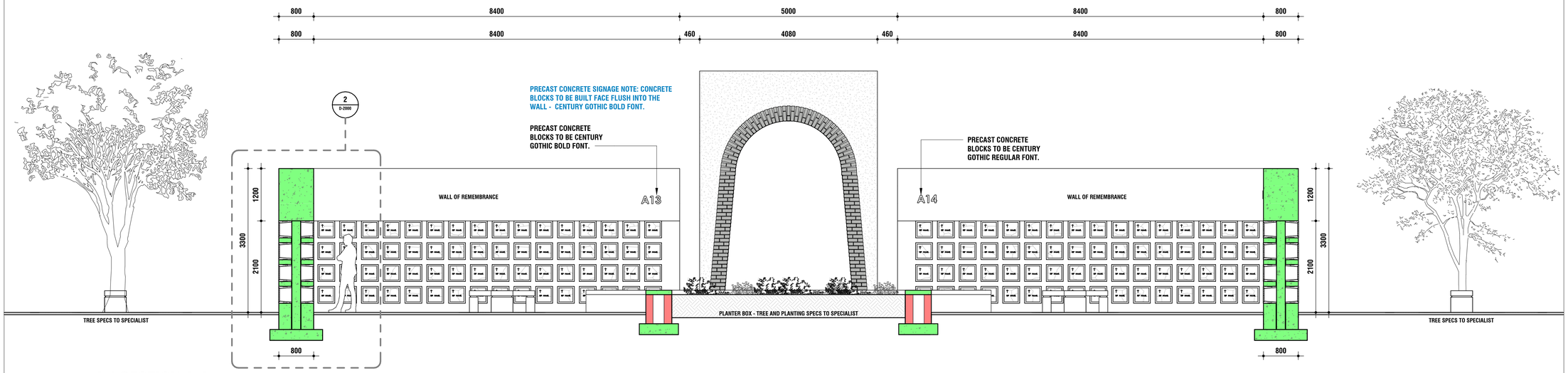
COLUMBARIUM PARTIAL PLAN

CODE	PHASE	DISCIPLINE	NUMBER	REV
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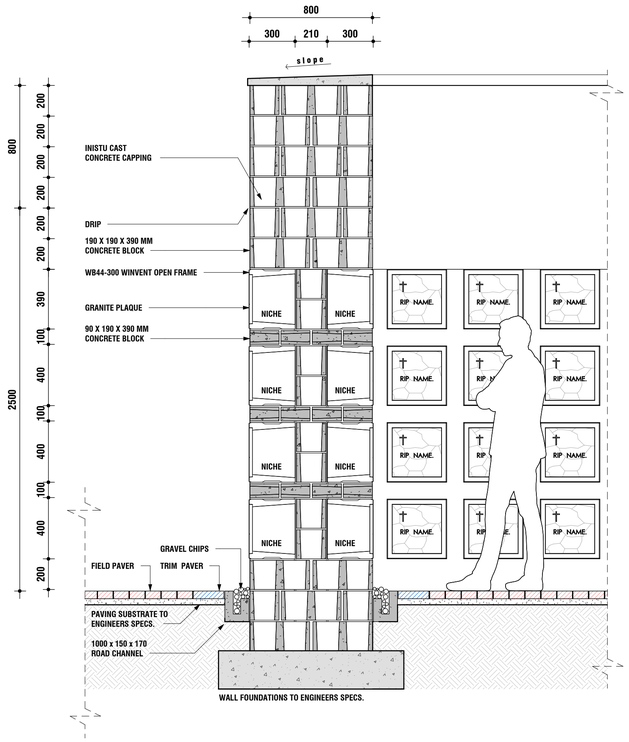
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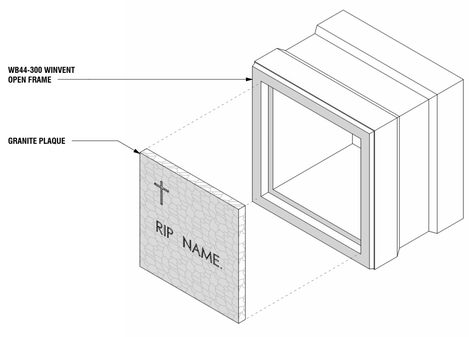
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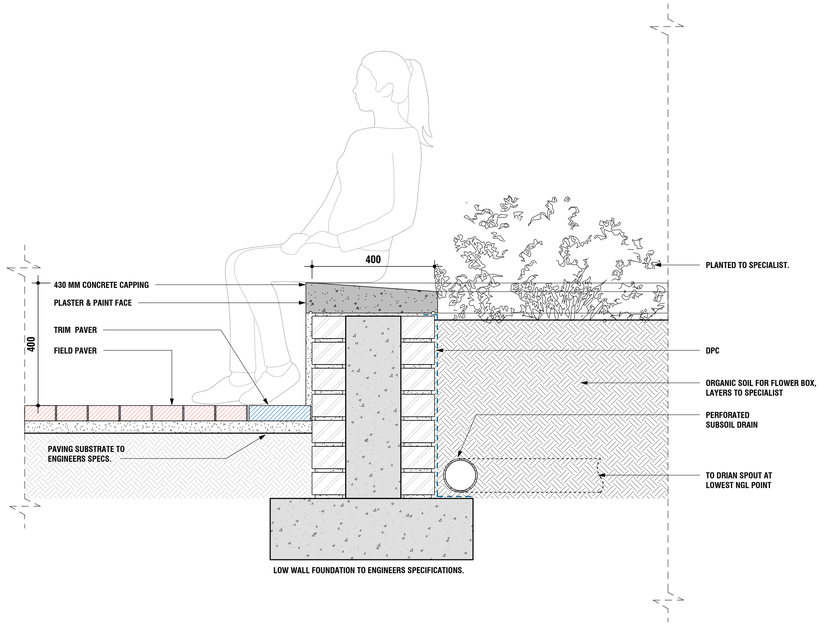
A | SECTION A-A
1 : 50



2 | Section 14 - Callout 1
1 : 20



4 | WINBLOCK NICHE
1 : 10



3 | 1. LOW SEAT / PLANTER RETAINER DETAIL
1 : 10

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REV	DATE	DRAWN	DESCRIPTION
A	05/24/2024	GP	COUNCIL SET
B	08/23/2025	GP	Tender Updates

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FARM NO 29
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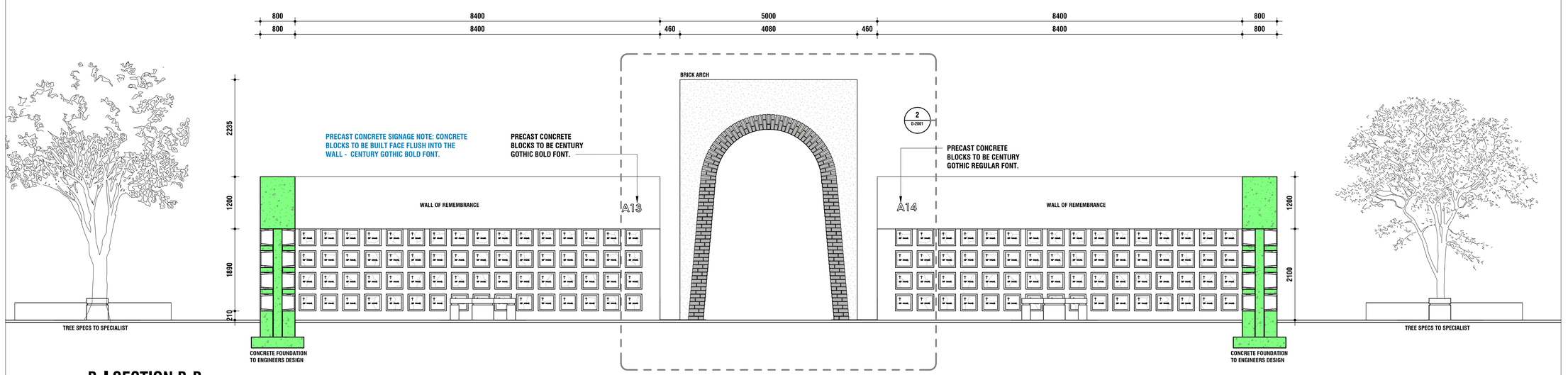
STELLENBOSCH

BUILDING CROSS SECTION / ELEVATIONS

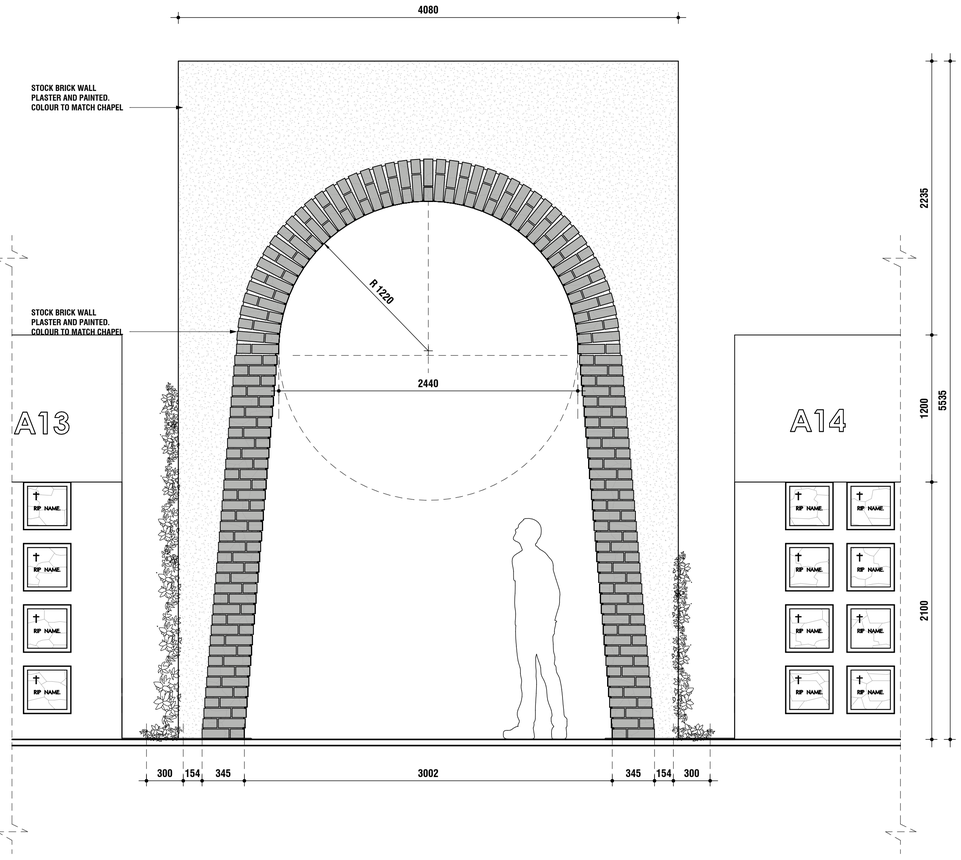
CODE	PHASE	DISCIPLINE	NUMBER	REV
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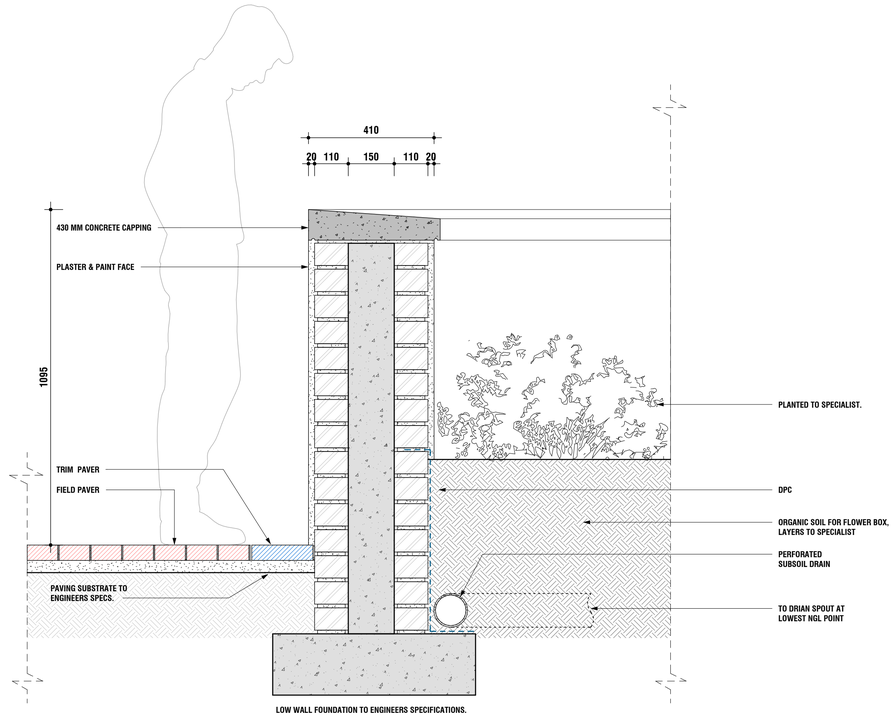
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B | SECTION B-B
1 : 50



2 | Section 16 - Callout 1
1 : 25



3 | 1. LOW RETAINER WERF WALL
1 : 10

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	05/24/2024	GP	COUNCIL SET
B	08/23/2025	GP	Tender Updates

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FARM NO 29
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STELLENBOSCH

BUILDING CROSS SECTION / ELEVATIONS 1

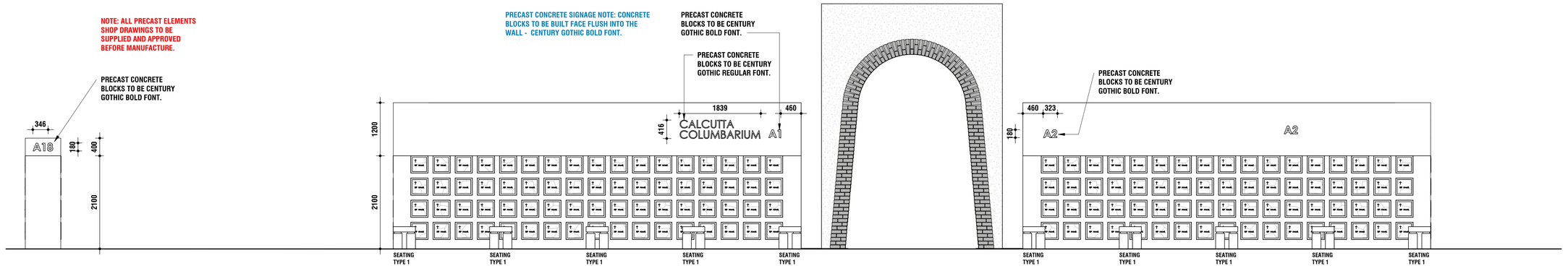
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TENDER

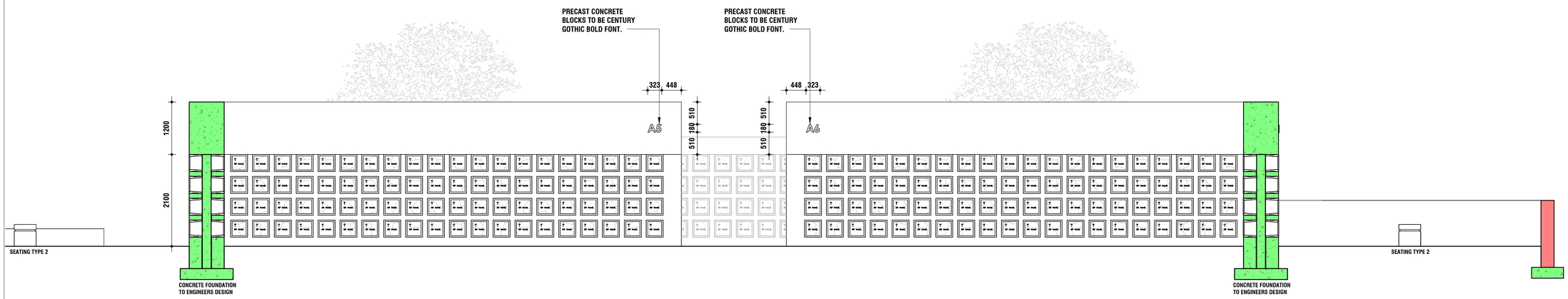
Autodesk Docs://23AK - CALCUTTA MEMORIAL PARK/23AK - CALCUTTA PARK ELEMENTS.rvt
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NOTE: ALL PRECAST ELEMENTS SHOP DRAWINGS TO BE SUPPLIED AND APPROVED BEFORE MANUFACTURE.

PRECAST CONCRETE SIGNAGE NOTE: CONCRETE BLOCKS TO BE BUILT FACE FLUSH INTO THE WALL - CENTURY GOTHIC BOLD FONT.



1 | Elevation 1 - A
1 : 50



C | SECTION C-C
1 : 50

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REVISIONS

REV	DATE	DRAWN	DESCRIPTION
A	05/24/2024	GP	COUNCIL SET
B	08/23/2025	GP	Tender Updates

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FARM NO 29
STELLENBOSCH

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BUILDING CROSS SECTION / ELEVATIONS 2

CODE	PHASE	DISCIPLINE	NUMBER	REV
23AK	1	AR	D-2002	B

TENDER

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STELLENBOSCH
STELLENBOSCH • PNIEL • FRANSCHHOEK
MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

31. STRUCTURAL DRAWINGS

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

1. GENERAL

1.1. These notes to be read in conjunction with the drawings and project specifications.
1.2. All structural drawings to be read in conjunction with the relevant architectural, mechanical & electrical engineers drawings and the specifications in the Bill of Quantities and any errors, omissions & discrepancies to be brought to the attention of the engineer immediately in writing, before any construction work commences.
1.3. It remains the main contractor's responsibility to compare drawings and notify the relevant parties of any discrepancies within a reasonable time frame in writing.
1.4. Where conflicting specifications between the drawings & bill of quantities occur, the drawing specifications will take preference over the specifications in the bill of quantities.
1.5. Where conflicting specifications occur between this **General Notes & Specifications** document and more recent detailed drawings; the specifications on the more recent detailed drawings will supersede those contained in this document. The contractor is to inform the engineer in writing of any such occurrence.
1.6. All work shall be executed in strict accordance with the latest **SANS 0400** or applicable part of **SANS 1200**; **OHS Act** and the project specifications in the contract documentation.
1.7. The contractor shall check all project dimensions on site beforehand. All dimensions are also to be checked against the architect's drawings. Any discrepancies shall immediately be reported to the engineer in writing.
1.8. No scaling off drawings allowed.
1.9. The contractor shall check the dimensions of all the adjacent structures at the positions where the new structure joins them. Any discrepancies shall immediately be brought to the engineer's attention to enable him to plan revised details.
1.10. An isolation joint must be provided between all new and existing structures, unless indicated otherwise on drawings. Stability requirements of elements over joints must be met.
1.11. Unless otherwise indicated on drawings all waterproofing, drainage falls & finishes are according to the architect's details and specifications.
1.12. All SANS specifications mentioned in the notes, on the drawings and in the project specifications shall be available on site at all times.
1.13. All instructions from the engineer shall be written in the site instruction book, which will be provided by the contractor
1.14. Products different to those specified may only be used with written approval from the engineer. Such approval is to be requested in writing.
1.15. The contractor shall ensure that waterproofing materials are not damaged during backfilling operations and fixing of steel. Any repair work for the contractor's account.
1.16. The contractor is responsible to control storm water and dewatering on the site to prevent damage to the structure, banks, excavations, or any other works for the duration of the contract period.
1.17. The contractor is responsible for the design and maintenance of all temporary structures.
1.18. The contractor is responsible for protecting completed elements from damage until completion of the project at hand-over. Sub-contractors working on roofs & tiled surfaces shall have strict access control and shall carry insurance for the repair of any damaged completed element. A detailed protecting strategy shall be discussed at tender stage.
1.19. The contractor shall disclose his proposed building sequence in broad terms at tender stage. Any substitutions of in-situ elements with pre-cast shall be proposed in writing at tender stage and separate pricing for the proposed alternatives are to be provided.
1.20. The position of construction joints; special reinforcing requirements; and temporary splice positions for structural steel shall be submitted to the engineer in writing for discussion. The proposals are to be discussed and agreed on to suit both the design- & construction programmes.
1.21. All dimensions are in millimetres (mm) and all elevations and coordinates are in metres (m).
1.22. The live loads for which the structure has been designed are as follows:
- Residential Suspended Slabs 1.5 kPa
- Hotel Rooms Suspended Slabs 2.0 kPa
- General Office Slabs 2.5 kPa
- Retail Suspended Slabs 5.0 kPa
- Stairs 3.0 kPa
- Plant Slabs 5.0 kPa
- Accessible Roofs 2.0 kPa
- Inaccessible Roofs 0.25 kPa
- Parking Garages 2.0 kPa

1.23. Safe access is to be provided and maintained to all areas of the Site for the Engineer and Client to be able to inspect at their discretion. Rejection of works due to lack of safe access for proper inspection will be for the Contractor's account.

2. FOUNDATIONS AND EARTHWORKS

2.1. All earthworks shall be in accordance with the **SANS 2001-BE1:2008** specifications.
2.2. All excavations must be inspected and approved by the geotechnical engineer before placing of any concrete foundation, blinding, and waterproofing or geofabric membrane.
2.3. Levels of bases as shown are preliminary and have to be confirmed by the geotechnical engineer on site to obtain the specified bearing pressure. Where excavation levels have to be lowered, the top level of the base should be kept as shown and the blinding layer thickened to a maximum of 300mm. Any voids in excess of 300mm shall be filled with mass concrete. Raising the founding level may be permitted, on approval from the engineer. Such approval shall be requested prior to any blasting of rock proceeds.
2.4. Founding levels determined on site are to be forwarded to the engineer in good time for reinforcing detailing
2.5. No foundation or ground beam shall be cast on either non-engineered fill or backfill material. Portions that are over-excavated beyond the depth required by the geotechnical engineer, to be filled with mass concrete (15MPa / 19mm) at contractor's expense.
2.6. A 50mm thick blinding layer of 15MPa/19mm shall be cast under all reinforced foundations if so specified by the engineer. No blinding layer needs to be cast for unreinforced brickwork and mass concrete foundations.
2.7. All foundations are placed symmetrically below columns and brickwork unless otherwise shown.
2.8. Retaining wall, strip and column foundations shall be cast directly against the vertical faces of the excavation, unless indicated otherwise on drawings.
2.9. No backfilling behind retaining walls is to be done before the engineer gives written approval. Where applicable, backfilling shall be done simultaneously on both sides of walls to minimize the relative height difference in soil levels.
2.10. All backfilling behind retaining walls to be compacted to 98% MOD AASHTO density in layers not exceeding 150mm in thickness.
2.11. Imported gravel for backfilling is to comply with SANS 1200DM clause 3.2.4. Approved cohesion less backfill to be compacted to minimum 93% mod AASHTO. (u.n.o.) in layers not exceeding 150mm in thickness. (For fill under surface beds refer to the relevant section of this document)

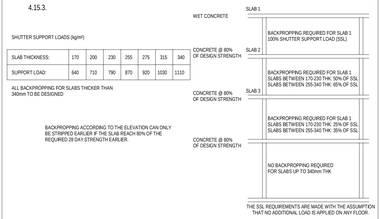
3. BRICKWORK & BLOCKWORK

3.1. All masonry walling shall be constructed according to the specifications & details of **SANS 2001-CM1:2007, SANS 10164 and SANS 10400**.
3.2. All building work to be carried out in accordance with the National Building Regulations.
3.3. Masonry units shall comply with the following specifications:
3.3.1. SANS 227: burnt clay masonry units
3.3.2. SANS 285: calcium silicate masonry units
3.3.3. SANS 1215: concrete masonry blocks
3.4. All brickwork, block work, anchors, wall ties and straps shall be in accordance with the latest **SANS 2001-CM1:2007, SANS 10164 and SANS 10400** specifications.
3.5. The minimum crushing strength of all load bearing brickwork shall be 14 MPa u.n.o.
3.6. The minimum crushing strength of all load bearing block work shall be 7 MPa u.n.o.
3.7. The minimum crushing strength of mortar shall be as for Class II mortar in accordance with Table 1 SANS 10164 Part I unless indicated otherwise on drawings.
3.8. Brickforce
3.8.1. Load bearing brickwork shall be reinforced with an approved brickforce every fourth layer unless otherwise specified on drawings.
3.8.2. Load bearing blockwork shall be reinforced with an approved brickforce every second layer unless otherwise specified on drawings.
3.8.3. In addition, continuous brick force is required in every layer for the first four layers above and below the top of foundations & slabs, as well as windows and over door openings. Minimum laps to be 300mm.
3.9. All brickwork / blockwork shown on engineer's drawings is load bearing unless otherwise indicated.
3.10. Cavity walls to have stepped DPC's.
3.11. See architect's drawings for general layout of brickwork / block work. All setting out to be done from architect's drawings.
3.12. All inside levels refer to raw concrete and not to finished floor except where otherwise indicated.
3.13. All brick anchors, wall ties and straps shall be hot-dipped galvanized.
3.14. Y-joints are to be made right through plasterwork where brickwork / blockwork and concrete or pre-cast elements join.
3.15. Non-load bearing brickwork / blockwork may not be built closer than 20mm from the soffits and sides of beams and slabs unless otherwise shown. The joint shall be filled with "Jointex" or similar approved, and sealed on both sides with a single component polyurethane sealant. Any specific waterproofing requirements to architect's details. Any specific fire requirements to fire consultant's detail
3.16. Refer to architect's drawings for positions of expansion joints in brickwork / blockwork. Vertical joints to be at maximum 8m c/c for external walls. Control joints for internal walls to be @ max 9m c/c.
3.17. All brickwork shall be fixed to concrete & steel columns by means of 30 x 1.6mm x 400 long galvanised mild steel ties every fourth course and block work every second course. Fix the ties to the columns with 2 Hilti shot studs each.
3.18. Unless required otherwise by the architect or fire consultant, provide 10 mm jointex with a tear-off strip between masonry walls & concrete elements. The joint is to be sealed with an approved single component polyurethane sealant – colour selection by architect.
3.19. 12mm vertical soft board to be placed where the slab abuts against a wall.
3.20. Slip joint consisting of 2 layers of 3 ply matlhed with plastic in between to be formed on top of all walls supporting a concrete slab.
3.21. Lintels over openings to have a minimum of 230mm bearing each end.
3.22. In cavity walls, wall ties shall join the leaves and shall be embedded in masonry joints at right angles to the leaves as the work progresses.
3.23. The number of wall ties per m^2 of walling shall be:
3.20.1. 75mm > Cavity: 2.5 ties/m^2
3.20.2. 75mm < Cavity < 100mm: 3.0 ties/m^2
3.20.3. 100mm < Cavity < 150mm: 5.0 ties/m^2
3.21. Additional ties shall be provided at openings, discontinuities (eg. control joints) spaced at intervals not exceeding 300mm vertically, or, where deemed necessary or as shown on the drawings such as at external angles.
3.22. Modified PWD galvanized ties of 3,15mm diameter shall be used unless otherwise stated.
3.23. For high-lift grouted walls, ties complying with the requirements of SANS 10164 Part 2 Annex A (14) shall be spaced at intervals not exceeding 500mm horizontally and not exceeding 300mm vertically, with each layer staggered by 450mm.
3.24. Ensure that each tie is embedded to a depth of at least 50mm in the mortar joint of each leaf.
3.25. Wall joints must be repeated in all tiled finishes.
3.26. Brick balustrades on roof to have joints at max. 6m c/c.
3.27. All planters built in brickwork are to be provided with 25mm dia. weep holes above finished paving levels and at 1000 c/c. U.O.N
3.28. For cavity widths not exceeding 75mm. Ensure that the wall ties used comply with the relevant requirements of SANS 28 subject to the provision that ties of the single wire type shall not be used.
3.29. For cavity widths exceeding 75mm but not exceeding 150mm. Ensure that wall ties used are of the vertical twist type, or any similar type having at least the equivalent strength and stiffness.
3.30. Tops of cavity walls to be ventilated for as long as possible.
3.31. Clay bricks to be wetted before being used.
3.32. Concrete bricks and blocks to be kept dry before being used.
3.33. Load bearing brickwork shall be reinforced with an approved brickforce every fourth layer and for three courses above all wall openings.
3.34. Load-bearing cavity walls to be filled solid with concrete for the top 4 courses.
3.35. Chasing into walls
3.35.1. Vertical chasing
3.35.1.1. In-solid masonry units vertical chasing shall be limited to a third (T/3) of the thickness of the leaf in question
3.35.1.2. Chasing to be avoided in hollow or voided masonry unit construction. Where unavoidable, chasing will be limited to a depth of 15mm and the cores or voids in the masonry units shall be filled with infill concrete
3.35.2. Horizontal or diagonal chasing
3.35.2.1. In-solid masonry units the chasing shall be limited to a sixth (T/6) of the thickness of the leaf in question
3.35.2.2. For hollow or voided masonry unit construction it will not be permitted. No exceptions will be made.

4. CONCRETE

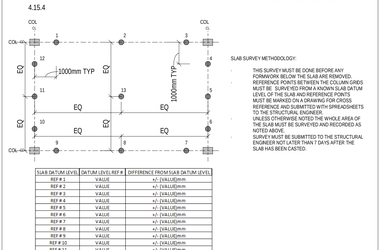
4.1. All concrete work shall be carried out strictly in accordance with **SANS 2001-CC1:2007 and SANS 1200**
4.2. The concrete strength of all elements is 30 MPa / 19 mm maximum unless otherwise specified.
4.3. Concrete Batching shall be carried strictly in accordance with **SANS 1200 G**
4.4. All casting procedures, construction methods and positions of construction joints shall be submitted to the engineer prior to the commencement of the project.
4.5. All exposed concrete work to be off-shutter grade II finish unless noted otherwise.
4.6. Cement extenders to be used only if approved by the Engineer.
4.7. Mix design to be submitted for approval to meet requirements for green star rating.
4.8. Rewbreate top 300mm of columns approx. one hour after casting. (or before initial settling takes place)
4.9. All slabs to be surveyed on a 1.5m x 1.5m grid before & after props have been removed, to confirm level tolerances.
4.10. The strength of concrete cover blocks shall at least be equal to the concrete strength of the structural element in which they are used. The size and fixing method of cover blocks shall be discussed in advance with the engineer. Clay or cement bricks are not allowed to be used as cover blocks.
4.11. A 25 mm x 25 mm chamfer shall be provided on all visible corners of concrete.
4.12. All exposed concrete overhangs shall be constructed with a drip groove 50mm back from the edge of the concrete.
4.13. Curing
4.13.1. Curing of concrete shall be carried out strictly in accordance with SANS 2001-CC1 and SANS 1200.
4.13.2. "High Temperature Accelerated Curing" shall not be permitted.
4.13.3. All columns shall be cured with a plastic membrane.
4.13.4. Wet curing to be applied to top of element (excluding columns) within 8 hours of start of casting. Element to be wet-cured for 3 days and thereafter covered with DPC for a further 4 days
4.14. Curing compounds shall not be allowed unless expressly authorized by the Engineer. Authorization is to be requested in writing in good time. Water based curing compounds will not be accepted.
4.15. Formwork & formwork removal
4.15.1. Stripping times of shuttering and propping shall be in accordance with SANS 2001-CC1 clauses 4.3.8 and Table 2 as well as SANS 1200.
4.15.2. The following elements or parts of the structure are to remain fully propped until the required design concrete strength has been reached:
Beams
Cantilevers
Slabs supporting hanging structures (Note that the portions being suspended cannot support the floor directly above)
Note: Formwork / propping design to account for any loads imposed on the propped structure

4.15.3.



SLAB THICKNESS:	170	200	230	255	275	315	340
SUPPORT LOAD:	640	710	790	870	920	1030	1110

4.15.4



SLAB DATUM LEVEL	DATUM LEVEL REF #	DIFFERENCE FROM SLAB DATUM LEVEL
REF # 1	VALUE	+/- DELU.Dmm
REF # 2	VALUE	+/- DELU.Dmm
REF # 3	VALUE	+/- DELU.Dmm
REF # 4	VALUE	+/- DELU.Dmm
REF # 5	VALUE	+/- DELU.Dmm
REF # 6	VALUE	+/- DELU.Dmm
REF # 7	VALUE	+/- DELU.Dmm
REF # 8	VALUE	+/- DELU.Dmm
REF # 9	VALUE	+/- DELU.Dmm
REF # 10	VALUE	+/- DELU.Dmm
REF # 11	VALUE	+/- DELU.Dmm
REF # 12	VALUE	+/- DELU.Dmm
REF # 13	VALUE	+/- DELU.Dmm

SPREADSHEET FORMAT FOR SURVEY RESULTS.

SCHEMATIC LAYOUT AND METHODOLOGY OF SLAB SURVEY BEFORE ANY SHUTTERING MAY BE REMOVED.

4.16. The specification, for the removal of propping under beams, are also applicable to concrete walls which are not continuous to bases and are thus acting as beams.
4.17. The main contractor is to appoint a competent person to design all formwork and support work. The engineer is to be contacted if any loading requirements are unclear.
4.18. Formwork layout drawings prepared by the competent person are to be kept on site for inspection at any time.
4.19. Back-propping to be discussed with the engineer. The contractor to submit a back-propping method and/or method-statement for acceptance. Note that typical back-propping information does not supersede formwork design as required of the Contractor.
4.20. Specification for concrete mix design
4.20.1. Stone aggregate: 19/9mm. To comply with **SANS 1083:2006**
4.20.2. Sand: To comply with **SANS 1083:2006**. Admixtures: None, except as agreed with the Engineer.
4.20.3. 30% reduction in OPC usage as project discuss with engineer.
4.21. Concrete cube crushing tests as per SANS 2001-CC1 Clause 5.2
4.22. The live loads for which the structures have been designed for are as follows:
4.22.1 2.5kPa for Offices
4.22.2 3.0kPa for Passages
4.22.3 5.0kPa for Areas Susceptible to Crowding
4.22.4 5.0kPa for Staircases
4.22.5 0.25kPa for Inaccessible Roofs
4.23. All casting procedures, construction methods and positions of construction joints shall be submitted to the engineer prior to the commencement of the project.
4.24. The contractor must co-ordinate all services drawings for details and positions of openings and sleeves required for stormwater, sewerage, drainage, electrical, mechanical and other services. Only openings larger than 150 mm dia or 150 x 150 mm are shown on structural drawings.
4.25. The contractor must obtain permission from the engineer before any openings or services, which are not indicated on the drawings, may be introduced through any structural element or close to any column.
4.26. Penetrations not indicated on drawings may not be introduced within a distance of 4 (four) times the slab depth from any column
4.27. No chasing of services into concrete elements are allowed
4.28. Defective concrete work shall be reported to the engineer without delay. The contractor may not proceed with any remedial work or patching unless approved by the engineer in writing.
4.29. No brick or block walls are to be built on floor slabs before the slabs have reached their 14-day strengths. Propping underneath slabs and beams shall be completely removed before brickwork is built. All bricks required for brick walls on a specific slab panel should be stacked evenly onto that specific slab panel before walls are being built.
4.30. Beam dimensions are given as a x b where:
a = width of beam
b = total overall depth of beam
4.31. No lockers allowed.
4.32. See architect's drawings for detail and positions of v-joints and drip joints in concrete.
4.33. See architect's drawings for detail and positions of rain water pipes in concrete and other cast-in items.
4.34. All columns are placed symmetrically on grid lines unless otherwise shown.
4.35. Concrete tolerance to be as follows:
Internal concrete: Degree of accuracy No. II (SANS 2001-CC1, clause 5.2)
4.36. All special concrete finishes including screeds, toppings, etching, colouring, hardening and inlays by others.
4.37. All concrete drawings to be read in conjunction with the relevant architectural and structural steel drawings and any discrepancy to be brought to the attention of the engineer in writing.
4.38. All cast-in items to be hot-dipped galvanized, clean and free of oil, dirt or any other material which may impair the bond with concrete. Tolerance for placing according to SANS 2001-CC1 clause 5.2.
4.39. Areas with congested cast-in items, such as electrical conduits, are to be approved by the engineer
4.40. All grouts and epoxies to be used strictly in accordance with the manufacturer's specification.
4.41. Defective concrete to be brought to the engineer's immediate attention in writing.
- No remedial work may be done without written consent from the engineer.
- Visible honeycombing will not be permitted.
- All concrete forming part of the pour containing visible honeycombing will be demolished and rebuilt at the contractor's expense.
- No protruding reinforcement will be permitted.
- All blow holes are to be filled using DURAREP PC (by ABE construction chemicals, or similar approved), if deemed necessary by the engineer.

4.42. Construction Joints
4.47.1. All horizontal and vertical construction joints shall be cleaned of all dirt and loose particles. All intersections of construction joints with concrete surfaces, which will be exposed to view, shall be made straight and level or plumb.
4.47.2. The surface of the concrete to be prepared shall be between 6h and 12h old after completion of placing and shall be "blown off" using a high pressure water jet until all dirt and laitance is removed, and particles of clean coarse aggregate are exposed sufficiently to produce a rough keyed surface. (The success of this method of preparation is dependent on selection of the correct time and equipment to suit the cement type and atmospheric conditions)
4.47.3. The prepared surfaces shall be saturated with fresh clean water for a period of 4 hours prior to the adjoining pour.
4.47.4. Prior to placement of concrete the surface condition shall be saturated, yet surface dry - no pooling or standing of water.
4.48. Formwork tie holes
4.48.1. For conventional concrete all tie holes are to be plugged with an approved non-shrink grout – Sikagrout 212, or similar equivalent strictly in accordance with the manufacturer's details & specifications.
4.48.2. For concrete designated as waterproof (with Xypex or similar admixtures and/or post-applied slurry coats) the details & specifications for plugging as provided by the relevant product supplier must be strictly adhered to.
4.49. Concrete Surfaces
4.49.1. When a wood-floated finish is specified, the surface shall first be treated as follows:
4.49.1.1. Immediately after placing and compaction, the concrete shall be screeded with true straight edged equipment working between forms or other guides set accurately to line and level.
4.49.1.2. No mortar shall be added to depressions and proud aggregate shall be tamped level.
4.49.1.3. After the concrete has hardened sufficiently it shall be floated to a uniform surface free from trowel marks with a wooden float.
4.49.1.4. Within 2hrs of final set curing of the concrete shall commence.
4.49.2. When a steel-floated finish is specified, the surface shall be treated as specified for a wood-floated finish above. In addition, the following is to be done:
4.49.2.1. When the bleed water has disappeared and the concrete has hardened sufficiently to prevent the migration of laitance foam to the surface, the levelled surface shall be floated with a steel trowel
4.49.2.2. Firm uniform pressure shall be applied to provide a dense, smooth, uniform surface free from any irregularities
4.49.3. When a power-floated finish is specified, the surface shall be treated as specified for a wood-floated finish above. In addition the following is to be done:
4.49.3.1. The levelled concrete surface shall be power-floated to provide a dense surface.
4.49.3.2. After the bleed water has disappeared and the concrete has hardened sufficiently the float-blades shall be replaced with trowel-blades
4.49.3.3. The surface will be power-trowelled with a single pass to provide a dense, smooth, uniform surface free from irregularities.
4.49.4. When a power-trowelled finish is specified, the surface shall be treated as specified for power-floated finish above. In addition the following is to be done:
4.49.4.1. After fitting the trowel-blades the surface shall be continually burnished to provide a dense, smooth, high quality polished surface free from any irregularities.

5. SURFACE BEDS

5.1. Provide 10mm isolation joints (I.J.) around all concrete columns and against brick walls. After concrete has set, Jointex to be raked out 10mm deep and sealed with approved joint sealant – refer to Standard Details.
5.2. Saw-cut joints are to be done as soon as concrete is firm enough not to damage the edges. Usually between 6 to 16 hours. Joints to be repeated in finishes.
5.3. See standard details for specifications for saw-cut, isolation & construction joints.
5.4. All backfill to be compacted in layers not exceeding 150mm to 98% MOD. AASHTO u.n.o.
5.5. In areas of cut the surface beds are to be placed on treated in situ soil. The upper 150mm is to be ripped and re-compacted to 93% MOD AASHTO at optimum moisture content.
5.6. Method statement for pouring of surface bed panels to be approved by the engineer.
5.7. Engineers drawings to be read in conjunction with Architects drawings.
5.8. All services and sleeves to be positioned prior to casting surface beds.
5.9. Layout of panels to be strictly adhered to. Construction procedure, sequence and location of construction joints to be discussed with the engineer prior to casting of surface bed.
5.10. Surface bed to be power floated to just short of being polished. Method to be approved by engineer prior to implementation.
5.11. Slabs to be cured for min. 7 days after casting of concrete i.e. kept wet or covered with plastic membrane.
5.12. Saw-cut sequence to be based on 'halving' all panels discuss with engineer prior to implementation.
5.13. Cement type to be used in 25MPa surface bed :
CEM I : 42.5 or higher
CEM II : A-U, W, L or S, 32.5 or higher
5.14. Unless otherwise specifically noted, all joints shown are either saw cut or construction joints.

6. REINFORCEMENT

6.1. Reinforcement shall be manufactured and fixed to comply with the tolerances as specified in **SANS 2001-CC1:2007** and/or the project specification.
6.2. Bending of reinforcement shall be in accordance with **SANS 282**
6.3. No reinforcing may be cut without written approval from the engineer
6.4. Should starter bars move during the preceding cast; they may not be bent back into position. The engineer is to be informed in writing – the correspondence is to be sufficient digital photographs to show the problem
6.5. The contractor shall inspect and approve the fixed reinforcement before the engineer is notified of a required inspection. The engineer is to be notified, in writing, at least 24-hours in advance for the required inspection.
6.6. Reinforcement shall be inspected and approved by the engineer before casting of concrete may commence.
6.7. Reinforcing steel shall be clean from oil, rust, dirt and other contaminants
6.8. No slab will be inspected unless the reinforcing and cables (if present) have been fully fixed; all other services have been installed and the deck has been cleaned properly.
6.9. No heat treatment, welding or cutting of steel without the written approval of the engineer shall be allowed.
6.10. Bend-out bars at construction joints shall be bent out with a suitable pipe so that no kink is formed in the bar.
6.11. Minimum concrete cover to reinforcing to be allowed for to be as follows U.O.N:

Foundations	-	50mm
Pile Caps	-	50mm
Columns (internal)	-	30mm
Columns (exposed)	-	30mm
Beams	-	30mm
Slabs	-	30mm
Retaining walls	-	30mm non-fill side / 40mm fill side

6.12. No tie-wire shall encroach on the specified minimum cover by more than a strand thickness
6.13. Concrete cover blocks shall be manufactured in accordance with the requirements of SANS 10100 Part 2 (8.4.1.2). Fixing wire shall be fully galvanised Class A in accordance with SANS 675. All cover blocks used shall be of a semi-spherical shape. Blocks shall be fully cured in water for 14 days before use.
6.14. Plastic 'Snap-On' positioners may be used provided they are of sufficient strength and quality such that they do not distort, and that they shall be securely wired at cross-rebar junctions.
6.15. The following grouts may be used for dowel bars. Grouts to be used strictly in accordance with the manufacturers' specifications:

Y10 up to Y20 bars (u.n.o.)	-	Fischer FIS-V or Hilti HIT-HY 200
Y25 up to Y40 bars (u.n.o.)	-	Fischer FIS-EM or HILTI HIT-RE 500
Moist substrate (u.n.o.)	-	Fischer FIS-EM or HIlti HIT-RE 500

6.16. Should the contractor wish to use an alternative product, it is to be requested in writing. The request is to include valid European Technical Approval (ETA) certificates for the anchor's intended use.
6.17. Sufficient reinforcing is to be from recycled sources in order to satisfy Greenstar requirements. (structural steel & rebar)

7. STRUCTURAL STEELWORK

7.1. All structural steelwork shall be fabricated and erected in accordance with SANS 2001-CS1.
7.2. Welding
7.2.1. Welds shall conform to SABS 0167 – 1984, 044 and AWS D 1.1 specifications.
7.2.2. Where no weld sizes are shown, the minimum weld size shall be that of the thickest plate of the connecting plates/elements. Unless otherwise shown the intention of connections are to transfer the full force that can be developed in connecting members through the connection.
7.2.3. When using electric arc welding, all electrodes shall be E70 18. For any other welding process to be used, the contractor shall apply, in writing, for the approval from the engineer for the electrodes to be used.
7.2.4. All butt welds shall develop the full strength of the elements joined.
7.2.5. All splices shall develop the full strength of the elements joined.
7.2.6. Welding shall only be performed by coded welders.
7.2.7. Site welding: To material grade S355JR:
Welding to be performed by qualified (certified) and experienced welders using proper equipment in a good condition.
Weld areas should be free from impurities and be protected against climatic efforts.
7.2.8. The contractor shall design all welds and, where necessary, gussets of sufficient strength shall be provided to obtain the required weld length to ensure the full strength of the connection.
7.3. The contractor shall design all welds and, where necessary, gussets of sufficient strength shall be provided to obtain the required weld length to ensure the full strength of the connection.
7.4. All dimensions and levels shall be checked on site before shop drawings commence. Any discrepancies shall be brought to the attention of the engineer.
7.5. A complete set of shop drawings shall be submitted to the engineer for approval before fabrication commences. Shop drawings will only be checked for compliance with design intent. No dimensional checks will be done. Comments on shop drawings and/or approval thereof will be done within 7 work days after receiving.
7.6. All shop splices are to be indicated on drawings.
7.7. base plates shall be grouted with a cementitious non-shrink grout with a minimum crushing strength of 40 MPa. Grouting must take place before the primary loads are applied to the structure.
7.8. The contractor is responsible to compile a safe erection method statement that is to be submitted to the engineer for comment and/or acceptance. All specific design requirements; proposed splice and hoisting positions should be clearly stated at tender stage already.
7.9. Steel grades shall be as follows:

Plates	Grade S355JR
Hot rolled sections	Grade S355JR
Hot rolled angles ≥ 60mm	Grade S355JR
Hot rolled angles < 60mm	Commercial grade (Minimum yield stress of 240MPa)
Hollow sections	Grade S355 Tube (Minimum yield stress of 355MPa)
Cold formed open sections	Commercial grade (Minimum yield stress of 240MPa)

7.10. Tensile strength testing results must be provided for each batch of steel from which cold-formed sections are sourced.
7.11. A certificate from the steel manufacturer in which the grade of the structural steel is verified shall be handed to the engineer for approval.
7.12. All structural bolts shall be grade 8.8 unless otherwise noted (hot-dipped-galvanized).
7.13. The proposed method and sequence of erection of the structure shall be submitted to the engineer for written approval. Such submission is to take place at time of shop drawing submittal. The contractor shall indicate the proposed method of propping to ensure stability of the structure during erection. Such stability during erection remains the contractor's responsibility. Where temporary bracing or propping is required, the contractor shall be responsible for the design, erection, maintenance and removal (where necessary) thereof. Proposal of such bracing or propping shall be submitted to the engineer at an early stage for his perusal
7.14. Setting-out points (S.O.P's) at member centroids shall conform to those shown on general arrangement drawings. No eccentricities, except those shown on the engineer's drawings, shall be allowed.
7.15. Welding of stainless steel shall be done according to the MMA process and stainless steel 316l welding rods shall be used. Welds shall be pickled and passivated on completion
7.16. All structural steel drawings to be read in conjunction with the relevant architectural, concrete drawings as well as the Bill of Quantities and any discrepancy to be brought to the attention of the engineer in writing.
7.17. Quality control on welding shall be as follows:
- All welds shall be inspected using visual aids.
- All butt welds : 100% ultrasonic NDT
- All fillet welds : 20% MPI

7.18. Welding procedures and welders' performance qualifications shall conform to the requirements of AWS D 1.1. The supporting documentation is to be submitted to the engineer and approved prior to the start of welding.
7.19. Where applicable, cementitious non-shrink grout shall be provided under base plates before any primary loads are applied to the structure. Laminated finger shaped packing to be provided under base plates (hot-dip galvanized).
7.20. Where HSFG bolts are specified, the following shall apply:
7.20.1. All contact surfaces at HSFG bolt splices shall be free from oil, grease, rust, scale, paint or any other impurities at the time of bolting
7.20.2. The tightening of high strength friction-grip bolts shall be done according to the turn-of-the-nut method as specified in clause 5.3.1(a) of SABS 094-1982 Or
Where HSFG bolts have been specified, the contractor shall use "coronet"-type load indicating washers in conjunction with such bolts.
7.21. The contractor shall, at the commencement of the project, acquaint himself with the availability and delivery time of the products and steel profiles specified on the drawings so that such material can be ordered ahead of time.
7.22. Where slotted holes for bolts occur, the nut shall be hand tightened and a lock-nut be provided unless noted otherwise.
7.23. The contractor shall request inspections by the engineer at the following stages:
- After preparation of individual steel elements for butt welding, but before welding has commenced.
- During welding of elements.
- After welding has been completed, but before application of corrosion protection, to allow testing of welds.
- After core-drilling of anchor bolts on site, but before installation of bolts.
- After installation of anchor bolts to allow testing of bolts by bolt supplier.
- During erection of structural steelwork. At completion of erection.

7.24. The contractor may not commence with a stage before the previous stage has been inspected, approved and signed off by the engineer. The contractor shall submit the following to the engineer:
- Certificates of coded welders.
- Weld procedure specification (WPS).
- Procedure planning specification (PPS) indicating inspection benchmarks.

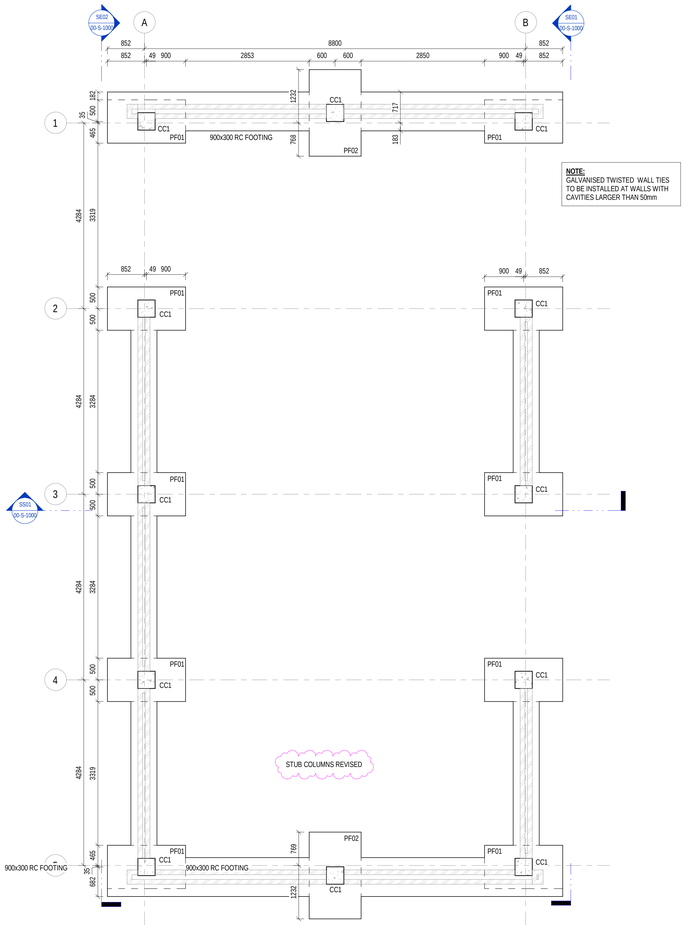
7.25. One chemical anchor bolt shall be installed as a test bolt and be tested to the ultimate tensile capacity of the bolt, by the bolt manufacturer. Further bolts may only be installed after successful completion of the test.
7.26. Paint Specification for the bolts: 3 days before the erection of the structural steelwork, all bolts are to be cleaned and degreased. Within 2 days of erection, all bolts are to be coated with 1 coat of Sigmadur Gloss or equivalent
7.27. See architectural drawings for final colour of structural steelwork and corrosion protection.
7.28. Carefully inspect each coat for misses and carry out dry film thickness (DFT) testing. No single DFT reading may be less than the minimum or greater than the maximum. The mean of the readings shall equal or exceed the nominal. All critical areas, edges, weld, etc. to be given extra stripe coats. All coats to be in contrasting shades. All work to comply with the project quality requirements and the general preamble.
7.29. All angle irons supporting brickwork to be galvanized
7.30. Fireproofing of steelwork to comply with the requirements of SABS 0400 Part T. The fireproofing method must be submitted to the Engineer for approval.
7.31. Inland corrosion protection shall consist of:
7.31.1 All structural steel must be thoroughly chipped and scraped free of millscale. Remove oil, grease and contaminants using Plascon Metalcare Aquasolv Degreaser (code GR 1) or similar approved followed by freshwater rinses. Prepare steel by wire brushing to remove all loose material.
7.31.2 Apply one coat (40 micron) zinc phosphate primer in accordance with SANS 681.
7.31.3 Apply two coats alkyd base enamel (35 micron each) to architect's colour specification. The two coats of alkyd enamel are to be applied in contrasting colours, so to identify any misses. Damaged areas of paint shall be made good on site in accordance with SANS 0120.
7.32 **Coastal** corrosion protection shall consist of:
7.32.1 All structural steel must be thoroughly chipped and scraped free of millscale. Remove oil, grease and contaminants using Plascon Metalcare Aquasolv Degreaser (code GR 1) or similar approved followed by freshwater rinses. Prepare steel by wire brushing to remove all loose material.
7.32.2 Apply one coat (75 micron) high build zinc phosphate primer in accordance with SANS 681.
7.32.3 Apply two coats high build waterborne acrylic (70 micron each) to architect's colour specification. The two coats of alkyd enamel are to be applied in contrasting colours, so to identify any misses. Damaged areas of paint shall be made good on site in accordance with SANS 0120.
7.33 For steelwork below surface bed apply two coats of bituminous paint.
7.34 Painting of nuts, bolts and damaged paint work to be made good on site.
7.35 Corrosion protection of gutters to be as follows:
7.35.1 Prepare, patch & clean surface with galvanize iron cleaner - Plascon GILI or similar approved.
7.35.2 Apply one coat PLASCON epoxy tar EPD 112 with a dry film thickness of 75 microns and one coat PLASCON epoxy tar EPD 100 with dry film thickness of 75 microns to give a total dry film thickness of 150 microns. All work must be done in accordance with the manufacturer's instructions.
7.36 HD Bolts to be hot-dipped galvanized and threads must be undercut after galvanizing.
7.37 Sufficient structural steel is to be from recycled sources in order to satisfy Greenstar requirements. 60% of all steel by mass to have minimum of 90% recycled content & certificates to validate this shall be provided to the engineer.

8. TIMBER

8.1. All structural timber shall be in accordance with SABS 1245 laminated timber SABS 1460.
8.2. All structural timber delivered to the project should be marked with the relevant timber grade stress.
8.3. The contractor is to cover all materials against the weather if stored for long periods.
8.4. Truss hold-down is to be in accordance with standard details or designers details.
8.5. All connections, hangers and cleats to be in accordance with design specification.
8.6. The contractor is to check that all bracing specified has been fixed in the correct position.
8.7. All timber used on site to be procured from FSC approved sources.

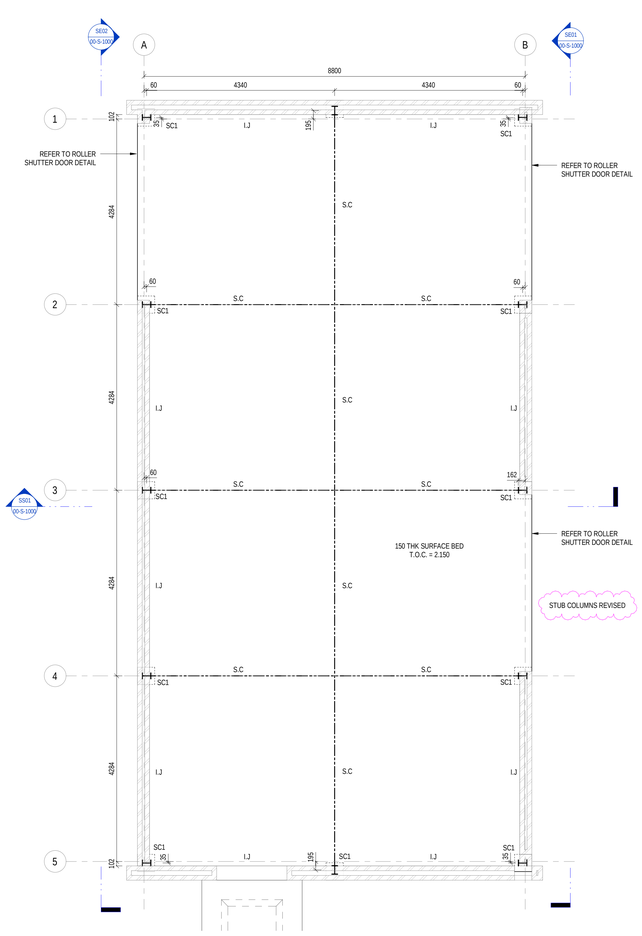
9. ELECTRICAL SLEEVES

9.1. All Telecommunication and electrical sleeves are to be 100mm diameter kabelflex (HDPE) or similar approved and laid 600m below final road level unless otherwise shown.
9.2. All Telecommunication and



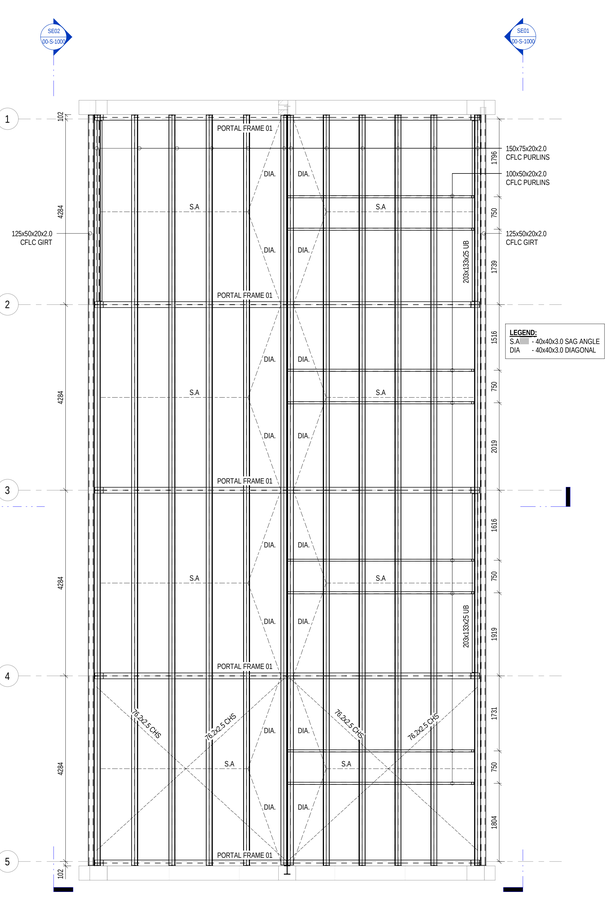
SHED FOUNDATION LAYOUT

1 : 50



SHED GROUND FLOOR LAYOUT

1 : 50



SHED ROOF LAYOUT

1 : 50

GENERAL NOTES:

REFER TO DRAWING NO 2024-0122-GN-0000 FOR GENERAL NOTES.

FOUNDATION NOTES:

1. ALL FOUNDATIONS HAS BEEN SIZED FOR SOIL BEARING CAPACITY AS INDICATED.
2. FOUNDATION LEVELS AS INDICATED IS TOP OF FOUNDATION.
3. DCP TESTS TO BE DONE ON SITE WHEN FOUNDATION TRENCHES HAVE BEEN OPENED TO CONFIRM BEARING.
4. THE DIFFERENCE BETWEEN FINAL FOUNDING LEVEL AND BOTTOM OF FOUNDATIONS SHOWN TO BE MADE UP WITH 15 MPa MASS CONCRETE.
5. DEPTH OF EXISTING FOUNDATIONS TO BE CONFIRMED ON SITE
6. DURING CONSTRUCTION ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER.
7. IF EXTERNAL CONCRETE NOT SHUTTERED, 25mm OF CONCRETE IS TO BE ADDED TO CREATE COVER OF 75mm.
8. NO FOOTINGS MAY BE FOUNDED ON RUBBLE. BACK FILLED MATERIAL OR SOILS CONTAINING HIGH ORGANIC CONTENT.
9. A 50mm BLINDING LAYER IS REQUIRED FOR CLAYEY MATERIAL.
10. THE BOTTOM OF ALL FOUNDATIONS ARE TO BE LEVEL.
11. ALL FOUNDATIONS TO HAVE MINIMUM GROUND COVER OF 340mm.

BRICKWORK NOTES:

1. BRICKWORK TO BE SET OUT ACCORDING TO ARCHITECT'S DRAWINGS.
2. BRICK STRENGTH TO BE 1MPa.
3. BRICKWORK TO BE REINFORCED WITH BRICKFORCE AS FOLLOWS :
   a. BRICKFORCE TO BE PROVIDED IN EVERY 4TH BRICK COURSE
   b. 2 LAYERS OF BRICKFORCE PER COURSE FOR THREE COURSES ABOVE AND BELOW WINDOWS AND ABOVE DOOR OPENINGS. BRICKFORCE TO EXTEND MIN 500mm BEYOND OPENING.
4. BUTTERFLY TIES @ 500mm c/c HORIZONTALLY AND AT BRICKFORCE CENTRES VERTICALLY.

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF SANS 1200 G.
2. STRIPPING TIMES OF FORMWORK AND PROPPING SHALL BE IN ACCORDANCE WITH SANS 1200 G.
3. 25mm x 25mm CHAMFER TO ALL EXPOSED CORNERS.
4. CONCRETE FINISHES AS PER ARCHITEC'S SPEC.
5. CONCRETE SPECIFICATION, U.N.O:

a.	FOUNDATIONS:	25MPa/19mm
b.	WALLS:	30MPa/19mm
c.	SURFACE BEDS: MAXIMUM 15% FLY ASH AND 180l/m WATER	30MPa/19mm
d.	COLUMNS:	30MPa/19mm
e.	BEAMS	30MPa/19mm
f.	SLABS	30MPa/19mm

6. COVER TO REINFORCEMENT, U.N.O:

a.	FOUNDATIONS = 50mm	
b.	WALLS = 40mm	
c.	SURFACE BEDS = 30mm	
d.	COLUMNS = 40mm UNLESS BELOW GROUND = 50mm	
e.	BEAMS = 30mm	
f.	SLABS = 30mm	

7. MINIMUM REINFORCEMENT LAP LENGTHS(= 50Ø):

a.	Y10	= 500mm
b.	Y12	= 600mm
c.	Y16	= 800mm
d.	Y20	= 1000mm
e.	Y25	= 1250mm
f.	Y32	= 1600mm

REFER TO DRAWING NO 2024-0122-GN-0000 FOR GENERAL NOTES.

STRUCTURAL STEEL NOTES:

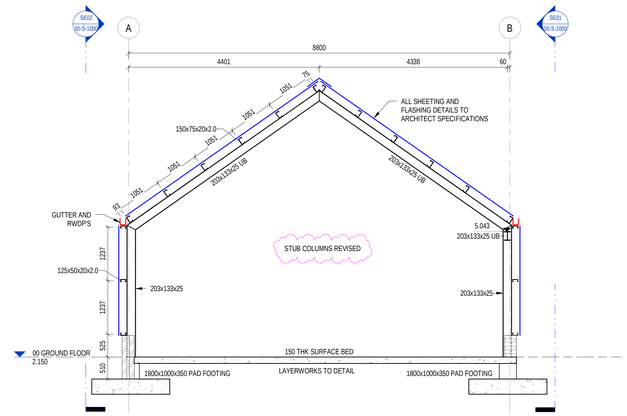
1. ALL STRUCTURAL STEELWORK SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH SANS 1200 H, SANS 0162-1993 AND THE PROJECT SPECIFICATIONS.
2. WELDING SHALL CONFORM TO AWS D1.1-90 SPECIFICATIONS.
3. BUTT WELDS SHALL DEVELOP THE FULL STRENGTH OF THE ELEMENTS JOINED.
4. ALL WELDING TO BE 6mm CONTINUOUS FILLET WELD UNLESS OTHERWISE NOTED. WELDING ELECTRODE TO BE E70 XX.
5. ALL DIMENSIONS SHALL BE CHECKED ON SITE BY THE STEELWORK CONTRACTOR BEFORE SHOP DRAWINGS COMMENCE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. CONTRACTOR TO ENSURE THE STABILITY AND SAFE ERECTION OF THE STRUCTURE, AND TO PROVIDE ALL NECESSARY BRACING TO ENABLE HIM TO DO SO. SUCH BRACING TO BE INDICATED ON THE ERECTION GENERAL ARRANGEMENT DRAWINGS.
7. A COMPLETE SET OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION COMMENCES.
8. ALL STRUCTURAL STEEL SHALL BE GRADE S355JR EXCEPT FOR COLD ROLLED PURLINS AND GIRTS WHERE COMMERCIAL QUALITY STEEL MAY BE USED IF APPROVED BY ENGINEER.
9. STRUCTURAL BOLTS SHALL BE GRADE 8.8 EXCEPT FOR PURLINS AND GIRTS WHERE BOLTS MAY BE GRADE 4.8. A MINIMUM OF TWO BOLTS PER CONNECTION MUST BE USED.
10. IF SPLICES IN STEEL MEMBERS ARE REQUIRED FOR TRANSPORT OR MANUFACTURE, PROPOSALS FOR THIS WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
11. BASE PLATES SHALL BE GROUTED WITH A CEMENTITIOUS NON-SHRINK GROUT WITH A MINIMUM CRUSHING STRENGTH OF 40 MPa. GROUTING MUST TAKE PLACE BEFORE THE PRIMARY LOADS ARE APPLIED TO THE STRUCTURE.
12. WHERE TEMPORARY BRACING OR PROPPING IS NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, MAINTENANCE AND REMOVAL OF SUCH SUPPORTS.

ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
B	2025-05-14	REVISED FOR TENDER	JWP
A	2025-05-09	ISSUED FOR TENDER	JWP

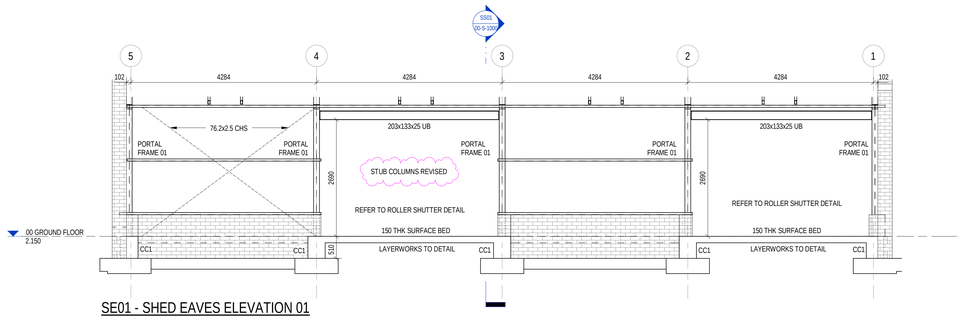
DRAWING STATUS

FOR TENDER



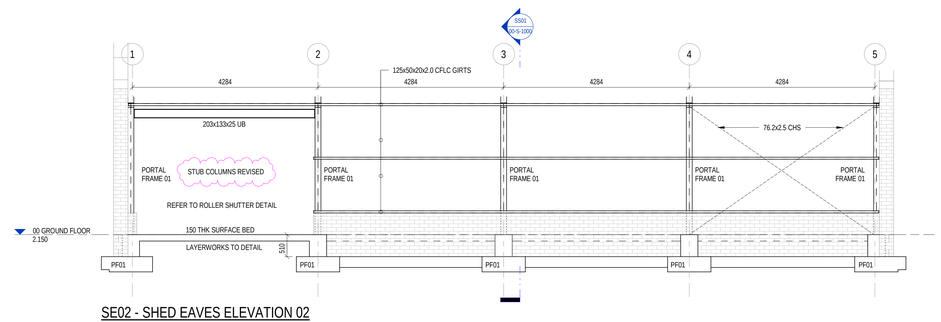
SS01 - TYPICAL SHED PORTAL FRAME 01 SECTION

1 : 50



SE01 - SHED EAVES ELEVATION 01

1 : 50

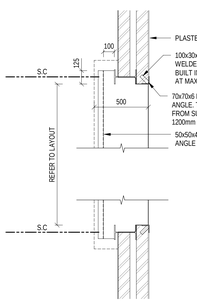


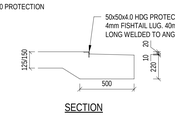
SE02 - SHED EAVES ELEVATION 02

1 : 50

STRUCTURAL COLUMN SCHEDULE		
TYPE MARK	TYPE	NO. OFF
CC1	400x400 RC STUB COL	12
SC1	203x133x25	12

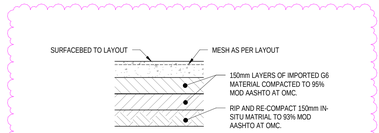
STRUCTURAL FOUNDATION SCHEDULE			
TYPE MARK	TYPE	NO. OFF	Fcu
PF01	1800x1000x350 PAD FOOTING	10	25
PF02	2000x1200x350 PAD FOOTING	2	25





TYPICAL ROLLER SHUTTER DOOR AT STEEL COLUMN DETAIL

1 : 20



TYPICAL SHED LAYERWORKS DETAIL

1 : 20

STRUCTURAL

ARCHITECT

nvorm

CLIENT

-

PROJECT

CALCUTTA MEMORIAL

DRAWING CHECKS

DESIGNED BY: D. IMMELMAN
DRAWN BY: JW. PIETERSE
CHECKED BY: D. IMMELMAN
APPROVED BY: D. IMMELMAN

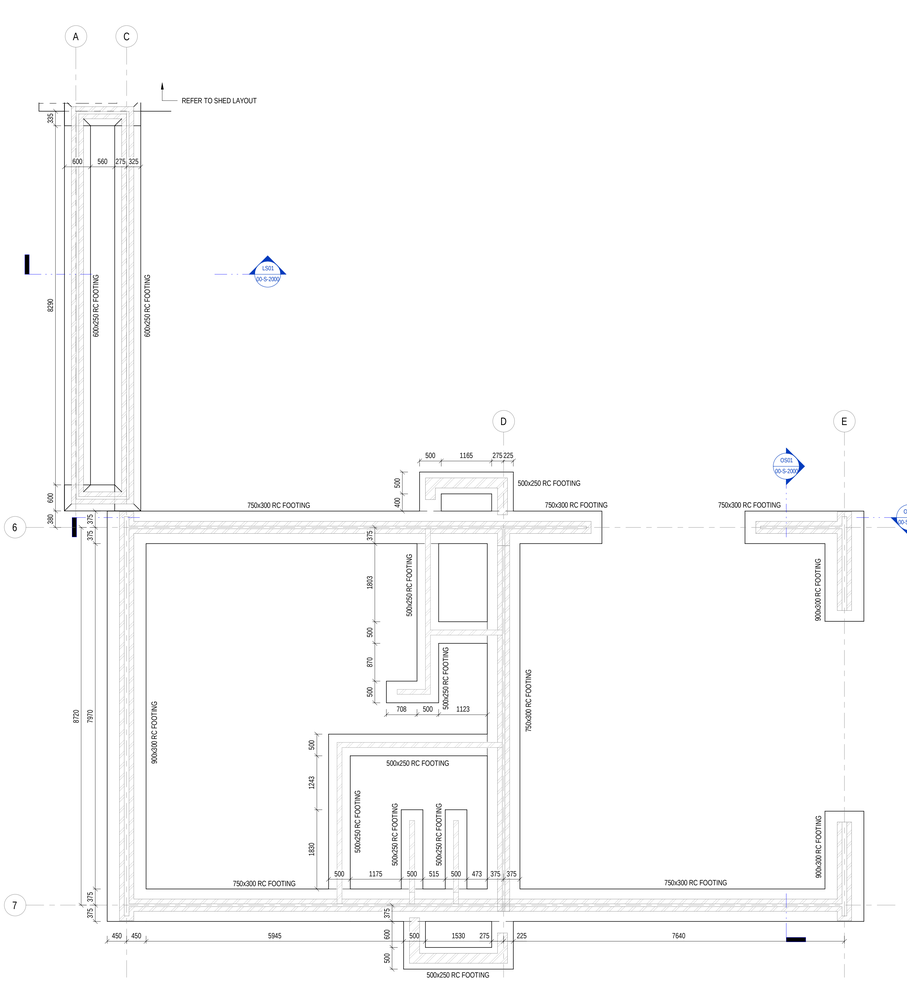
DRAWING TITLE

SHED STRUCTURAL LAYOUT AND SECTIONS

SCALE As indicated

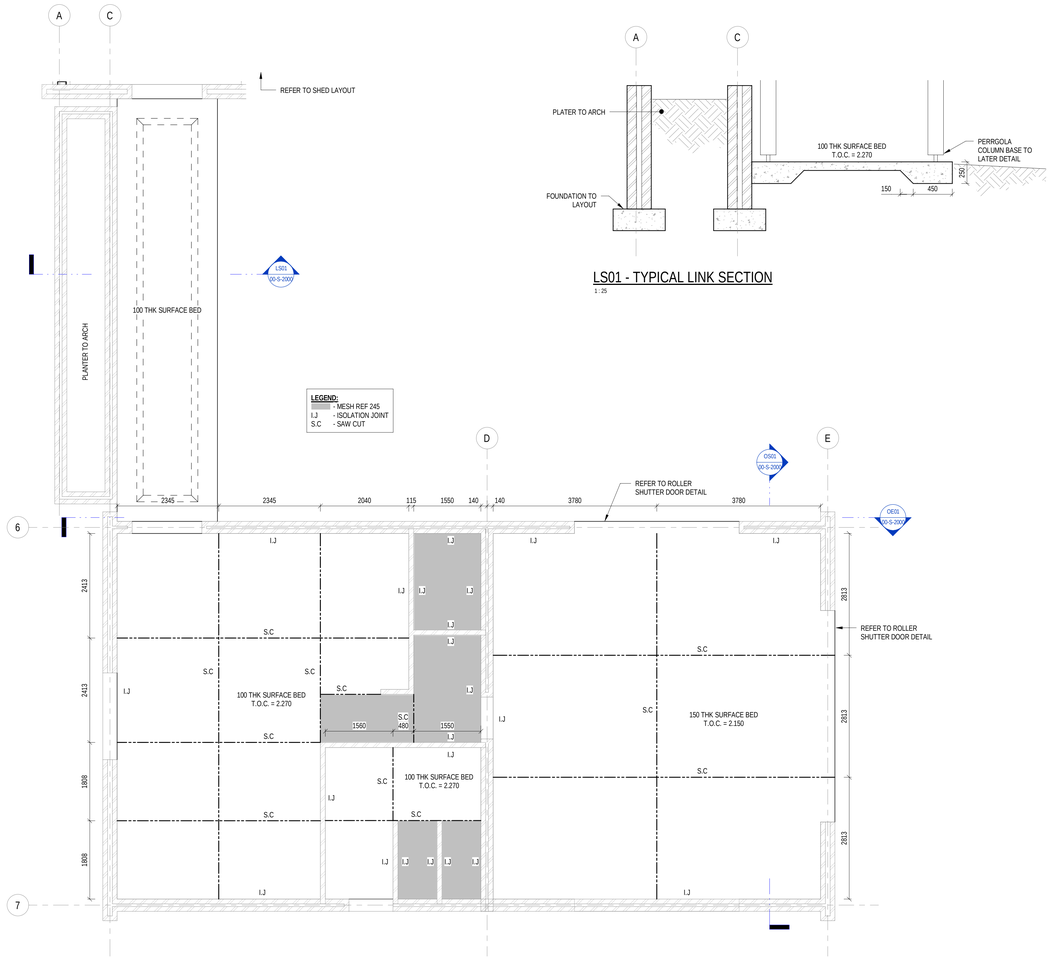
DRAWING NUMBER: 2024_0122-00-S-1000
REV: B
SHEET SIZE: A0

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ISO A0 1189mm x 841mm



OFFICE FOUNDATION LAYOUT

1 : 50

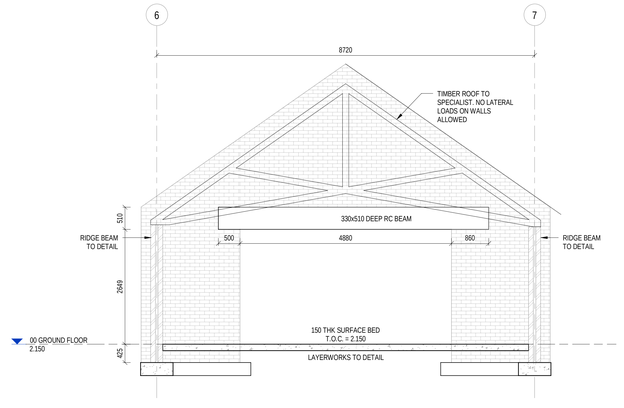


OFFICE GROUND FLOOR LAYOUT

1 : 50

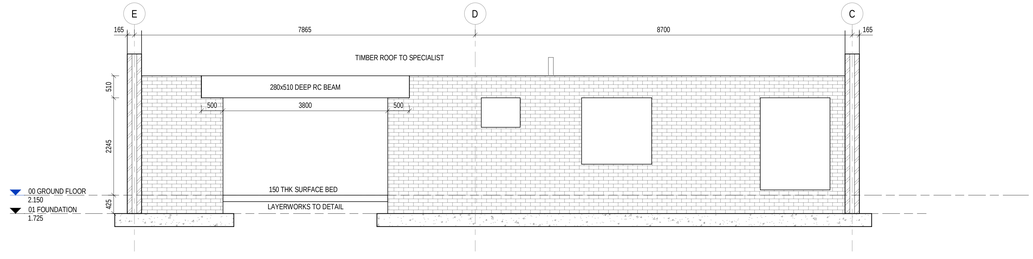
LS01 - TYPICAL LINK SECTION

1 : 25



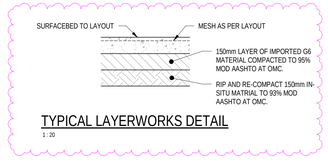
OS01 - TYPICAL OFFICE SECTION

1 : 50



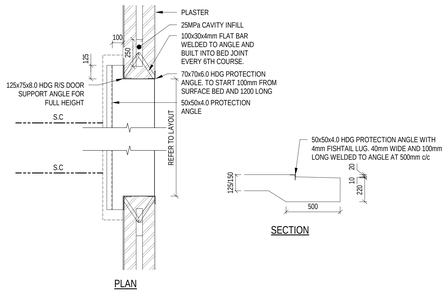
OE01 - TYPICAL OFFICE ELEVATION

1 : 50



TYPICAL LAYERWORKS DETAIL

1 : 20



TYPICAL ROLLER SHUTTER DOOR STANDARD DETAIL

1 : 20

GENERAL NOTES:

REFER TO DRAWING NO 2024-0122-GN-0000 FOR GENERAL NOTES.

FOUNDATION NOTES:

1. ALL FOUNDATIONS HAS BEEN SIZED FOR SOIL BEARING CAPACITY AS INDICATED.
2. FOUNDATION LEVELS AS INDICATED IS TOP OF FOUNDATION.
3. DCP TESTS TO BE DONE ON SITE WHEN FOUNDATION TRENCHES HAVE BEEN OPENED TO CONFIRM BEARING.
4. THE DIFFERENCE BETWEEN FINAL FOUNDING LEVEL AND BOTTOM OF FOUNDATIONS SHOWN TO BE MADE UP WITH 15 MPa MASS CONCRETE.
5. DEPTH OF EXISTING FOUNDATIONS TO BE CONFIRMED ON SITE
6. DURING CONSTRUCTION ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER.
7. IF EXTERNAL CONCRETE NOT SHUTTERED. 25mm OF CONCRETE IS TO BE ADDED TO CREATE COVER OF 75mm.
8. NO FOOTINGS MAY BE FOUNDED ON RUBBLE. BACK FILLED MATERIAL OR SOILS CONTAINING HIGH ORGANIC CONTENT.
9. A 50mm BLINDING LAYER IS REQUIRED FOR CLAYEY MATERIAL.
10. THE BOTTOM OF ALL FOUNDATIONS ARE TO BE LEVEL.
11. ALL FOUNDATIONS TO HAVE MINIMUM GROUND COVER OF 340mm.

BRICKWORK NOTES:

1. BRICKWORK TO BE SET OUT ACCORDING TO ARCHITECTS DRAWINGS.
2. BRICK STRENGTH TO BE 14MPa.
3. BRICKWORK TO BE REINFORCED WITH BRICKFORCE AS FOLLOWS :
   a. BRICKFORCE TO BE PROVIDED IN EVERY 4TH BRICK COURSE
   b. 2 LAYERS OF BRICKFORCE PER COURSE FOR THREE COURSES ABOVE AND BELOW WINDOWS AND ABOVE DOOR OPENINGS. BRICKFORCE TO EXTEND MIN 500mm BEYOND OPENING.
4. BUTTERFLY TIES @ 500mm c/c HORIZONTALLY AND AT BRICKFORCE CENTRES VERTICALLY.

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF SANS 1200 G.
2. STRIPPING TIMES OF FORMWORK AND PROPPING SHALL BE IN ACCORDANCE WITH SANS 1200 G.
3. 25mm x 25mm CHAMFER TO ALL EXPOSED CORNERS.
4. CONCRETE FINISHES AS PER ARCHITEC'S SPEC.
5. CONCRETE SPECIFICATION, U.N.O.

   a. FOUNDATIONS: 25MPa/19mm
   b. WALLS: 30MPa/19mm
   c. SURFACE BEDS: 30MPa/19mm
      MAXIMUM 15% FLY ASH AND 180l/m WATER
   d. COLUMNS: 30MPa/19mm
   e. BEAMS 30MPa/19mm
   f. SLABS 30MPa/19mm

6. COVER TO REINFORCEMENT, U.N.O:

   a. FOUNDATIONS = 50mm
   b. WALLS = 40mm
   c. SURFACE BEDS = 30mm
   d. COLUMNS = 40mm UNLESS BELOW GROUND = 50mm
   e. BEAMS = 30mm
   f. SLABS = 30mm

7. MINIMUM REINFORCEMENT LAP LENGTHS(= 50Ø):

   a. Y10 = 500mm
   b. Y12 = 600mm
   c. Y16 = 800mm
   d. Y20 = 1000mm
   e. Y25 = 1250mm
   f. Y32 = 1600mm

REFER TO DRAWING NO 2024-0122-GN-0000 FOR GENERAL NOTES.

STRUCTURAL STEEL NOTES:

1. ALL STRUCTURAL STEELWORK SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH SANS 1200 H, SANS 0162-1993 AND THE PROJECT SPECIFICATIONS.
2. WELDING SHALL CONFORM TO AWS D1.1-90 SPECIFICATIONS.
3. BUTT-WELDS SHALL DEVELOP THE FULL STRENGTH OF THE ELEMENTS JOINED.
4. ALL WELDING TO BE 6mm CONTINUOUS FILLET WELD UNLESS OTHERWISE NOTED. WELDING ELECTRODE TO BE E70 XX.
5. ALL DIMENSIONS SHALL BE CHECKED ON SITE BY THE STEELWORK CONTRACTOR BEFORE SHOP DRAWINGS COMMENCE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. CONTRACTOR TO ENSURE THE STABILITY AND SAFE ERECTION OF THE STRUCTURE, AND TO PROVIDE ALL NECESSARY BRACING TO ENABLE HIM TO DO SO. SUCH BRACING TO BE INDICATED ON THE ERECTION GENERAL ARRANGEMENT DRAWINGS.
7. A COMPLETE SET OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION COMMENCES.
8. ALL STRUCTURAL STEEL SHALL BE GRADE S355JR EXCEPT FOR COLD ROLLED PURLINS AND GIRTS WHERE COMMERCIAL QUALITY STEEL MAY BE USED IF APPROVED BY ENGINEER.
9. STRUCTURAL BOLTS SHALL BE GRADE 8.8 EXCEPT FOR PURLINS AND GIRTS WHERE BOLTS MAY BE GRADE 4.8. A MINIMUM OF TWO BOLTS PER CONNECTION MUST BE USED.
10. IF SPLICES IN STEEL MEMBERS ARE REQUIRED FOR TRANSPORT OR MANUFACTURE, PROPOSALS FOR THIS WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
11. BASE PLATES SHALL BE GROUTED WITH A CEMENTITIOUS NON-SHRINK GROUT WITH A MINIMUM CRUSHING STRENGTH OF 40 MPa. GROUTING MUST TAKE PLACE BEFORE THE PRIMARY LOADS ARE APPLIED TO THE STRUCTURE.
12. WHERE TEMPORARY BRACING OR PROPPING IS NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, MAINTENANCE AND REMOVAL OF SUCH SUPPORTS.

ISSUE / REVISION

I/R	DATE	DESCRIPTION	ISS BY
B	2025-05-14	REVISED FOR TENDER	JWP
A	2025-05-09	ISSUED FOR TENDER	JWP

DRAWING STATUS

FOR TENDER

STRUXIT

ARCHITECT

nvorm

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-

PROJECT

CALCUTTA MEMORIAL

DRAWING CHECKS

DESIGNED BY: D. IMMELMAN
DRAWN BY: JW. PIETERSE
CHECKED BY: D. IMMELMAN
APPROVED BY: D. IMMELMAN

DRAWING TITLE

OFFICE AND LINK STRUCTURAL LAYOUT AND SECTIONS

SCALE As indicated

DRAWING NUMBER: 2024_0122-00-S-2000
REV: B
SHEET SIZE: A0

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ISO A0 1189mm x 841mm

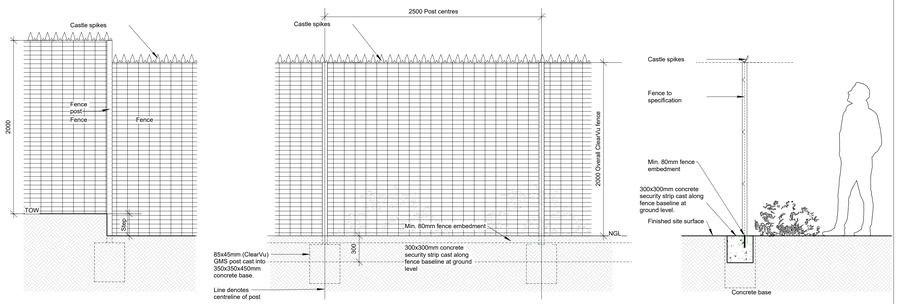


CALCUTTA - PARK PARKING CALCULATIONS	
PARKING BAYS	PROPOSED
GENERAL PARKING	460
DISABLED PARKING	9

CALCUTTA - CHAPEL SEATING - 150	
PARKING REQUIRED	25
DISABLED PARKING	3

WATER SUPPLY KEY	
	NEW 110MM ø uPVC CLASS 12 WATER PIPE
	NEW 50MM ø uPVC CLASS 12 WATER PIPE
	NEW 110MM ø uPVC CLASS 16 FIRE PIPE
	NEW 25MM ø HDPE PN 16 WATER ERF CONNECTION
	FIRE HYDRANT
	ISOLATION VALVE
	NEW 10 KL WATER TANK & PUMP
CT	CONSERVANCY TANK REFER TO DETAIL DRAWING: 3807.00.00.CZA.06.0001

1 | SITE PLAN - BOUNDARY LAYOUT
1 : 1100



NOTE: ALL POSITIONS AND CO-ORDINATES TO BE CONFIRMED ON SITE PRIOR TO INSTALLATION AND DISCREPANCIES TO BE CONFIRMED WITH ARCHITECT

Full Spec:

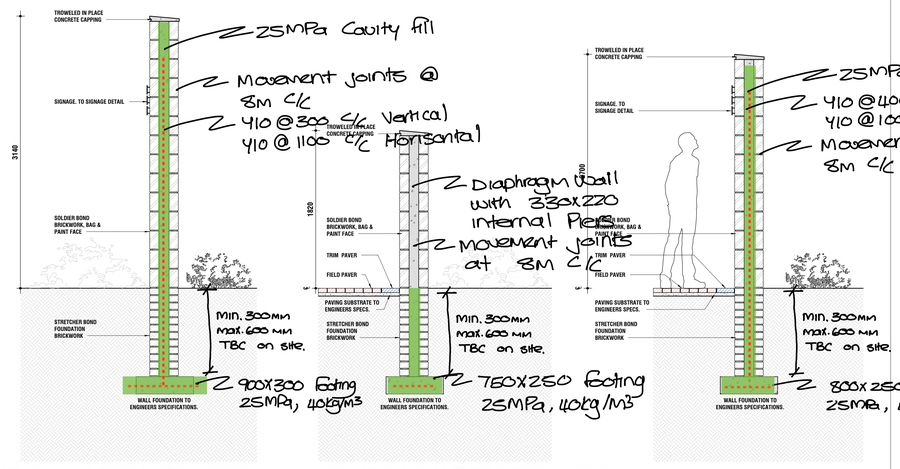
Panel
2500mm(w) x 2100mm(h) high security 3mm welded mesh panel with 3-D reinforcing bends
Aperture 76mm x 12mm
Core wire coating ZincAlu consisting of 95% Zinc and 5% Aluminium
Additional coating PVC (black)
PVC wire diameter 3.4mm

Post
Panels secured with metal security fixators bolted through posts and firmly secured with tamperproof shear-nuts
PVC coating to match panels

Guidelines to be specified in tender:

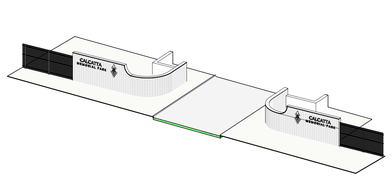
C.2.2. **INTERNAL**
- Fencing between any two erven or between internal erf boundaries will be limited to 2.0m.
- Internal fencing must be black 2.0m high Clearvu (or similar approved) fence.
- Security equipment, other than Clearvu or similar approved anti-climb spikes, to detect and deter intruders will not be installed on top of the fence line but integrated into the posts and restricted to within 2.0m height of the fence.
- Gates to be steel framed with Clearvu or similar approved infill panels to match the fence.

2 | FENCE TYPE 1 (FT1) DETAILS
1 : 25



8 | BOUNDARY WALL TYPE 1 (BTW1) DETAIL
1 : 25

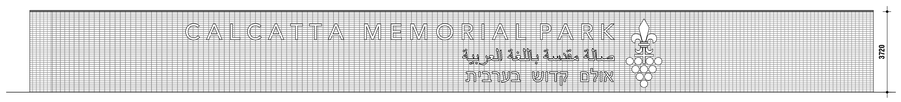
9 | BOUNDARY WALL TYPE 2 (BTW2) DETAILS
1 : 25



3 | BOUNDARY WALL TYPE 2 (BTW2) - 3D



4 | BOUNDARY WALL TYPE 1 (BTW1) - 3D



5 | BOUNDARY WALL TYPE 1 (BTW1) - ELEVATION
1 : 100



6 | BOUNDARY WALL TYPE 2 (BTW2) - ELEVATION 1
1 : 100



7 | BOUNDARY WALL TYPE 2 (BTW2) - ELEVATION 2
1 : 100

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3. All work to be executed in accordance with the requirements of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. All work to be done in accordance with the requirements of the Agrément South Africa (ASA) system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Agrément South Africa system. Alternatively, all materials are to be certified to the SANS 9000 family of standards then monitor these works accordingly.
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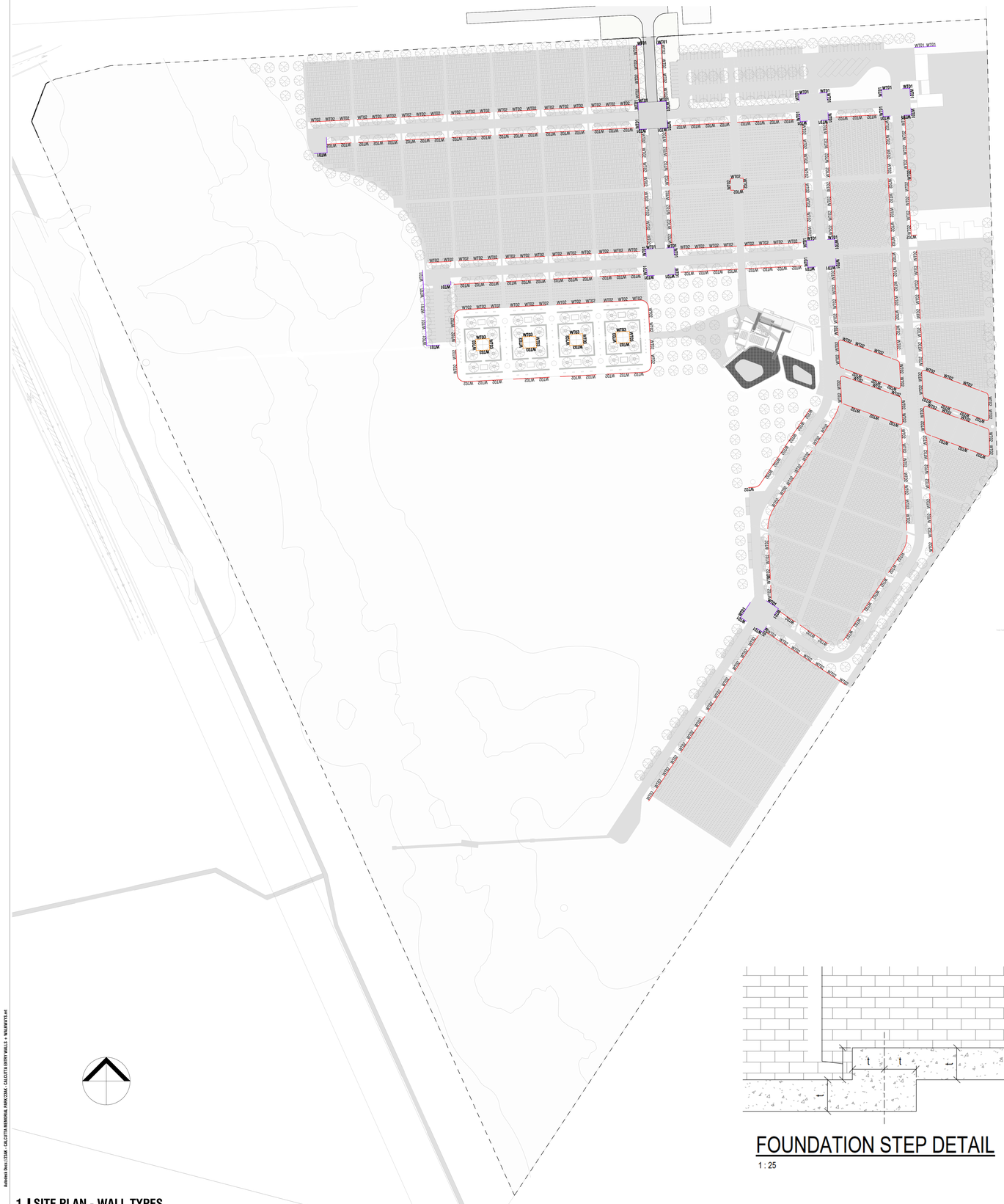
STELLENBOSCH

SITE BOUNDARY LAYOUT & DETAILS

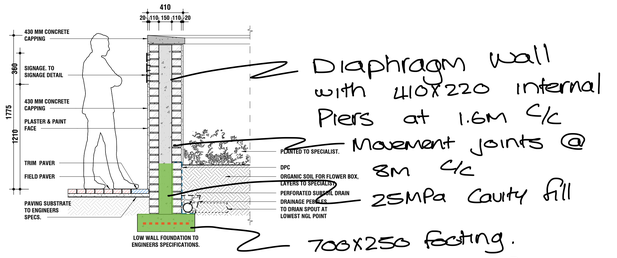
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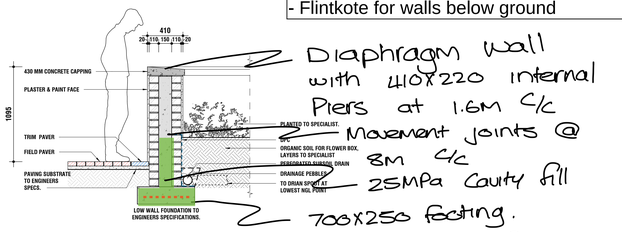
1 | SITE PLAN - WALL TYPES
1 : 1100



Diaphragm wall with 410x220 internal Piers at 1.6m c/c
Movement joints @ 8m c/c
25MPa Cavity fill
700x250 footing. 25MPa, 40kg/m3

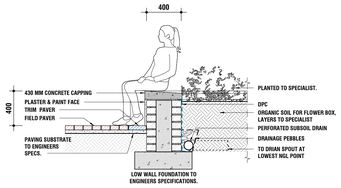
2 | WALL TYPE 01 (WT01) DETAILS
1 : 25

Note:
- Werf walls footing rebar may be removed if soil conditions allow. TBC by geotechnical report
- Flintkote for walls below ground



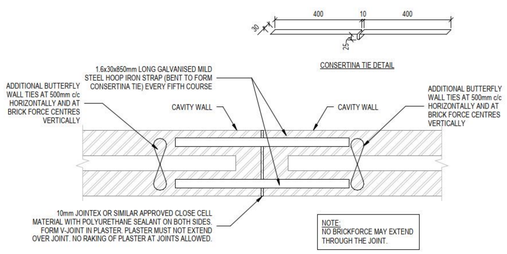
Diaphragm wall with 410x220 internal Piers at 1.6m c/c
Movement joints @ 8m c/c
25MPa Cavity fill
700x250 footing. 25MPa, 40kg/m3

3 | WALL TYPE 02 (WT02) DETAILS
1 : 25



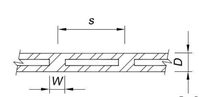
4 | WALL TYPE 03 (WT03) DETAILS
1 : 25

FOUNDATION STEP DETAIL
1 : 25



280 CAVITY WALL

TYPICAL BRICKWORK MOVEMENT JOINT DETAIL
1 : 10



e) Diaphragm walls

D = depth of pier
h = maximum height of wall above ground level
s = spacing of piers
T = thickness of wall
W = width of pier
x = height of soil above strip footing

TYPICAL DIAPRAGHM WALL DETAIL

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3. All work to be done in accordance with the Occupational Health and Safety Act, Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The Contractor is to have a quality assurance system, preferably to the ISO 9001:2000 system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Specifications and Contract Documents. All suppliers and subcontractors be certified to the SANS 9000 family of standards then monitor these works accordingly.
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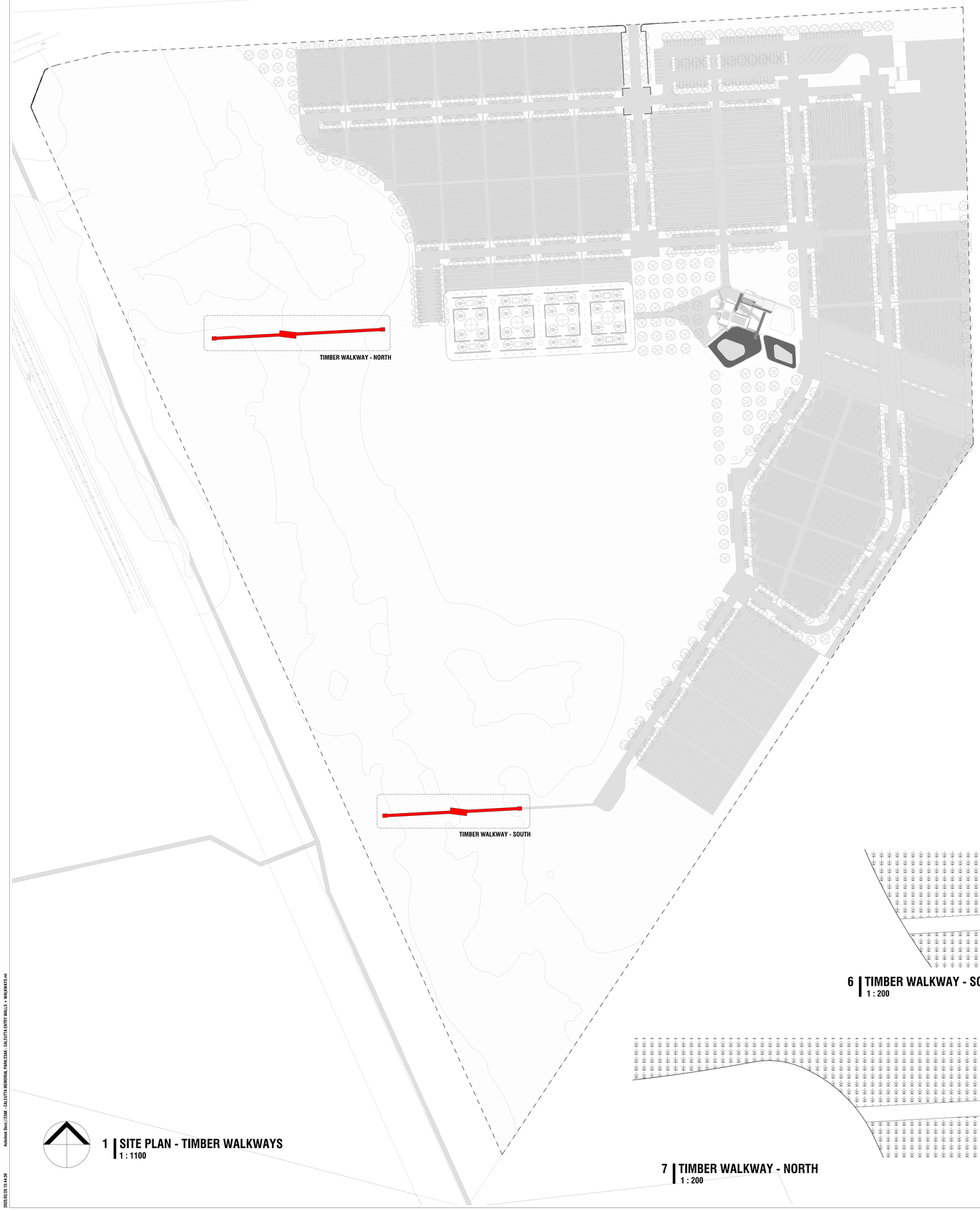
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SITE WALL TYPES

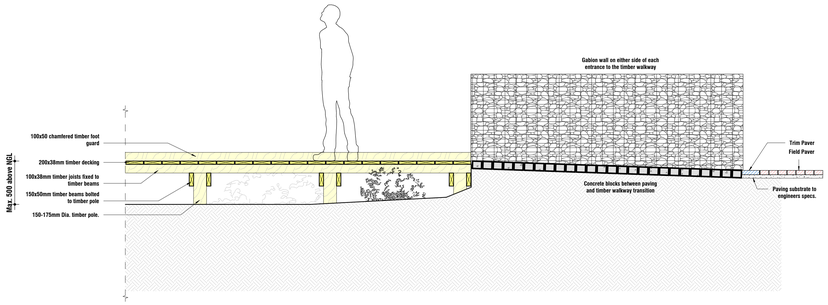
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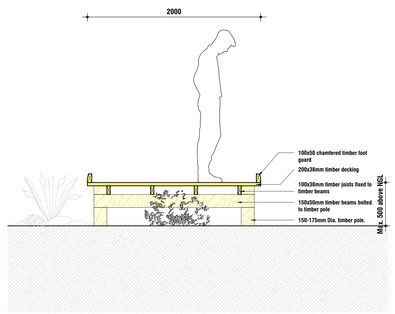
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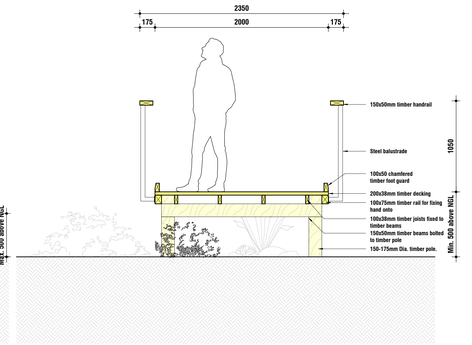
1 | SITE PLAN - TIMBER WALKWAYS
1 : 1100



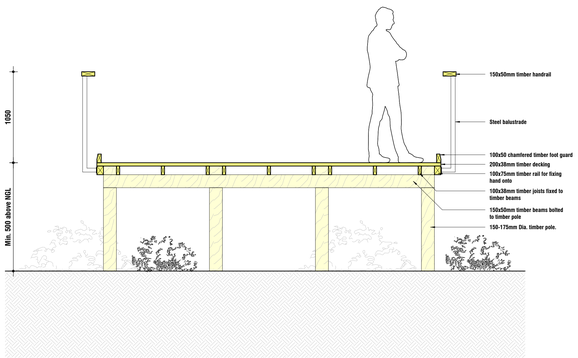
2 | TIMBER WALKWAY 01
1 : 25



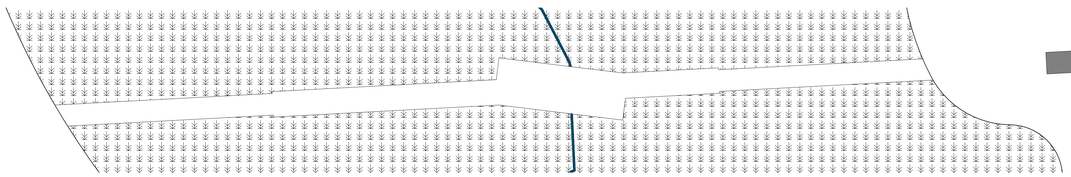
3 | TIMBER WALKWAY 02
1 : 25



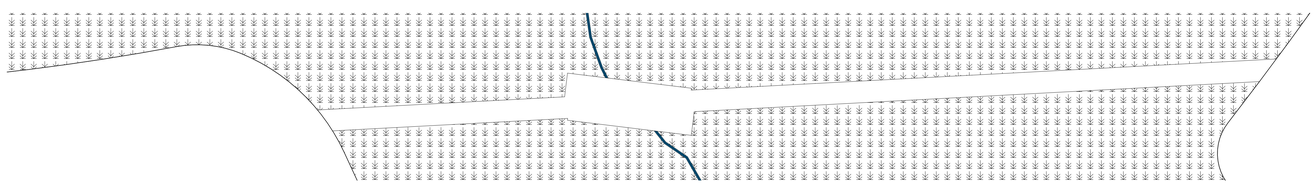
4 | TIMBER WALKWAY 03
1 : 25



5 | TIMBER WALKWAY 04
1 : 25



6 | TIMBER WALKWAY - SOUTH
1 : 200



7 | TIMBER WALKWAY - NORTH
1 : 200

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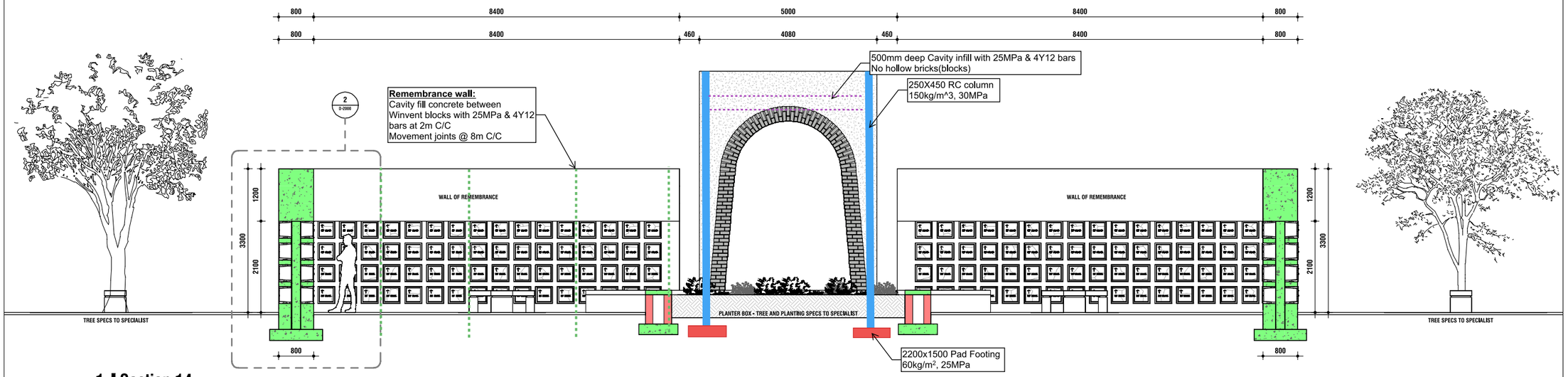
STELLENBOSCH

TIMBER WALKWAYS

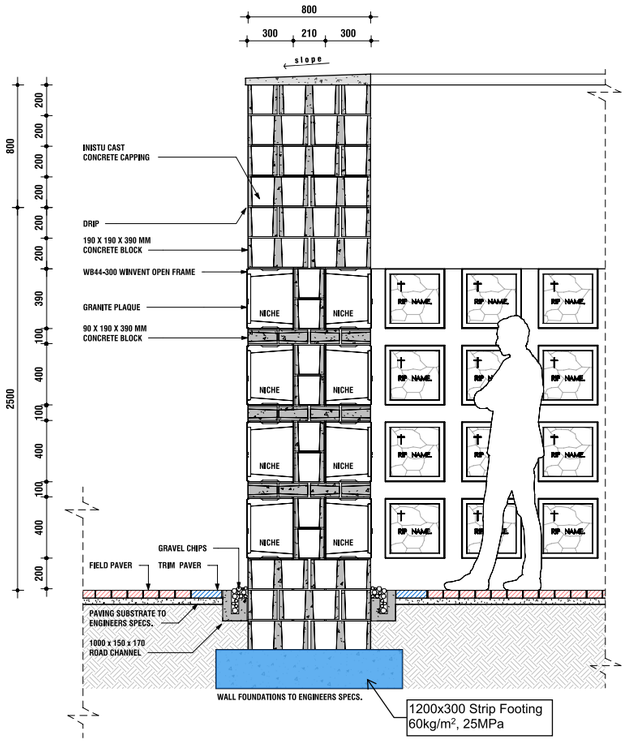
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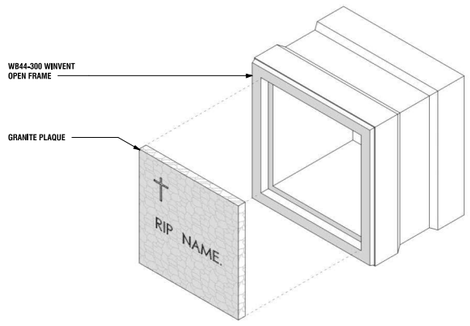
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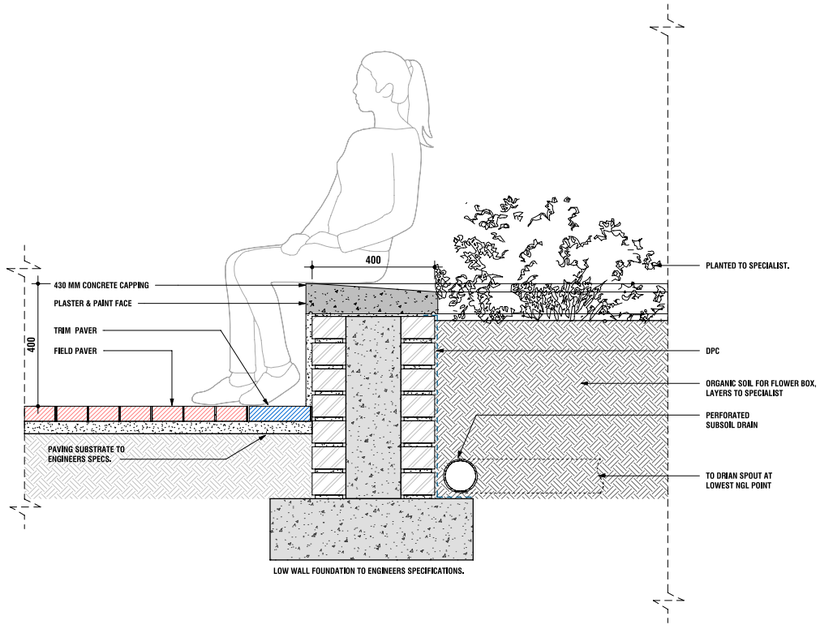
1 | Section 14
1 : 50



2 | Section 14 - Callout 1
1 : 20



4 | WINBLOCK NICHE
1 : 10



3 | 1. LOW SEAT / PLANTER RETAINER DETAIL
1 : 10

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3. The contractor shall in all aspects of the works comply with the provisions of the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and any regulations promulgated in terms of that Act or the Factories Machinery and Building Works Act of 1941.
4. The contractor shall set up, document and maintain a quality assurance and quality control system, in accordance with SANS 9001/ISO 9001, able to be checked to the satisfaction of the Architect, that all materials and workmanship, whatever their sources, meet the requirements of the Specification. Should the Contractor or any of his sub-contractors be certified to the SANS 9000 family of standards then monitor these works accordingly.
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32. GEOTECHNICAL INVESTIGATION

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629



DRAFT - FOR DISC

Report to Bigen Engineers on an Augmented Geotechnical Investigation Phase 1 to 3 Calcutta Memorial Park, Stellenbosch, Western Cape

Project No.: 23-071R01

Date Issued: November 2023

Report to Bigen Engineers on an Augmented Geotechnical Investigation Phase 1 to 3 Calcutta Memorial Park, Stellenbosch, Western Cape

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8.12 Backfill to Foundations 34
9. CONCLUSION 34

Appendix A: Road Investigation Test Pits
Appendix B: Hand Augered Boreholes
Appendix C: DPL Test Results
Appendix D: Laboratory Test Results

Figures 2 and 4

DRAFT - FOR DISCUSSION PURPOSES

	PREPARED:
DATE:	**November 2023**
NAME:	**Mark Richter**
SIGNATURE:	

Report to Bigen Engineers on an Augmented Geotechnical Investigation Phase 1 to 3 Calcutta Memorial Park, Stellenbosch, Western Cape

1. INTRODUCTION

As requested by Mr Leallyn Fransman of Bigen Engineers, Gondwana Geo Solutions (or GGS) carried out an augmented geotechnical investigation for Phases 1 to 3 of the proposed Calcutta Memorial Park near Stellenbosch in the Western Cape.

The augmented geotechnical investigation comprised the following work agreed on with Mr Fransman:

- Road Investigation Test Pits at Bellmouth intersections on R304
- Road Investigation Test Pits on the Class 3 & 5 Roads in the park
- Water & Sewer Pipelines and Attenuation Ponds
- Buildings (chapel, offices, ablution facilities, workshop buildings, staff accommodation, etc)
- General area for grave location: supplementary groundwater evaluation, gathering of additional geotechnical information etc

This augmented geotechnical investigation follows on an earlier one done by Gondwana Geo Solutions, the results of which are contained in a report referenced 18-811R01, titled *"Report to CK Rumboll & Partners on a Geotechnical Investigation carried out for the Culcatta RE/29, Cemetery Site, Stellenbosch, Western Cape"*, dated May 2018. Relevant information from this earlier investigation is also presented in the current report.

This report contains the results of the augmented geotechnical investigation carried for Phases 1 to 3 of Calcutta Memorial Park. Recommendations for earthworks, excavations and lateral support, foundations, materials usage for roads, subgrade treatment, and the construction of boundary fence posts are provided.

2. INFORMATION SUPPLIED

The following information was used in the investigation:

- Request for quotation, Ref no: 3667-00-00/Geotech, dated 8 September 2023, titled *"Remainder Farm No 29, Stellenbosch (B/SM 13/21) Request for Geotechnical Investigation and Report for Calcutta Memorial Park, Stellenbosch"*
- Copy of Plan showing Combined Services Layout
- Google Earth Kmz file showing the site position.
- Copy of CALCUTTA MASTER PLAN_2023.06.19
- Copy of CALCUTTA Phasing Plan
- Geotechnical report by Gondwana Geo Solutions, referenced 18-811R01, titled *"Report to CK Rumboll & Partners on a Geotechnical Investigation carried out for the Culcatta RE/29, Cemetery Site, Stellenbosch, Western Cape"*, dated May 2018
- Annexure V: Application for Rezoning from Open Space Zone I to Agricultural Zone II for the Establishment of a Public Cemetery and Memorial Park: Remainder of Farm No 26, Stellenbosch Division -: Other Studies, *"Geohydrological Assessment - Calcatta Cemetery Site, Stellenbosch"* by GEOSS.
- Cemetery By-Law 2011 for Stellenbosch Municipality

3. SITE DESCRIPTION

The area on which the geotechnical investigations were carried out consist of a site with an area of 23.7Ha. The R304 surfaced road and road reserve bounds the site on the west side. Commercial farm land consisting of vineyards is located on the northern boundary while the eastern boundary is flanked by grassland with scattered small trees. A minor drainage line runs almost parallel to the road reserve on the west side. A second drainage line is situated on the east side of the site and runs in a north-south direction passing close to the eastern corner of the site, roughly parallel to the R304 road, and some 75m to 100m from the road itself.

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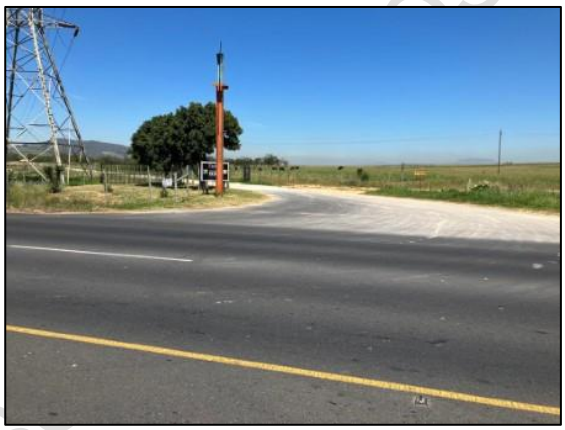
Figure 1: General locality of the site

The site slopes gently towards the southwest and southeast and is thickly covered in Eucalyptus plantation regrowth and Port Jackson Willow trees, shrubs, grass and weeds.

The following plates provide a more detailed perspective of the site.

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Plates 1 to 6: Southern perspectives of the site from the R304 which starts beyond the Electricity Pylons. Northwestern perspective shows the entrance into the smallholdings with entrance opposite the proposed northern cemetery site access. Perennial drainage lines run parallel to the R304 and on the eastern side of the site

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Plates 7 to 14: Generally waterlogged site which started drying out by mid to late October 2023



Plates 15 to 20: Generally waterlogged site which started drying out by mid to late October 2023

4. FIELDWORK

The fieldwork for the investigation was conducted during October 2023 and comprised the following:

- Road Investigation Test Pits
- Hand Augered Boreholes, and
- Dynamic Cone Penetrometer (light), or DPL, tests

The positions of the above tests are given in Figure 2, included at the back of this report.

At the time of investigation, the site had been severely affected by the extremely heavy rains that fell over the period 24 to 27 September 2023, resulting in flooding and widespread damage to property and infrastructure in Stellenbosch and other environs in the general Cape Town area. As a result, the site was inaccessible to TLB Excavator plant due to the risk of bogging down on the site. Also an immediate unavailability of excavators was experienced in the area as these were being used for remedial and clean-up operations at the time. GGS communicated this problem to Mr Fransman and advised that the work could be carried out by using hand augered boreholes and was instructed to continue on this basis.

It should be noted the much of the site was under water during the investigation and drying out of the area only started becoming evident in mid-October 2023.

4.1 Road Investigation Test Pits

Twelve test pits, designated TP-R1 to TP-R12 were dug by hand at the approximate positions shown in Figure 2 to allow soil identification and sampling of the subgrade materials.

An additional two tests, designated TP1* and TP2*, were dug by SGS Matrolab at the intersection of the proposed northern entrance road into the Calcutta Memorial Park and the R304 provincial road. These test pits were dug to confirm the layer works of the R304 for future widening of the lanes for turning off into the cemetery site.

The test pits were dug to final depths ranging between 0.80 and 1.20 mbegl.

The test pits were logged and profiled[1] by an Engineering Geologist and representative soil samples recovered for laboratory testing. The detailed logs are provided in Appendix A and summarised in Table 1 below.

Table 1
Summary of Test Pit Details

TP No.	Depth (mbegl)	Geology
TP-R1	1.00	0.00-0.70m: Slightly moist brown silty fine grained SAND with roots. 0.70-1.00m: Slightly moist greyish brown very stiff silty fine grained sandy CLAY. **Final depth at 1.00m.** **No groundwater seepage.** **No sidewall collapse.**
TP-R2	0.90	0.00-0.70m: Slightly moist brown silty fine grained SAND with roots. 0.70-0.90m: Wet greyish brown very dense medium to large gravelly SAND. **Final depth at 0.90m.** **Groundwater seepage at 0.70m.** **No sidewall collapse.**
TP-R3	0.80	0.00-0.40m: Slightly moist greyish brown silty fine grained sandy CLAY with roots. 0.40-0.80m: Wet greyish brown very stiff medium to large gravelly sandy CLAY. **Final depth at 0.80m.** **Groundwater seepage at 0.40m.** **No sidewall collapse.**
TP-R4	0.80	0.00-0.80m: Slightly moist greyish brown silty fine grained SAND. **Final depth at 0.80m.** **Groundwater seepage at 0.40m.** **Sidewall collapse.**
TP-R5	0.80	0.00-0.40m: Slightly moist greyish brown silty fine grained SAND. 0.40-0.80m: Slightly moist orangey grey very stiff silty CLAY. **Final depth at 0.80m.** **No groundwater seepage.** **No sidewall collapse.**
TP-R6	0.80	0.00-0.80m: Slightly moist greyish brown silty fine grained SAND containing pieces of calcrete. **Final depth at 0.80m.** **Groundwater seepage at 0.50m.** **No sidewall collapse.**
TP-R7	0.80	0.00-0.40m: Wet brown silty fine grained SAND. 0.40-0.80m: Slightly moist orangey grey very stiff silty CLAY. **Final depth at 0.80m.** **Groundwater seepage at 0.20m.** **No sidewall collapse.**

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TP No.	Depth (mbegl)	Geology
TP-R8	0.80	0.00-0.80m: Slightly moist brownish grey silty fine grained SAND. **Final depth at 0.80m.** **Groundwater seepage at 0.60m.** **Sidewall collapse.**
TP-R9	0.80	0.00-0.30m: Slightly moist greyish brown silty fine grained SAND. 0.30-0.80m: Slightly moist greyish brown very stiff silty fine grained sandy CLAY. **Final depth at 0.80m.** **No groundwater seepage.** **No sidewall collapse.**
TP-R10	0.80	0.00-0.30m: Wet greyish brown silty SAND. 0.30-0.80m: Slightly moist greyish brown very stiff silty fine grained sandy CLAY. **Final depth at 0.80m.** **Groundwater seepage at 0.20m.** **No sidewall collapse.**
TP-R11	0.80	0.00-0.80m: Slightly moist greyish brown very stiff silty fine grained sandy CLAY. **Final depth at 0.80m.** **No groundwater seepage.** **No sidewall collapse.**
TP-R12	0.80	0.00-0.30m: Slightly moist greyish brown silty fine grained SAND. 0.30-0.80m: Slightly moist greyish brown very stiff silty fine grained sandy CLAY. **Final depth at 0.80m.** **No groundwater seepage.** **No sidewall collapse.**
TP1* (R304)	1.20	0.00-0.10m: Pre-mixed Asphalt wearing course layer. Bitumen condition: aged. No other distress patterns noted. 0.10-0.26m: Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found. 0.26-0.45m: Moist brown dense uniform gravel silty SAND. Imported SSG layer. 0.45-0.75m: Moist brown dense uniform fine grained SAND. Imported fill layer. 0.75-1.20m: Very moist dark brown dense uniform clayey SAND. Residual layer. **Final depth at 1.20m.** **No groundwater seepage.**
TP2* (R304)	1.20	0.00-0.12m: Pre-mixed Asphalt wearing course layer. Bitumen condition: aged. No other distress patterns noted. 0.12-0.25m: Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found. 0.25-0.45m: Moist brown dense uniform gravel silty SAND. Imported SSG layer. 0.45-0.85m: Moist brown dense uniform fine grained SAND. Imported fill layer. 0.85-1.20m: Very moist dark brown dense uniform clayey SAND. Residual layer. **Final depth at 1.20m.** **No groundwater seepage.**

Note: mbegl = metres below existing ground level





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Plates 21 to 30: Photos of road test pits TP-R1 through TP-R10, dug for the Class 3 roads serving the cemetery area









Plates 31 to 34: TP1 done at the bell mouth area of the intersections of the proposed northern access road for Calcutta Memorial and the R304 connecting Kalpmuts and Stellenbosch









Plates 35 to 38: TP2 done at the bell mouth area of the intersections of the proposed northern access road for Calcutta Memorial and the R304 connecting Klapmuts and Stellenbosch

4.2 Hand Augered Boreholes

Thirty-one hand augered boreholes, designated AH-A1 to AH-A12, AH-B1 to AH-B15 and AH-S1 to AH-S4 were drilled by hand operated auger hand at the approximate positions shown in Figure 2.

The boreholes were advanced to refusal depths ranging between 0.40 and 3.00 metres below existing ground level (mbegl).

The samples recovered from the auger flight were logged[1].and sampled. The detailed logs are attached in Appendix B and summarised in Table 2 below.

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[1] Guidelines for Soil and Rock Logging in South Africa, *Proceedings, Geoterminology Workshop organised by AEG, SAICE and SAIEG*, 1990

Table 2
Summary of Hand Augered Boreholes

AH No.	Depth (mbegl)	Geology
AH-A1	3.00	0.00-0.30m: Slightly moist greyish brown silty fine grained SAND. 0.30-2.20m: Slightly moist greyish orange soft to very stiff silty fine grained sandy CLAY. Alluvium. 2.20-3.00m: Slightly moist orangey brown very stiff silty fine grained slightly clayey SAND containing very small white stones. Residual Shale. **Final depth at 3.00m. Hard to auger.** **No groundwater seepage.**
AH-A2	3.00	0.00-0.30m: Slightly moist greyish brown silty fine grained SAND. 0.30-2.20m; Slightly moist greyish orange soft to very stiff silty fine grained sandy CLAY. 2.20-3.00m: Slightly moist orangey grey very stiff silty fine grained sandy CLAY containing very small white stones. Residual Shale. **Final depth at 3.00m. Hard to auger.** **No groundwater seepage.**
AH-A3	3.00	0.00-0.30m: Slightly moist greyish brown silty fine grained SAND. 0.30-0.90m: Slightly moist greyish orange very stiff silty fine grained sandy CLAY. 0.90-3.00m: Slightly moist orangey grey very stiff medium grained sandy CLAY containing very small white stones. Residual Shale. **Final depth at 3.00m. Hard to auger.** **No groundwater seepage.**
AH-A4	2.40	0.00-0.40m: Dry brownish grey silty fine grained SAND. 0.40-0.90m: Slightly moist greyish orange silty fine grained sandy CLAY. 0.90-2.40m: Slightly moist greyish orange very stiff silty fine grained sandy CLAY containing very small white stones. Residual Shale. **Final depth at 2.40m. Hard to auger.** **No groundwater seepage.**
AH-A5	2.60	0.00-0.50m: Slightly moist brownish grey silty fine grained SAND. 0.50-1.50m: Slightly moist greyish orange silty fine grained sandy CLAY. Residual Shale. 1.50-2.60m: Slightly moist greyish orange silty fine grained sandy CLAY containing very small white stones. Residual Shale. **Final depth at 2.60m.** **Groundwater seepage at 1.90m.**
AH-A6	1.80	0.00-1.80m: Slightly moist brownish grey silty fine grained SAND. **Final depth at 1.80m.** **Groundwater seepage at 0.80m.** **Sidewall collapse.**
AH-A7	2.50	0.00-0.50m: Slightly moist brownish grey silty fine grained SAND. 0.50-0.90m: Slightly moist orangey grey silty fine grained SAND containing ferricrete nodules. 0.90-2.50m: Slightly moist orangey grey very stiff silty fine grained clayey SAND containing small white stones. Alluvium. **Final depth at 2.50m. Hard to auger.** **No groundwater seepage.**
AH-A8	0.90	0.00-0.60m: Dry brownish grey silty fine grained SAND. 0.60-0.90m: Slightly moist orangey grey silty fine grained SAND containing abundant ferricrete nodules. **Final depth at 0.90m. Refusal on ferricrete.** **No groundwater seepage.**
AH-A9	1.00	0.00-1.00m: Wet brownish grey silty fine grained SAND. **Final depth at 1.00m.** **Groundwater on surface.** **Auger collapse as position is flooded.**
AH-A10	2.40	0.00-0.70m: Slightly moist brownish grey silty fine and medium grained SAND. Colluvium. 0.70-2.40m: Slightly moist orangey grey soft to very stiff medium grained sandy CLAY containing ferricrete nodules. Ferruginized Horizon. **Final depth at 2.40m. Refusal on ferricrete.** **Groundwater seepage at 0.40m.**
AH-A11	0.40	0.00-0.40m: Dry brownish grey loose silty fine grained SAND containing ferricrete nodules. Hardpan Ferricrete. **Final depth at 0.40m. Refusal on ferricrete.** **No groundwater seepage.**
AH-A12	0.00	Auger not done. Hardpan Ferricrete at surface. **Refusal due to abundant ferricrete nodules / bedrock.**

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AH No.	Depth (mbegl)	Geology
AH-B1	1.00	0.00-1.00m: Slightly moist brownish grey silty fine grained SAND. **Final depth at 1.00m. Refusal on boulders/calcrete.** **Groundwater seepage at 0.50m.**
AH-B2	3.00	0.00-0.60m: Moist greyish brown silty fine grained SAND. 0.60-3.00m: Moist orangey yellow soft to very stiff silty CLAY. Residual Shale. **Final depth at 3.00m.** **Groundwater seepage at 0.50m.** **No sidewall collapse.**
AH-B3	3.00	0.00-0.80m: Moist greyish brown silty fine grained SAND. 0.80-3.00m: Moist orangey yellow soft to very stiff silty fine grained sandy CLAY. Residual Shale. **Final depth at 3.00m.** **Groundwater seepage at 0.40m.** **No sidewall collapse.**
AH-B4	3.00	0.00-0.50m: Slightly moist brown silty fine grained SAND. 0.50-1.40m: Moist greyish brown soft to very stiff silty fine grained sandy CLAY. Residual Shale. 1.40-2.50m: Slightly moist greyish brown silty fine grained SAND containing tiny white particles. Residual Shale. 2.50-3.00m: Slightly moist orangey grey very stiff silty CLAY. Residual Shale. **Final depth at 3.00m. No refusal.** **No groundwater seepage.**
AH-B5	1.40	0.00-1.40m: Wet brownish grey silty fine grained SAND containing ferricrete nodules. **Final depth at 1.40m.** **Groundwater seepage at 1.40m.** **Sidewall collapse due to water.**
AH-B6	NA	Position flooded.
AH-B7	2.50	0.00-0.20m: Wet greyish brown silty fine grained SAND. 0.20-1.20m: Moist orangey grey silty fine grained sandy CLAY. 1.20-2.10m: Slightly moist orangey grey very dense silty fine grained clayey SAND. Residual Sandstone. 2.10-2.50m: Slightly moist orange grey very dense silty fine grained clayey SAND. Residual Sandstone. **Final depth at 2.50m. Auger refusal.** **Groundwater seepage at 0.20m.**
AH-B8	2.80	0.00-1.10m: Slightly moist brownish grey silty fine grained SAND containing small round calcrete stones. 1.10-2.00m: Slightly moist orangey grey very stiff silty fine grained sandy CLAY. 2.00-2.80m: Slightly moist to wet light greyish brown silty fine grained sandy CLAY. Residual Shale. **Final depth at 2.80m. Auger refusal.** **Groundwater seepage at 1.10m.**
AH-B9	1.90	0.00-1.00m: Slightly moist brownish grey silty fine grained SAND containing small round calcrete stones. 1.00-1.90m: Moist orangey grey silty fine grained sandy CLAY. Residual Shale. **Final depth at 1.90m.** **Groundwater seepage at 1.00m.** **Sidewall collapse.**
AH-B10	1.60	0.00-0.40m: Wet greyish brown silty fine grained SAND. 0.40-1.20m: Moist orangey grey silty fine grained sandy CLAY containing very small white particles. Residual Shale. 1.20-1.60m: Wet brownish grey silty fine grained sandy CLAY. Residual Shale. **Final depth at 1.60m.** **Groundwater seepage at 0.40m.** **Sidewall collapse at 1.20m.**
AH-B11	1.50	0.00-0.30m: Wet greyish brown medium grained SAND. 0.30-1.20m: Moist orangey grey soft to very stiff silty fine grained sandy CLAY. 1.20-1.50m: Slightly moist orange silty fine grained SAND. Ferruginized Horizon. **Final depth at 1.50m. Auger refusal on ferricrete.** **Groundwater seepage at 0.30m.**
AH-B12	1.40	0.00-0.30m: Slightly moist brownish grey silty fine grained SAND. 0.30-0.90m: Slightly moist greyish brown very dense silty fine grained sandy CLAY. 0.90-1.40m: Slightly moist orangey grey silty fine grained sandy CLAY containing ferricrete nodules. **Final depth at 1.40m. Auger refusal.** **No groundwater seepage.**

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AH No.	Depth (mbegl)	Geology
AH-B13	3.00	0.00-1.30m: Slightly moist brown silty fine grained SAND. 1.30-3.00m: Slightly moist orangey grey soft to very stiff silty fine grained sandy CLAY. Residual Shale. **Final depth at 3.00m. No refusal.** **Groundwater seepage at 0.60m.**
AH-B14	1.50	0.00-0.50m: Wet greyish brown silty fine grained SAND. 0.50-0.80m: Moist greyish brown silty fine grained sandy CLAY. 0.80-1.50m: Moist orange silty CLAY containing ferricrete nodules. Ferruginized Horizon. **Final depth at 1.50m. Auger refusal.** **Groundwater seepage at 0.50m.**
AH-B15	1.30	0.00-0.50m: Wet greyish brown silty fine grained SAND. 0.50-1.00m: Moist orangey grey silty fine grained sandy CLAY. 1.00-1.30m: Moist orange silty CLAY containing ferricrete nodules. **Final depth at 1.30m. Auger refusal.** **Groundwater seepage at 0.50m.**
AH-S1	1.50	0.00-0.50m: Wet greyish brown silty fine grained SAND. 0.50-1.50m: Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Alluvium. **Final depth at 1.50m. Auger refusal.** **Groundwater seepage at 0.30m.**
AH-S2	1.50	0.00-0.30m: Wet greyish brown silty fine grained SAND. 0.30-1.50m: Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Residual Shale. **Final depth at 1.50m. Auger refusal.** **Groundwater seepage at 0.30m.**
AH-S3	1.50	0.00-0.30m: Wet greyish brown silty fine grained SAND. 0.30-1.00m: Slightly moist greyish brown silty fine grained sandy CLAY. 1.00-1.50m: Slightly moist orangey brown silty fine grained sandy CLAY with ferricrete nodules. Ferruginized Horizon. **Final depth at 1.50m. Auger refusal.** **Groundwater seepage at 0.30m.**
AH-S4	1.90	0.00-0.30m: Wet greyish brown silty fine grained SAND with roots. 0.30-1.00m: Slightly moist greyish brown silty fine grained sandy CLAY. 1.00-1.90m: Slightly moist brownish grey silty fine grained SAND with very small calcrete pieces. **Final depth at 1.90m. Auger refusal.** **Groundwater seepage at 1.00m.**

Note: mbegl = metres below existing ground level

4.3 Dynamic Cone Penetrometer (Light) or DPL Tests

Thirty-four Dynamic Cone Penetrometer (light), or DPL, tests, designated DPL CAL-1 to CAL-16, CAL-28 to CAL-31, CAL-35 to CAL-37 and CAL-40 to CAL-50 were carried out at the approximate positions shown in Figure 2 to determine the consistency of the soils underlying the site and possible depth to bedrock or a competent founding substrate.

The DPL test comprises a 25mm diameter solid steel retractable cone driven vertically into the ground using a 10 kg hammer dropped through a height of 550mm. The resistance to penetration is measured in terms of number of blowcounts per 300mm advance. It should be noted that material on which DPL tests refuse cannot be accurately determined, since refusal may occur on very dense, cemented or gravelly horizons, as well as boulders and obstructions in the fill. Due to the nature of the test no soil samples are recovered from the DPL equipment.

The DPL's were advanced to refusal depths ranging between 1.80 and 4.50 mbegl.

The results of the DPL tests, comprising plots of blowcount per 300mm advance and inferred soil consistency against depth, are attached in Appendix C and summarised in Table 3 below.

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Table 3
Summary of DPL Test Results

DPL No.	Depth (mbegl)	Comments
DPL CAL-1	1.80	Very loose to 0.60m Medium dense to 1.20m Stiff to 1.80m Refusal
DPL CAL-2	3.60	Very loose to 0.60m Loose to 1.20m Soft to 1.50m Firm to 1.80m Stiff to 2.70m Very stiff to 3.60m Refusal
DPL CAL-3	2.70	Loose to 0.30m Medium dense to 1.20m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-4	2.70	Loose to 1.20m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL-CAL-5	2.70	Very loose to 0.90m Medium dense to 1.20m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-6	1.80	Very loose to 0.30m Loose to 0.60m Medium dense to 1.20m Stiff to 1.50m Very stiff to 1.80m Refusal
DPL CAL-7	2.70	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-8	3.60	Very loose to 0.60m Medium dense to 1.20m Firm to 1.50m Stiff to 3.00m Very stiff to 3.60m Refusal
DPL CAL-9	3.60	Very loose to 0.90m Loose to 1.20m Soft to 1.50m Firm to 1.80m Stiff to 3.30m Very stiff to 3.60m Refusal
DPL CAL-10	2.70	Very loose to 0.30m Loose to 0.60m Medium dense to 1.20m Stiff to 1.50m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL-CAL-11	3.60	Very loose to 0.30m Loose to 1.20m Firm to 1.80m Stiff to 3.60m Refusal

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DPL No.	Depth (mbegl)	Comments
DPL CAL-12	3.60	Very loose to 0.30m Loose to 1.20m Soft to 1.80m Firm to 2.40m Stiff to 3.30m Very stiff to 3.60m Refusal
DPL CAL-13	3.60	Very loose to 0.30m Loose to 0.90m Medium dense to 1.20m Firm to 1.80m Stiff to 3.60m Refusal
DPL CAL-14	2.70	Very loose to 0.30m Loose to 0.90m Medium dense to 1.20m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-15	4.20	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Firm to 2.70m Stiff to 3.90m Very stiff to 4.20m Refusal
DPL CAL-16	3.60	Very loose to 0.60m Medium dense to 1.20m Firm to 2.40m Stiff to 3.30m Very stiff to 3.60m Refusal
DPL-CAL-28	3.60	Very loose to 0.30m Loose to 0.60m Medium dense to 1.20m Firm to 2.10m Stiff to 3.60m Refusal
DPL CAL-29	1.80	Very loose to 0.30m Loose to 0.60m Medium dense to 0.90m Dense to 1.20m Very stiff to 1.80m Refusal
DPL CAL-30	2.70	Started at 0.60m Loose to 0.90m Medium dense to 1.20m Firm to 1.50m Stiff to 2.10m Very stiff to 2.70m Refusal
DPL CAL-31	2.70	Started at 0.60m Very loose to 0.90m Loose to 1.20m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-35	2.70	Very loose to 0.60m Loose to 1.20m Firm to 1.50m Stiff to 2.40m Very stiff to 2.70m Refusal

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DPL No.	Depth (mbegl)	Comments
DPL CAL-36	1.80	Very loose to 0.30m Loose to 0.60m Medium dense to 0.90m Dense to 1.20m Stiff to 1.50m Very stiff to 1.80m Refusal
DPL-CAL-37	1.80	Very loose to 0.30m Loose to 0.60m Medium dense to 0.90m Dense to 1.20m Stiff to 1.50m Very stiff to 1.80m Refusal
DPL CAL-40	1.80	Very loose to 0.60m Loose to 0.90m Dense to 1.20m Stiff to 1.50m Very stiff to 1.80m Refusal
DPL CAL-41	2.70	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL CAL-42	2.70	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Firm to 1.80m Stiff to 2.70m Refusal
DPL CAL-43	2.70	Very loose to 0.30m Loose to 0.60m Medium dense to 1.20m Firm to 1.80m Stiff to 2.40m Very stiff to 2.70m Refusal
DPL-CAL-44	4.20	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Soft to 1.50m Firm to 2.40m Stiff to 4.20m Refusal
DPL CAL-45	3.00	Very loose to 0.30m Loose to 0.90m Medium dense to 1.20m Stiff to 3.00m Refusal
DPL CAL-46	4.50	Very loose to 0.30m Loose to 0.90m Medium dense to 1.20m Firm to 2.10m Stiff to 4.50m Refusal
DPL CAL-47	2.70	Very loose to 0.60m Loose to 0.90m Medium dense to 1.20m Firm to 1.50m Stiff to 2.70m Refusal
DPL CAL-48	2.70	Very loose to 0.30m Medium dense to 1.20m Stiff to 2.70m Refusal

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DPL No.	Depth (mbegl)	Comments
DPL CAL-49	1.80	Very loose to 0.30m Loose to 0.60m Medium dense to 0.90m Loose to 1.20m Firm to 1.50m Stiff to 1.80m Refusal
DPL-CAL-50	1.80	Very loose to 0.60m Loose to 0.90m Dense to 1.20m Stiff to 1.50m Very stiff to 1.80m Refusal

Note: mbegl = metres below existing ground level

5. SITE GEOLOGY

5.1 General

The regional geology of the area is shown in the extract presented in Figure 3 and taken from the 1:250 000 Cape Town 3318 geological map prepared by the Council for Geosciences.

The site is underlain by a mantle of transported and residual soils overlying the weathered rocks (qreywacke, phyllite and quartzitic sandstone) of the Tygerberg Formation, Malmesbury Group.

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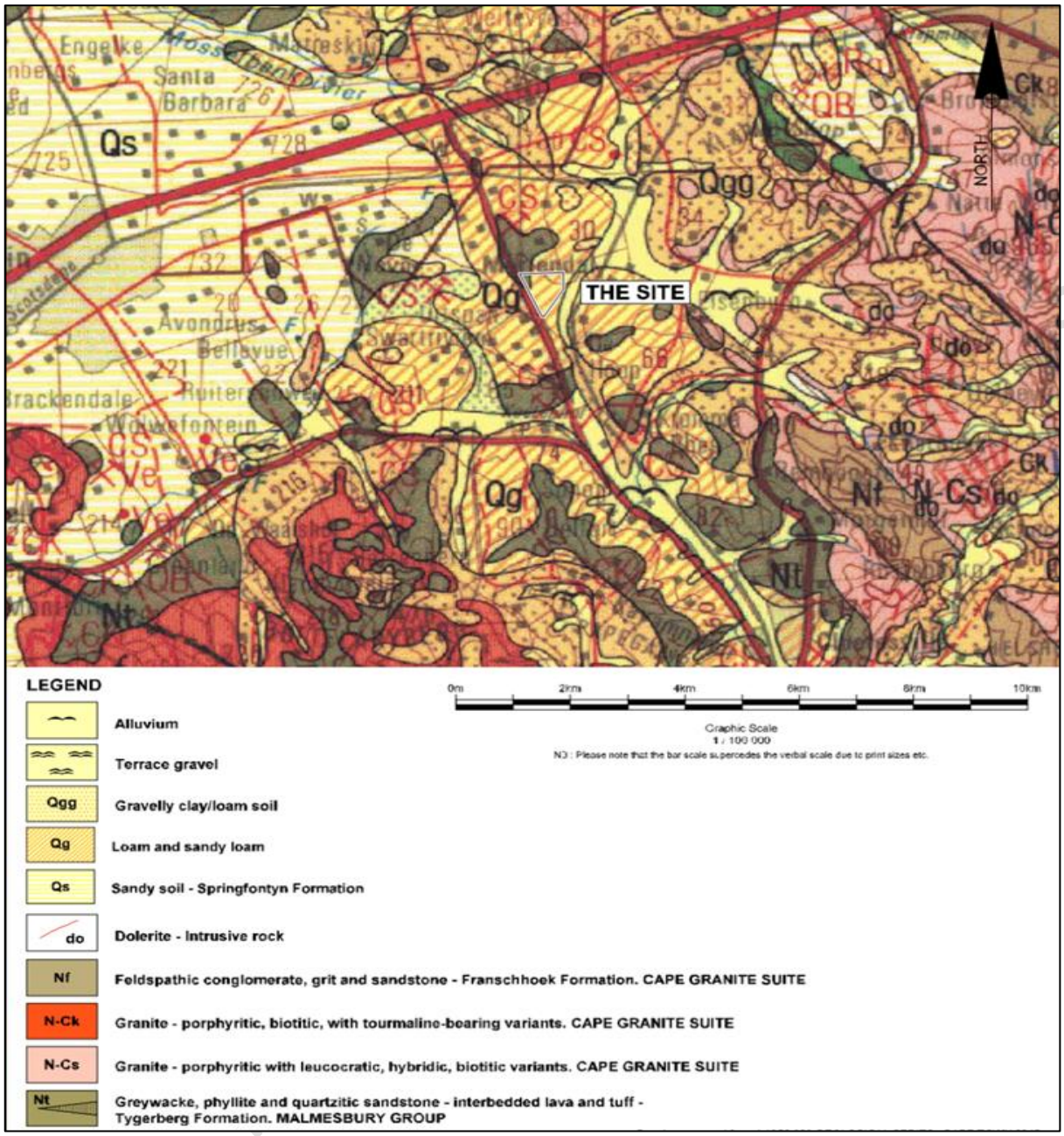


Figure 3: General Geology of the area

5.2 Site Geology

In general, the site is underlain, by a relatively thick mantel of transported (colluvium and alluvium), pedogenic (in places) and residual soils derived from the insitu weathering of shale and sandstone bedrock.

The soil geology is as follows:

- Colluvial soils comprising brown loose to medium dense fine to medium grained calcareous SAND or SAND with plant roots over the top 0.4m to 0.7m, overlying;
- Cream to grey brown medium dense to dense weakly cemented to cemented CALCRETE (in some areas) and Ferricrete (in other areas) overlying;
- Grey brown to olive brown stiff to very stiff slightly shattered sandy CLAY (residual shale soils), OR
- Olive brown to grey brown to light grey to dark grey dense to very dense gravelly SAND (residual sandstone).



Plates 39 to 42: Typical hardpan Ferricrete (top) and Calcrete Horizons encountered beneath some parts of the site

Sandstone bedrock was encountered only in one test pit dug; for the most part the site is underlain by a thick mantle of soils greater than 2.5m thick on average.

The detailed site geology, as inferred from the results of the fieldwork is provided in Figure 4 at the back of this report.

6. GROUNDWATER

Groundwater seepage was encountered in some test positions beneath the site at an average depth of 0.50m, in the range 0.50 to 1.00 mbegl. It is considered that these groundwater levels represent the ingress by percolation of surface or storm-water through the shallow, relatively highly permeable colluvial soils as a result of the September 2023 flood event, i.e. a perched groundwater seepage zone resting on the underlying clayey horizons. rather than a deeper or more permanent groundwater level, This is supported by the results of the 2018 geotechnical investigation in which no groundwater was recorded in any of the test pits put down.

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Table 4
Summary of Groundwater Seepage

AH/TP No.	Comments
AH-A5	• Groundwater seepage at 1.90m
AH-A6	• Groundwater seepage at 0.80m • Auger hole collapse
AH-A9	• Groundwater seepage on surface • Auger hole collapse
AH-A10	• Groundwater seepage at 0.40m
AH-B1	• Groundwater seepage at 0.50m
AH-B2	• Groundwater seepage at 0.50m • No sidewall collapse.
AH-B3	• Groundwater seepage at 0.40m • No sidewall collapse.
AH-B7	• Groundwater seepage at 0.20m
AH-B8	• Groundwater seepage at 1.10m
AH-B9	• Groundwater seepage at 1.00m • Auger hole collapse
AH-B10	• Groundwater seepage at 0.40m • Auger hole collapse at 1.20m
AH-B11	• Groundwater seepage at 0.30m
AH-B13	• Groundwater seepage at 0.60m
AH-B14	• Groundwater seepage at 0.50m
AH-B15	• Groundwater seepage at 0.50m
AH-S1	• Groundwater seepage at 0.30m
AH-S2	• Groundwater seepage at 0.30m
AH-S3	• Groundwater seepage at 0.30m
AH-S4	• Groundwater seepage at 1.00m
TP-R2	• Groundwater seepage at 0.70m • No sidewall collapse.
TP-R3	• Groundwater seepage at 0.40m • No sidewall collapse.
TP-R4	• Groundwater seepage at 0.40m • Sidewall collapse.
TP-R6	• Groundwater seepage at 0.50m • No sidewall collapse.
TP-R7	• Groundwater seepage at 0.20m • No sidewall collapse.
TP-R8	• Groundwater seepage at 0.60m • Sidewall collapse
TP-R10	• Groundwater seepage at 0.20m • No sidewall collapse.

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Some variation of the groundwater levels will be evident from season to season; they could be expected to rise during or immediately after heavy rainfall events. Given the recent heavy rainfalls in the general Cape Town area, the groundwater seepage levels are considered to be at their seasonal high.

7. LABORATORY TESTING

7.1 Materials Usage

In order to classify materials and to assess their suitability for a cemetery development the following laboratory testing was conducted on soils taken from the test pits.

- Foundation Indicator tests
- Road Indicator tests
- Modified AASHTO dry density tests
- California Bearing Ratio tests
- Chemical analysis of soils, comprising:
- Organic Content
- Electrical Conductivity and pH

The results of the laboratory and in-situ tests are provided in Appendix D and summarised in Table 5 and Table 6 below.

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Table 5
Summary of Results of Particle Size Distribution Analysis and Atterberg Limit Determinations

AH/TP No.	Depth (m)	Description	Particle Size %				Atterberg Limits			GM	Modified AASHTO		CBR Values (%) Compaction MDD (%)					Swell (%)	Classification & Activity
			Clay	Silt	Sand	Gravel	LL	PI	LS %		MDD (kg/m³)	OMC %	90	93	95	98	100		
AH-A7	0.00-0.50	Slightly moist brownish grey silty fine grained SAND. Transported (hillwash)	3.1	3.8	74.4	18.7	-	NP	0.0	1.38									A-2-4(0); SC; Low; Type B Gravel Wearing Course
	0.50-0.90	Slightly moist orangey grey silty fine grained SAND containing ferricrete nodules. Ferruginized Horizon	2.7	3.0	39.0	55.3	-	NP	0.0	2.14									A-1-a(0); SW-SC; Low; Type B Gravel Wearing Course
AH-B4	0.50-1.40	Moist greyish brown soft to very stiff silty fine grained sandy CLAY. Residual Shale	32.1	6.9	58.9	2.1	44	16	8.0	0.71									A-7-6(7); ML; Low; Type D Gravel Wearing Course
	1.40-2.50	Slightly moist greyish brown silty fine grained SAND containing tiny white particles. Residual Shale	9.8	2.5	84.5	3.3	29	12	6.0	1.23									A-2-6(0); SC; Low; Type A Gravel Wearing Course
AH-B7	1.20-2.10	Slightly moist orangey grey very dense silty fine grained sandy CLAY. Residual Shale.	7.0	3.1	88.6	1.4	-	SP	0.5	1.19									A-2-4(0); SC; Low; Type B Gravel Wearing Course
AH-B8	1.10-2.00	Slightly moist orangey grey very stiff silty fine grained sandy CLAY. Residual Shale	17.9	7.7	66.9	7.5	18	8	4.0	0.87									A-4(1); SC; Low; Type A Gravel Wearing Course
AH-S2	0.00-0.30	Wet greyish brown silty fine grained SAND. Transported (hillwash)	12.4	0.7	85.7	1.2	-	SP	1.0	0.78									A-4(1); SC; Low; Type B Gravel Wearing Course
	0.30-1.50	Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Residual shale	32.3	3.6	62.7	1.5	33	12	6.0	0.78									A-6(3); SC; Low; Type D Gravel Wearing Course
TP-R1	0.00-0.70	Slightly moist brown silty fine grained SAND with roots. Transported (hillwash)	37		63	0.0	-	NP	0.0	0.78	1850	14.3	2.5	3.0	3.3	3.8	4.2	0.00	A-4(0); SC; Less than G9 (COLTO); will meet G10 quality (TRH14:1985); Type B Gravel Wearing Course
	0.70-1.00	Slightly moist greyish brown very stiff silty fine grained sandy CLAY. Alluvium	38		62	0.0	19	6	3.0	0.74	1858	13.2	2.8	3.1	3.4	3.9	4.2	0.15	A-4(1); SM-SC; Type A Gravel Wearing Course

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AH/TP No.	Depth (m)	Description	Particle Size %				Atterberg Limits			GM	Modified AASHTO		CBR Values (%) Compaction MDD (%)					Swell (%)	Classification & Activity
			Clay	Silt	Sand	Gravel	LL	PI	LS %		MDD (kg/m³)	OMC %	90	93	95	98	100		
TP-R5	0.00-0.40	Slightly moist greyish brown silty fine-grained SAND. Ferruginized Horizon.	7		22	71	26	10	5.0	2.54	2304	7.1	7.1	11	15	24	33	0.13	A-2-6(0); SP-SC; G8; Type B Gravel Wearing Course
	0.40-0.80	Slightly moist orangey grey very stiff silty CLAY. Alluvium	61		13	26	40	14	7.0	0.98	1759	13.5	0.5	0.8	1.0	1.5	1.9	0.20	A-7-6(7); ML; Anticipate less than G9 quality; Type D Gravel Wearing Course
TP1 (SGS)	0.10-0.26	Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found.	8		29	63	-	SP	0.5	2.35	2326	5.7	19	34	49	86	125	0.00	A-1-a(0); GP-GC; G5; Type B Gravel Wearing Course
	0.26-0.45	Moist brown dense uniform gravel silty SAND. Imported SSG layer.	17		42	41	15	4	2.0	1.87	2194	6.7	12	20	28	47	66	0.00	A-1-b(0); SM-SC; G6; Type B Gravel Wearing Course
	0.45-0.75	Moist brown dense uniform fine grained SAND. Imported fill layer.	19		70	11	-	NP	0.0	1.35	2055	11.5	1.5	1.8	1.9	2.2	2.4	0.00	A-2-4(0); SC; Less than G9; Type B Gravel Wearing Course
	0.75-1.20	Very moist dark brown dense uniform clayey SAND. Insitu Subgrade	17		55	28	8	5	2.5	1.72	2164	7.8	1.1	3.7	8.0	26	57	0.13	A-1-b(0); SC; Less than G9; Type B/E Gravel Wearing Course
RESULTS FROM 2018 REPORT																			
TP1	0.30-0.50	Dry light brown to cream brown loose intact fine grained calcareous SAND. Transported – hillwash/ colluvium	5	6	88	1	0	NP	0	1.11									A-3(0); SW; Low heave; Type B Gravel Wearing Course
	1.60-1.90	Slightly moist olive brown stiff to very stiff slightly shattered sandy CLAY, Residual Shale	31	3	61	4	23	11	6.0	0.89									A-2-6(0); SL; Medium heave; Type D Gravel Wearing Course
TP4	0.60-2.40	Slightly moist grey brown firm to stiff slightly shattered sandy CLAY. Residual Shale	40	30	30	0	28	14	7.0	0.37									A-2-6(7); SL; High heave; Type D Gravel Wearing Course

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LL	-	Liquid Limit	GM	-	Grading Modulus	Classification in Terms of:	USPRA[2]
PI	-	Plasticity Index	MDD	-	Maximum Dry Density		Unified Soil Classification System[3]
LS	-	Linear Shrinkage	OMC	-	Optimum Moisture Content		Van Der Merwe (1964)[4]
							COLTO[5]
							TRH20 (1990), Suitability for gravel wearing course[6]
							Type A Erodible materials
							Type B Ravels & corrugates
							Type C Ravels
							Type D Slippery when wet
							Type E Good but may be dusty

[2] US Public Roads Administration Classification (Modified from Allen 1945)
[3] ASTM D 2487-06 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). June 2006
[4] D.H. Van Der Merwe (1964). The Prediction of Heave from the Plasticity Index and Percentage Clay Fraction of Soils. The Civil Engineer, pp 103-107
[5] COLTO (1998) – Commission of Land Transport Officials. Guidelines for Road and Bridge Construction
[6] TRH 20 (1990) - The Structural Design, Construction and Maintenance of Unpaved Roads, Committee of State Road Authorities

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Table 6
Summary of results of Chemical Analysis of Soil Samples: Electrical Conductivity, pH tests and Organic Content

AH/TP No.	Depth (m)	Description	Electrical Conductivity, Ec (S/m)	pH Value	Organic Content	Classification[7]
AH-A1	0.00-0.30	Slightly moist greyish brown silty fine grained SAND.			3.6	Normal soil range: between 3 and 6%
	0.30-2.20	Slightly moist greyish orange soft to very stiff silty fine grained sandy CLAY.	0.0860	6.89		• Highly corrosive • Slightly acidic
AH-A10	0.70-2.40	Slightly moist orangey grey soft to very stiff medium grained sandy CLAY containing ferricrete nodules.	0.1120	6.88		• Highly corrosive • Slightly acidic
AH-B4	0.00-0.50	Slightly moist brown silty fine grained SAND.			3.8	Normal soil range: between 3 and 6%
AH-B7	0.20-1.20	Moist orangey grey silty fine grained sandy CLAY.			7.1	Normal soil range: between 3 and 6%
AH-B8	0.00-1.10	Slightly moist brownish grey silty fine grained SAND containing small round calcrete stones.			7.8	Normal soil range: between 3 and 6%
AH-S2	0.30-1.50	Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Residual.	0.0530	6.4		• Corrosive • Slightly acidic
AH-S4	0.30-1.00	Slightly moist greyish brown silty fine grained sandy CLAY.			8.8	Normal soil range: between 3 and 6%
TP-R2	0.00-0.70	Slightly moist brown silty fine grained SAND with roots.	0.0300	6.9		• Moderately corrosive • Moderately acidic
	0.70-0.90	Wet greyish brown very dense medium to large gravelly SAND.	0.0400	7.1		• Corrosive • Slightly alkaline
TP1 (SGS)	0.10-0.26	Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found.	0.0100	8.73		• Moderately corrosive • Strongly acidic
	0.26-0.45	Moist brown dense uniform gravel silty SAND. Imported SSG layer.	0.0150	7.35		• Moderately corrosive • Slightly alkaline
	0.45-0.75	Moist brown dense uniform fine grained SAND. Imported fill layer.	0.0230	6.92		• Moderately corrosive • Slightly acidic
	0.75-1.20	Very moist dark brown dense uniform clayey SAND. Residual layer.	0.0300	6.85		• Moderately corrosive • Slightly acidic
TP2 (SGS)	0.85-1.20	Very moist dark brown dense uniform clayey SAND. Residual layer.	0.0320	6.88		• Moderately corrosive • Slightly acidic

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[7] Stapelberg (2005) The Engineering Geology of Cape Town & Environs, South Africa

8. DEVELOPMENT RECOMMENDATIONS

8.1 Proposed Calcutta Memorial Park Development

A summary of the proposed development of the proposed Calcutta Memorial Park is provided below:

- Roads
  The cemetery will require an access from the R304 Provincial Road. Class 3 and Class 5 roads will be designed to serve the Cemetery site. All roads will be surfaced with combination of asphalt and block paving with formal stormwater system.

- Stormwater
  The development traverses a river tributary and will play a major role in the landscaping design of the site. This forms a natural low point on site and will be ideal for attenuation which can be used for irrigation purposes.

  The aim is to optimise stormwater run-off volumes and intensity and promote groundwater recharge.

- Water
  A 160mm diameter or 200mm diameter pipeline running along the R304 Provincial Road and the Class 3 road will provide water to the site.

- Sewer
  As there is no nearby sewer network in place that drains to a municipal Wastewater Treatment Works (WWTW), sewage generated by the development will be handled via conservancy tanks located near buildings and accommodation.

- Earthworks Platforms
  The proposed site will be shaped to ensure overland stormwater flow is directed to the attenuation ponds and the wetland area on the western side of the site.

- Building Work
  The proposed building works for the Calcutta Memorial Park encompasses the following structures and areas:

  - A traditional grave area which allows for whole-body burials in traditional underground graves with Headstone
  - An informal zone. This zone is non-traditional burial sites with a memorial park/landscaped park/garden area with law plaques/or a tree of remembrance/tree as headstone. The zone will incorporate the outspan in the southern section of the site and wetland buffer zones of 25m to 30m for watercourses.
  - A columbarium and defined zone. These zones are non-traditional burial sites that comprise formalized/built, above ground areas where either individual or group burials will take place. These areas include structures with niche/small spaces for placing cremated/legally reduced remains in urns or other approved containers, memorial walls with plaques of remembrance, floor plaques/flat headstones and mausoleums or crypts.
  - A defined zone that includes an area for family and group burials and a hero's acre.
  - Boardwalks and wooden bridges.
  - Gabion lined drift.
  - An irrigation reservoir.
  - A memorial park centre and service zone consisting of:
    - Chapel
    - Offices and a storage area
    - Ablution facilities
    - A workshop
    - A plant/sampling nursery
    - Staff accommodation, and
    - A gathering space.

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8.2 Materials Classification and Usage

It is expected that the top, approximate 1.0 to 1.5m of the soil profile will yield the materials to be used in the construction of earthworks platforms, roads, parking and paved areas. The classification and recommended usage is summarised in Table 7 below.

Table 7
In situ Materials Classification and Usage

Material	Description	Classification Details	Recommended Use and Subgrade Treatment
Transported (colluvium or hillwash)	Brownish grey silty fine and medium grained SAND to gravelly SAND. Transported (Hillwash)	Clay & Silt = 6.9 to 37% Sand = 22 to 88% Gravel = 0 to 71% LL = 0 to 26 PI = NP to 10 LS = 0 to 5.0 GM = 0.78 to 2.54 MDD = 850 to 2034 OMC = 7.1 to 14% CBR = <3 @ 90% MDD CBR = 3 @ 93% MDD CBR = 3 @ 95% MDD CBR Swell = 0.0 to0.13% @ 100% MDD Classifies in the range A-3(0) to A-2-4(0); SC to SW; G10 (TRH14); Less than G9; Low heave potential;	Large variability in quality can be expected, however, generally suitable for use as general fill in the construction of roads, paved and parking areas. If used as gravel wearing course will be erodible, dusty and forms corrugations (Type B). Suitable for use as pipe bedding for specific pipeline types: flexible pipes such as uPVC, GRP, HDPE, as well as steel and ductile iron.
Ferruginised transported soils	Orange brown moderately ferruginised and cemented slightly clayey gravelly SAND with occasional ferricrete gravel and cobbles.	Clay & Silt = 5.7 to 7% Sand = 22 to 39% Gravel = 55.3 to 77% LL = 0 to 26 PI = NP to 10 LS = 0 to 5.0 GM = 2.14 to to 2.54 MDD =1850 to 2034 OMC = 7.1 to 14% CBR = 7.1 @ 90% MDD CBR = 7.1 @ 93% MDD CBR = 15 @ 95% MDD CBR Swell = 0.13% @ 100% MDD Classifies in the range A-2-6(0) to A-1-a(0); SW-SC to SP-SC; G8 (COLTO); Low heave potential;	Some variability in quality can be expected depending on degree of ferruginization, however, fair to very good subgrade material suitable (average G8) for use as selected layer materials in the construction of roads, paved and parking areas. Material should be selected for use in selected layer construction for road, parking and paved areas. If used as gravel wearing course will be close to the ideal (Type E).
Alluvium	Greyish brown mottled yellow sandy CLAY to clayey SAND.	Clay & Silt = 12.3 to 61% Sand = 13 to 84.5% Gravel = 0 to 26% PI = 6 to 16 GM = 0.71 to 0,98 Classifies as A-4(1) to A-7-6(7); SC, AM-SC; ML; Low to medium heave potential; Anticipate less than G9 (COLTO), marginal G10 (TRH14)	Anticipate poor to very poor subgrade material (i.e. less than G9 quality). This material should be cut to spoil or used for landscaping use. If used as gravel wearing course will ravel and corrugate, slippery when wet (Types B and D). Will be suitable for use in earth embankments or walls for dam, stormwater and sewage pond construction. Compaction of these materials to 98%MDD reduces the permeability coefficient further to between 10^{-7} m/sec and10^{-8} m/sec, rendering them *impervious*[8]

[8] SANCOLD – SA convention on Large Dams (2012), pp108.

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Material	Description	Classification Details	Recommended Use and Subgrade Treatment
Residual Shale	Dry brownish grey Sandy CLAY to clayey SAND.	Clay& Silt; 10.1 to 70% Sand = 30 to 88.4% Gravel = 0.0 to 7.5% PI = SP to 14 GM = 0.37 to 1.19 Classifies as A-4(1) to A-2-6(7); SC; Low to medium heave potential; Anticipate less than G19	Anticipate poor to very poor subgrade material (i.e. less than G9 quality). This material should be cut to spoil or used for landscaping use. If used as gravel wearing course will ravel and corrugate, slippery when wet (Types B and D). Will be suitable for use in earth embankments or walls for dam, stormwater and sewage pond construction. Compaction of these materials to 98%MDD reduces the permeability coefficient further to between 10^{-7} m/sec and10^{-8} m/sec, rendering them *impervious.*

8.3 Soil Corrosivity and pH

From the results of the chemical analyses (pH and Ec) in Table 6, the chemical characteristics of the insitu soils must be considered in the design of concrete foundations, buried steel and concrete pipes, and other infrastructure.

The soils range from moderately corrosive to corrosive and slightly acidic to slightly alkaline in nature. Galvanising of buried steel work and pipes, and minimum concrete cover requirements of 35mm should be observed.

It is recommended that the suppliers of the products under consideration be consulted in this regard.

8.4 Organic Content

From the results of the chemical analyses in Table 6, the Soil Organic Content of the insitu soils have an average value of 5.2%, in the range 3.6 to 8.8%. This matches the range for normal agricultural loamy (evenly proportioned clay-silt-sand) soils, which is between 3 and 6%

8.5 Excavations

8.5.1 Bulk and Trench Excavations

The depths to which Soft Excavation may be expected beneath the site is shown by the final depths of the Test Pits, Augered Boreholes and DPL tests. Generally, Soft Excavation[9], to an average depth of 2.9m, in the range 1.8 to 4.5m below existing ground level is achievable beneath the site. Occasional, localised sandstone pinnacles should be expected on the southeastern part of the site which may require Intermediate to Hard Excavation.

It is recommended that all bulk excavations should have slopes not steeper than 1V:2H or be shored for their full depth.

8.5.2 Grave Excavations

The required depth for adult graves as defined by the 2011 By-Law of Stellenbosch Municipality is 2.4m. Generally, excavation of the soils classifies as Soft Excavation, to the full depth achieved by the geotechnical investigation. Localised sandstone pinnacles were encountered in Area B, however, the occurrence of similar shallow rock areas cannot be entirely discounted.

[9] SANS634:2012: Geotechnical Investigations for Townships: pp16, Table 5 - Classification of material for machine excavation

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During the initial geotechnical investigation in 2018, sidewall collapse was not observed in any of the test pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible, such as was the case during the recent September 2023 floods.

Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

8.6 Earthworks

In that no detailed earthworks design information has been provided at this stage of the project, it is expected that minor cuts and fills less than 1.5m in height will be required for individual building platforms.

Notwithstanding, the following general recommendations are made:

- It is recommended that all earthworks be carried out in accordance with SABS1200DM.
- All vegetation should be cleared from the areas over which fills are to be built. De-stumping of the regrowth trees will be required, in itself an extensive task.
- Where possible, the upper 200mm of topsoil containing noticeable organic content should be removed and stockpiled for later topsoiling of fill banks or general landscaping purposes.
- All fills should be placed in layers not exceeding 300mm loose thickness, compacted to minimum 93% Modified AASHTO maximum dry density.
- Cuts will inevitably yield pieces of calcrete and ferricrete and boulders of variable size and quantity. It is important that all boulders or rock pieces in excess of 2/3 of fill layer thicknesses (i.e. exceeding 200mm for 300mm fill layer) be windrowed to spoil during fill construction
- Some areas of cut will yield the clayey soils of alluvial or residual shale origin. These may be used in general earthworks if they are not too clayey.
- Clayey materials will be moisture sensitive and will be difficult to compact when the moisture content is higher than about 2% of OMC. When this occurs, the soils should be ripped and left to dry out until compaction can be resumed. Compacting these materials is best carried out using a pad foot roller.
- Final cut and fill slopes up to a height of 1.5m should not be steeper than 1V:1.5H. cuts higher than this should be evaluated on site by the Geotechnical professional.
- All terraces and earthworks in general should be sloped to a gradient of not less than 1 vertical in 50 horizontal to prevent ponding and ingress of water into the subsoils.
- Surface drainage should be directed away from the crests of fill embankments to prevent over-topping and erosion of fill slopes.
- Cut and fill slopes should be top-soiled and planted with grass as soon as possible after formation. This will limit erosion of the slopes and the problems associated with wash-away of fill embankments. Continual maintenance of earth slopes is time consuming and costly to both the developer and the eventual owner of the property.

8.7 Foundations

Proposed buildings will comprise the Staff Housing, Chapel and Maintenance Buildings. While no designs of these buildings have been provided it is assumed that the staff housing and maintenance buildings will be single storey structures and the chapel double volume in height.

Staff Housing:

The founding conditions beneath the staff housing area are given by boreholes AH-B2, AH-B3 and AH-B13 and TP9, and DPL tests DPL13 to DPL16.

The site is underlain by a colluvial layer at surface to a depth of about 0.7m, comprising silty fine and medium sands. This colluvial horizon is underlain by deeply formed sandy silty clay (residual shale)

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The foundation indicator test results from AH-B4 indicate that the foundation soils are of low potential heave. However, the residual shale soils of the Tygerberg Formation are well known in the Stellenbosch are to give rise to heave movements beneath foundations and resultant cracking. This is because of their significant thickness and propensity to dry out during the dry summer months.

The following is recommended for foundations for the staff housing:

- Maximum bearing pressure of 80kPa for foundation design
- All foundations to be founded at a minimum depth of 0.8m
- Foundations should have minimum widths 600mm (strips) and 1 000mm (pads) respectively.
- Footing should be structurally reinforced to accommodate total heave of between 7.5 and 15mm.
- This site classifies as H1 in terms of the NHBRC

Chapel:

The founding conditions beneath the chapel area are given by boreholes AH-B5, AH-B11, AH-B14, AH-B15, and AH-S3 and DPL tests DPL32, 44 and 37.

The following is recommended for foundations for the chapel:

- Maximum bearing pressure of 80kPa for foundation design
- All foundations to be founded at a minimum depth of 0.8m
- Foundations should have minimum widths 800mm (strips) and 1 200mm (pads) respectively.
- Footing should be structurally reinforced to accommodate total heave of between 7.5 and 15mm.
- This site classifies as H1 in terms of the NHBRC

Maintenance Buildings:

The founding conditions beneath the chapel area are given by boreholes AH-B1 and AH-B9 and DPL tests DPL5, through DPL8.

The following is recommended for foundations for the chapel:

- Maximum bearing pressure of 80kPa for foundation design
- All foundations to be founded at a minimum depth of 0.8m
- Foundations should have minimum widths 600mm (strips) and 1 000mm (pads) respectively.
- Footing should be structurally reinforced to accommodate total heave of between 7.5 and 15mm.
- This site classifies as H1 in terms of the NHBRC

It is recommended that all foundation excavations are inspected by GGS to confirm depth of founding and bearing pressure before concrete is cast.

8.8 Drainage

8.8.1 Surface Water Drainage

An important factor in the promotion of a stable site is the control and removal of surface water from the site. It is important that the design of the stormwater management system allow for the drainage of accumulated surface water towards the existing stormwater infrastructure or natural drainage lines. Disposal of stormwater should in any case conform to the Local Authority's requirements.

8.8.2 Subsoil Drainage and Soil Permeability

Subsoil Drainage

The design of the roads, parking and paved areas should incorporate the use of subsoil drains to protect their structural layers from groundwater ingress.

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Soil Permeability

The results of laboratory tests carried out on undisturbed samples for the initial geotechnical investigation in 2018 indicated the following:

- Insitu sandy soils in the upper 0.7 to 1,0 metre (colluvium) with coefficient of permeability***, k***, values ranging between 10^{-2} and 10^{-4} m/sec can be classified[10] as *pervious*
- Compaction of these materials to 98%MDD reduces the permeability coefficient further to between 10^{-7} m/sec and10^{-8} m/sec, rendering them *impervious*

8.9 Retaining Walls

The *sandy insitu materials* are suitable for use as backfill to retaining walls, with the following shear strength parameters[11] considered applicable (compaction 93% MDD):

Soil density (dry): 1850 kg/m³
Soil Density (wet): 1950 kg/m³
Soil friction angle: 32 degrees
Cohesion: 0 kPa

Retaining walls must be designed with an efficient back-drainage system. Attention should be given to final ground floor levels to ensure they are either raised well above the anticipated level of seepage or have under-drainage to cater for this eventuality.

8.10 Roads

8.10.1 As-Built Details of R304 Pavement Structure

Location: Shoulder of R304		
TP1* (R304)	1.20	0.00-0.10m: Pre-mixed Asphalt wearing course layer. Bitumen condition: aged. No other distress patterns noted. 0.10-0.26m: Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found. 0.26-0.45m: Moist brown dense uniform gravel silty SAND. Imported SSG layer. 0.45-0.75m: Moist brown dense uniform fine grained SAND. Imported fill layer. 0.75-1.20m: Very moist dark brown dense uniform clayey SAND. Residual layer. **Final depth at 1.20m.** **No groundwater seepage.**
Location: Intersection Bellmouth of R304 with existing Gravel Road		
TP2* (R304)	1.20	0.00-0.12m: Pre-mixed Asphalt wearing course layer. Bitumen condition: aged. No other distress patterns noted. 0.12-0.25m: Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found. 0.25-0.45m: Moist brown dense uniform gravel silty SAND. Imported SSG layer. 0.45-0.85m: Moist brown dense uniform fine grained SAND. Imported fill layer. 0.85-1.20m: Very moist dark brown dense uniform clayey SAND. Residual layer. **Final depth at 1.20m.** **No groundwater seepage.**

Laboratory tests carried out on the materials from TP1* provide the following materials classifications:

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[10] SANCOLD – SA convention on Large Dams (2012), pp108.
[11] Geotechnical properties of Cape Flats sands N Fouché, P W Day (2022). Journal of the South African Institution of Civil Engineering ISSN 1021-2019 Vol 64 No 2, June 2022, Pages 13–27, Technical Paper 1372

TP1* (R304)	0.10-0.26	Moist grey dense uniform hornfels. Imported base layer. No evidence of previous stabilization found.	A-1-a(0); GP-GC; G5;
	0.26-0.45	Moist brown dense uniform gravel silty SAND. Imported SSG layer.	A-1-b(0); SM-SC; G6;
	0.45-0.75	Moist brown dense uniform fine grained SAND. Imported fill layer.	A-2-4(0); SC; Less than G9
	0.75-1.20	Very moist dark brown dense uniform clayey SAND. Insitu Subgrade	A-1-b(0); SC; Less than G9;

It should be noted that the test pit (TP2*) done in the bell mouth has a thicker asphalt layer (120mm) than the shoulder section (100mm) done about 30m away to the south.

8.10.2 Proposed Road Designs

Preliminary pavement designs were provided by Bigen Engineers as follows:

Class 3 Roads:

Asphalt A	40mm
Base G2 1	50mm
Subbase G5	150mm
Upper Selected Layer G7	150mm
Lower Selected Layer G9	150 mm
Roadbed preparation G10	150mm
Pavement thickness 790 mm	

Class 5 Roads:

Paver 80mm	
Sand 20mm	
Subbase C4 150mm	
Upper Selected Layer G7	150mm
Roadbed preparation G10	150mm
Pavement thickness 550 mm	

Gravel Roads:

200mm G5 wearing course compacted to 95% MOD AASHTO with CBR>45.

Quality of Available On-site Materials for Road Construction:

From the results of the laboratory tests in Table 5, and materials assessment in Table 7, the following is concluded regarding the use of the on-site materials for road and pavement construction:

- Upper sandy layer (colluvium)
  - covers most of the site from ground surface to about 0.8m average thickness
  - average quality G10 (TRH14) to G9 (COLTO).
  - generally suitable as general fill or common subgrade material
  - Some variability expected in quality

- Ferruginised Horizon:
  - Occurs at the boundary between the colluvium and underlying clayey soils (alluvium and residual soils).
  - Expected G8 average quality
  - Some variability expected in volume and quality, tends to occur erratically beneath the site
  - Suitable borrow areas should be established to yield acceptable quality and sufficient volume

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- Alluvium:
  - Sandy clays and clayey sands
  - Average <G10 quality expected

- Residual Shale:
  - Sandy clays to silty clays
  - Average <G10 quality expected.

- Residual Sandstone:
  - Silty and clayey sands
  - Average <G9 to G8 (COLTO) quality expected

Conclusions:

The following can be concluded:

- Materials of average G10 quality are confined to the upper 0.8m of site, however, large variability should be expected.
- Materials of G8 quality will need to be located i.e borrow areas of sufficient volumes and quality will need to be located by further exploration with confirmatory laboratory testing (see Figure 4 for the extent of the ferruginized area on site which can be investigated for borrow purposes)
- Materials of G7, G6 and G5 quality will need to be imported to the site, along with the top structural layers (Crushed Stone base and asphalt wearing course)

8.10.3 Subgrade Treatment for Roads, Parking and Paved Areas

Where the brown to greyish brown sands of hillwash (colluvial) origin are encountered in road construction, these materials will be of G10 average quality and therefore suitable for use as a general subgrade or fill material only. This subgrade material should ripped to 300 mm depth below top of subgrade level (or as determined by the Engineer), wet and recompacted to minimum 93% MDD where a CBR of 3 may be used for design.

Where the more clayey variations of subgrade are encountered and assessed as being unsuitable forroad construction, they should be cut to spoil and replaced with fill material of at least G8 quality, and similarly compacted. An undercut depth of 300mm is recommended, however, this should be confirmed by the Engineer.

8.11 Fenceposts

Recommendations are provided for the founding of posts or poles for boundary and internal fences. While no details have been provided of the fence type or construction, it is assumed that fencing similar in type to the patented 'ClearVu' , or similar, fence will be used.

From previous investigations for this type of fence, the following construction details are considered applicable:

- Fence posts are 3m long, protruding 2.4m above NGL; embedded 600mm below NGL. The fence panels are 3.3m wide.
- For sections with near-surface ferricrete /calcrete horizons: the footing size will be 400mm x 400mm x 600mm deep. 25MPa concrete and a 400mm under-dig below panels
- For sandy sections: the footing size will be 500mm x 500mm x 1000mm deep, with a 600mm under-dig below panels.

At no stage should fence post foundations be placed in new fill unless the fill is specifically designed to support the fence structure. It should be noted that settlement of even well-engineered fills will occur, with settlement of the order of 0.5% of the fill height or 5mm per metre of fill height[12] anticipated. Such settlement can, over time, lead to gradual sagging or tilting of the fence unless allowed for during construction (or later maintenance)

[12]Look, B. (2007) Handbook of Geotechnical Investigation and Design Tables. pp296. Taylor & Francis Group

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8.12 Backfill to Foundations

The following shear strength parameters are recommended for the backfill to fence post structures:

- ***Uncompacted and insitu sandy materials (i.e. loosely backfilled and hand tamped):***

Angle of shearing resistance:	28^0
Cohesion	0 kPa
Soil density	1700 kg/m^3

- ***Compacted to Minimum 93% MDD:***

Angle of shearing resistance:	32^0
Cohesion	0 kPa
Soil density	1800 kg/m^3

- ***Cement Stabilised Soil Backfill***

  Stabilisation of sandy backfill material with cement (minimum 5% by mass) may be considered. This stabilised soil or 'soilcrete', is likely to have a UCS of between 0.75 and 1.0MPa and may be used as backfill where sandy soils cannot be compacted efficiently around the foundation base.

9. CONCLUSION

This report presents the results of the augmented geotechnical investigation conducted for the proposed Calcutta Memorial site in the Stellenbosch Municipal area.

The site is underlain by a significantly thick mantle of transported and residual soils overlying the weathered rocks (qreywacke, phyllite and quartzitic sandstone) of the Tygerberg Formation, Malmesbury Group.

This report contains the results of the augmented geotechnical investigation carried for Phases 1 to 3 of Calcutta Memorial Park. Recommendations for earthworks, excavations and lateral support, foundations, materials usage for roads, subgrade treatment, and the construction of boundary fence posts are provided.

In conclusion, the information and recommendations provided in this report relates to the location of the test holes and DPL tests put down on site. It is quite possible that variations to the ground conditions will be encountered elsewhere on the site during construction. Therefore, it is recommended that GGS be appointed to carry out periodic inspections on the earthworks and foundation excavations during construction to confirm the recommendations given in this report.

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APPENDIX A

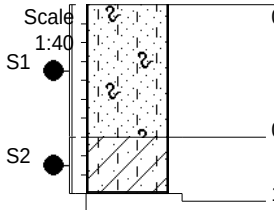
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GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R1**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brown silty fine grained SAND with roots.

0.70 Slightly moist greyish brown very stiff silty fine grained sandy CLAY.

1.00

NOTES

1) Final depth at 1.00m.
2) No groundwater seepage.
3) No sidewall collapse.
4) Samples taken :
   S1 0.00--0.70m (3 x Bulk)
   S2 0.70--1.00m (3 x Bulk)

DRAFT - FOR DISCUSSION PURPOSES

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PROFILED BY : PT

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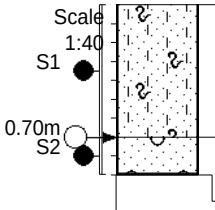
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HOLE No: **TP-R1**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R2**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brown silty fine grained SAND with roots.

0.70 Wet greyish brown very dense medium to large gravelly SAND.

0.90

NOTES

1) Final depth at 0.90m.
2) Groundwater seepage at 0.70m.
3) No sidewall collapse.
4) Samples taken :
   S1 0.00--0.70m (3 x Bulk)
   S2 0.70--0.90m (3 x Bulk)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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PROFILED BY : PT

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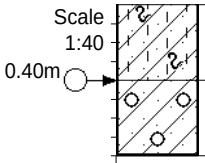
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Y-COORD : E18 48 31.4

HOLE No: **TP-R2**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R3**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00	Slightly moist greyish brown silty fine grained sandy CLAY with roots.
0.40	Wet greyish brown very stiff medium to large gravelly sandy CLAY.
0.80	

NOTES

1) Final depth at 0.80m.
2) Groundwater seepage at 0.40m.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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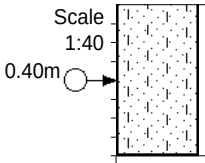
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HOLE No: **TP-R3**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R4**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist greyish brown silty fine grained SAND.

0.80

NOTES

1) Final depth at 0.80m.
2) Groundwater seepage at 0.40m.
3) Sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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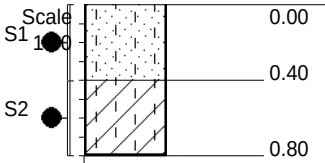
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Y-COORD : E18 48 44.8

HOLE No: **TP-R4**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R5**
Sheet 1 of 1

JOB NUMBER: 23-071



Slightly moist greyish brown silty fine grained SAND.

Slightly moist orangey grey very stiff silty CLAY.

NOTES

1) Final depth at 0.80m.

2) No groundwater seepage.

3) No sidewall collapse.

4) Samples taken :
S1 0.00--0.40m (3 x Bulk)
S2 0.40--0.80m (3 x Bulk)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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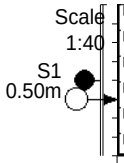
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HOLE No: **TP-R5**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R6**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist greyish brown silty fine grained SAND containing pieces of calcrete.

0.80

NOTES

1) Final depth at 0.80m.

2) Groundwater seepage at 0.50m.

3) No sidewall collapse.

4) Samples taken :
S1 0.00--0.80m (3 x Bulk)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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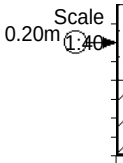
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HOLE No: **TP-R6**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R7**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Wet brown silty fine grained SAND.

0.40 Slightly moist orangey grey very stiff silty CLAY.

0.80

NOTES

1) Final depth at 0.80m.
2) Groundwater seepage at 0.20m.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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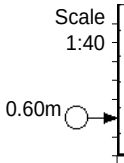
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HOLE No: **TP-R7**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R8**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brownish grey silty fine grained SAND.

0.80

NOTES

1) Final depth at 0.80m.
2) Groundwater seepage at 0.60m.
3) Sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
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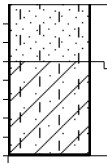
HOLE No: **TP-R8**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R9**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00	Slightly moist greyish brown silty fine grained SAND.
0.30	Slightly moist greyish brown very stiff silty fine grained sandy CLAY.
0.80	

NOTES

1) Final depth at 0.80m.
2) No groundwater seepage.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

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SETUP FILE : GGS-ST~1.SET

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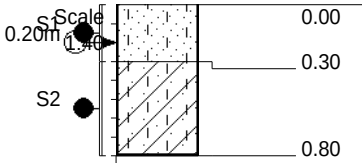
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Y-COORD : E18 48 46.9

HOLE No: **TP-R9**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R10**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet greyish brown silty SAND.

Slightly moist greyish brown very stiff silty fine grained sandy CLAY.

NOTES

1) Final depth at 0.80m.

2) Groundwater seepage at 0.20m.

3) No sidewall collapse.

4) Samples taken :
S1 0.00--0.30m (3 x Bulk)
S2 0.30--0.80m (3 x Bulk)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

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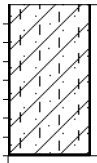
HOLE No: **TP-R10**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R11**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00 Slightly moist greyish brown very stiff silty fine grained sandy CLAY.

0.80

NOTES

1) Final depth at 0.80m.
2) No groundwater seepage.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:31
TEXT : ..bosch\Logs\TPR1TPR12.doc

ELEVATION :
X-COORD : S33 51 15.1
Y-COORD : E18 48 45.2

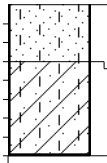
HOLE No: **TP-R11**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **TP-R12**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00	Slightly moist greyish brown silty fine grained SAND.
0.30	Slightly moist greyish brown very stiff silty fine grained sandy CLAY.
0.80	

NOTES

1) Final depth at 0.80m.
2) No groundwater seepage.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:31
TEXT : ..bosch\Logs\TPR1TPR12.doc

ELEVATION :
X-COORD : S33 51 18.9
Y-COORD : E18 48 39.2

HOLE No: **TP-R12**

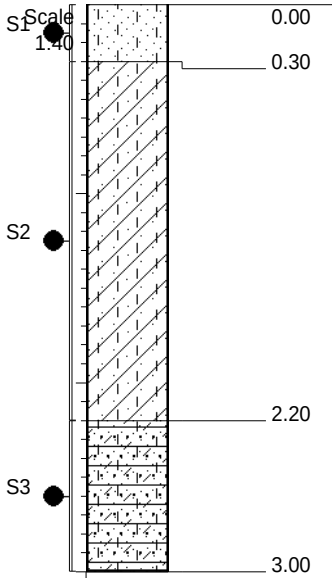
APPENDIX B

DRAFT - FOR DISCUSSION PURPOSES

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A1**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist greyish brown silty fine grained SAND.

0.30 Slightly moist greyish orange soft to very stiff silty fine grained sandy CLAY. Alluvium.

2.20 Slightly moist orangey brown very stiff silty fine grained slightly clayey SAND containing very small white stones. Residual Sandstone.

3.00

NOTES

1) Final depth at 3.00m. Hard to auger.

2) No groundwater seepage.

3) Samples taken :
S1 0.00--0.30m (1 x Small)
S2 0.30--2.20m (1 x Small)
S3 2.20--3.00m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 18.8
Y-COORD : E18 48 42.0

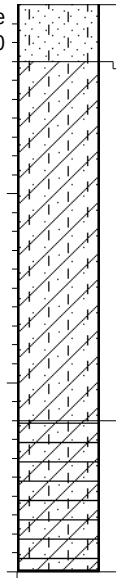
HOLE No: **AH-A1**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A2**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00	Slightly moist greyish brown silty fine grained SAND.
0.30	Slightly moist greyish orange soft to very stiff silty fine grained sandy CLAY.
2.20	Slightly moist orangey grey very stiff silty fine grained sandy CLAY containing very small white stones. Residual Shale.
3.00	

NOTES

1) Final depth at 3.00m. Hard to auger.
2) No groundwater seepage.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 16.7
Y-COORD : E18 48 42.5

HOLE No: **AH-A2**

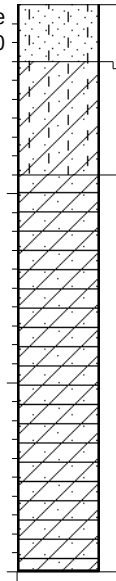
GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A3**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00	Slightly moist greyish brown silty fine grained SAND.
0.30	Slightly moist greyish orange very stiff silty fine grained sandy CLAY.
0.90	Slightly moist orangey grey very stiff medium grained sandy CLAY containing very small white stones. Residual Shale.
3.00	

NOTES

1) Final depth at 3.00m. Hard to auger.
2) No groundwater seepage.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
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ELEVATION :
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Y-COORD : E18 48 44.4

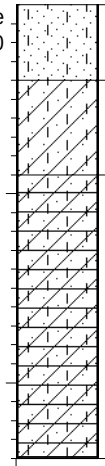
HOLE No: **AH-A3**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A4**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00	Dry brownish grey silty fine grained SAND.
0.40	Slightly moist greyish orange silty fine grained sandy CLAY.
0.90	Slightly moist greyish orange very stiff silty fine grained sandy CLAY containing very small white stones. Residual Shale.
2.40	

NOTES

1) Final depth at 2.40m. Hard to auger.
2) No groundwater seepage.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
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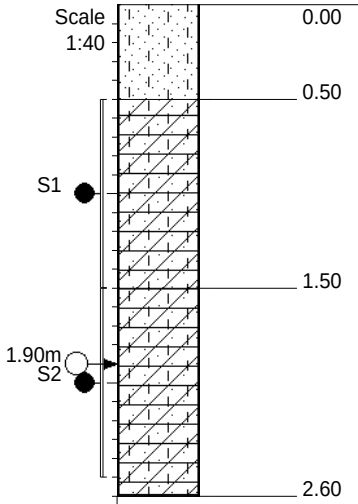
ELEVATION :
X-COORD : S33 51 11.1
Y-COORD : E18 48 48.5

HOLE No: **AH-A4**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A5**
Sheet 1 of 1

JOB NUMBER: 23-071



Slightly moist brownish grey silty fine grained SAND.

Slightly moist greyish orange silty fine grained sandy CLAY. Residual Shale.

Slightly moist greyish orange silty fine grained sandy CLAY containing very small white stones. Residual Shale.

NOTES

1) Final depth at 2.60m

2) Groundwater seepage at 1.90m.

3) Samples taken :
S1 0.50--1.50m (1 x Small)
S2 1.50--2.50m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 14/11/2023 13:28
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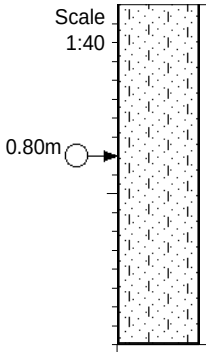
ELEVATION :
X-COORD : S33 51 08.3
Y-COORD : E18 48 47.9

HOLE No: **AH-A5**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A6**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brownish grey silty fine grained SAND.

1.80

NOTES

1) Final depth at 1.80m.
2) Groundwater seepage at 0.80m.
3) Sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
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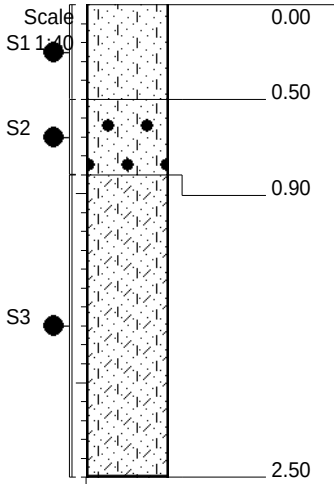
ELEVATION :
X-COORD : S33 51 04.5
Y-COORD : E18 48 44.9

HOLE No: **AH-A6**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A7**
Sheet 1 of 1

JOB NUMBER: 23-071



Slightly moist brownish grey silty fine grained SAND.

Slightly moist orangey grey silty fine grained SAND containing ferricrete nodules.

Slightly moist orangey grey very stiff silty fine grained clayey SAND containing small white stones. Alluvium.

NOTES

1) Final depth at 2.50m. Hard to auger.

2) No groundwater seepage.

3) Samples taken :
S1 0.00--0.50m (1 x Small)
S2 0.50--0.90m (1 x Small)
S3 0.90--2.50m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 04.6
Y-COORD : E18 48 42.3

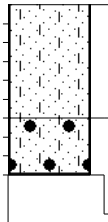
HOLE No: **AH-A7**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A8**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00 Dry brownish grey silty fine grained SAND.

0.60 Slightly moist orangey grey silty fine grained SAND containing abundant ferricrete nodules.

0.90

NOTES

1) Final depth at 0.90m. Refusal on ferricrete.

2) No groundwater seepage.

3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 04.8
Y-COORD : E18 48 37.9

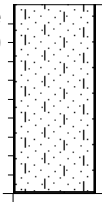
HOLE No: **AH-A8**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A9**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00 Wet brownish grey silty fine grained SAND.

1.00

NOTES

1) Final depth at 1.00m.
2) Groundwater on surface.
3) Auger collapse as position is flooded.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
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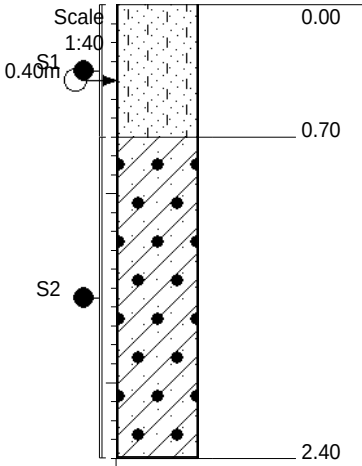
ELEVATION :
X-COORD : S33 51 04.9
Y-COORD : E18 48 35.1

HOLE No: **AH-A9**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A10**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brownish grey silty fine and medium grained SAND. Colluvium.

0.70 Slightly moist orangey grey soft to very stiff medium grained sandy CLAY containing ferricrete nodules. Ferruginized Horizon.

2.40

NOTES

1) Final depth at 2.40m. Refusal on ferricrete.

2) Groundwater seepage at 0.40m.

3) Samples taken :
S1 0.00--0.70m (1 x Small)
S2 0.70--2.40m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 02.7
Y-COORD : E18 48 30.6

HOLE No: **AH-A10**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A11**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40



0.00 Dry brownish grey loose silty fine grained SAND containing ferricrete nodules. Hardpan Ferricrete.

0.40

NOTES

1) Final depth at 0.40m. Refusal on ferricrete.

2) No groundwater seepage.

3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
TEXT : ..bosch\Logs\AHA1AHA12.doc

ELEVATION :
X-COORD : S33 51 02.5
Y-COORD : E18 48 34.7

HOLE No: **AH-A11**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-A12**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40

0.00 Auger could not be done. Hardpan Ferricrete at surface.
0.00

NOTES

1) Auger refusal due to abundant ferricrete nodules / bedrock.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:28
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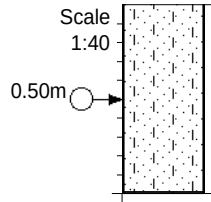
ELEVATION :
X-COORD : S33 51 02.3
Y-COORD : E18 48 38.0

HOLE No: **AH-A12**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B1**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brownish grey silty fine grained SAND.

1.00

NOTES

1) Final depth at 1.00m. Refusal on boulders/calcrete.

2) Groundwater seepage at 0.50m.

3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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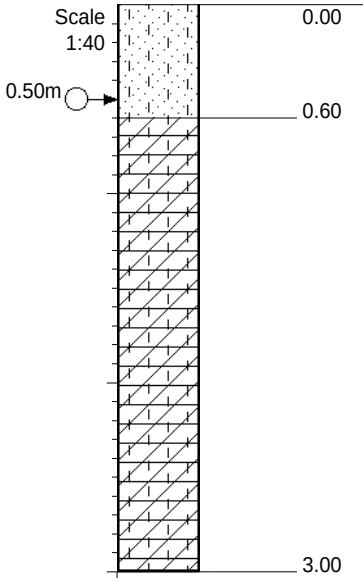
ELEVATION :
X-COORD : S33 51 02.7
Y-COORD : E18 48 47.2

HOLE No: **AH-B1**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B2**
Sheet 1 of 1

JOB NUMBER: 23-071



Moist greyish brown silty fine grained SAND.

Moist orangey yellow soft to very stiff silty CLAY. Residual Shale.

NOTES

1) Final depth at 3.00m.
2) Groundwater seepage at 0.50m.
3) No sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 05.3
Y-COORD : E18 48 46.7

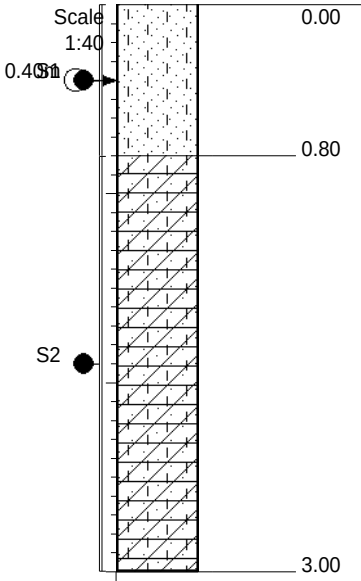
HOLE No: **AH-B2**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B3**
Sheet 1 of 1

JOB NUMBER: 23-071



Moist greyish brown silty fine grained SAND.

Moist orangey yellow soft to very stiff silty fine grained sandy CLAY. Residual Shale.

NOTES

1) Final depth at 3.00m.
2) Groundwater seepage at 0.40m.
3) No sidewall collapse.
4) Samples taken :
   S1 0.00--0.80m (1 x Small)
   S2 0.80--3.00m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 05.7
Y-COORD : E18 48 48.1

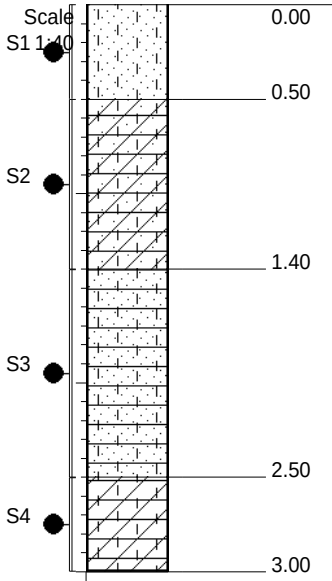
HOLE No: **AH-B3**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B4**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brown silty fine grained SAND.

0.50 Moist greyish brown soft to very stiff silty fine grained sandy CLAY. Residual Shale.

1.40 Slightly moist greyish brown silty fine grained SAND containing tiny white particles. Residual Shale.

2.50 Slightly moist orangey grey very stiff silty CLAY. Residual Shale.

3.00

NOTES

1) Final depth at 3.00m. No refusal.

2) No groundwater seepage.

3) Samples taken :
S1 0.00--0.50m (1 x Small)
S2 0.50--1.40m (1 x Small)
S3 1.40--2.50m (1 x Small)
S4 2.50--3.00m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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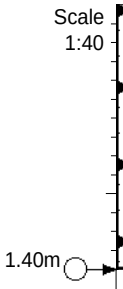
ELEVATION :
X-COORD : S33 51 06.4
Y-COORD : E18 48 48.6

HOLE No: **AH-B4**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B5**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet brownish grey silty fine grained SAND containing ferricrete nodules.

NOTES

1) Final depth at 1.40m.
2) Groundwater seepage at 1.40m.
3) Sidewall collapse due to water.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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ELEVATION :
X-COORD : S33 51 07.0
Y-COORD : E18 48 41.6

HOLE No: **AH-B5**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B6**
Sheet 1 of 1

JOB NUMBER: 23-071

Scale 1:40

0.00 Auger not done due to position in water.

0.00

NOTES

1) Auger could not be done.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

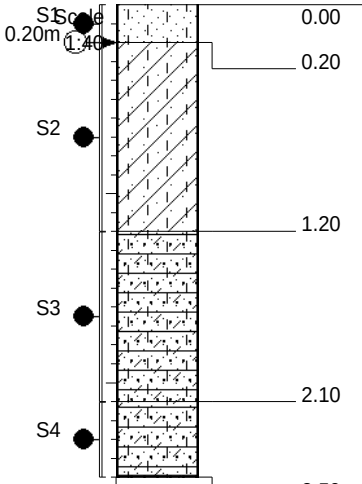
ELEVATION :
X-COORD : S33 51 07.7
Y-COORD : E18 48 39.9

HOLE No: **AH-B6**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B7**
Sheet 1 of 1

JOB NUMBER: 23-071



Scale 1:40

Wet greyish brown silty fine grained SAND.

Moist orangey grey silty fine grained sandy CLAY.

Slightly moist orangey grey very dense silty fine grained clayey SAND. Residual Sandstone.

Slightly moist orange grey very dense silty fine grained clayey SAND. Residual Sandstone.

NOTES

1) Final depth at 2.50m. Auger refusal.

2) Groundwater seepage at 0.20m.

3) Samples taken :
S1 0.00--0.20m (1 x Small)
S2 0.20--1.20m (1 x Small)
S3 1.20--2.10m (1 x Small)
S4 2.10--2.50m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 08.4
Y-COORD : E18 48 37.1

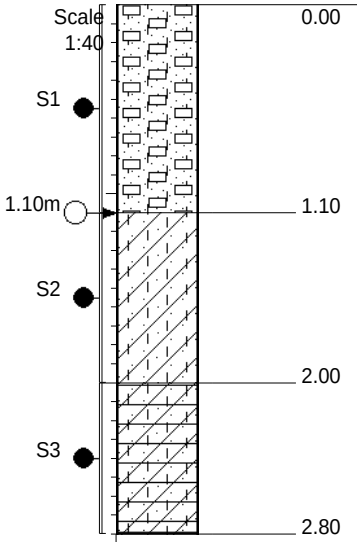
HOLE No: **AH-B7**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B8**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 – 1.10: Slightly moist brownish grey silty fine grained SAND containing small round calcrete stones.

1.10 – 2.00: Slightly moist orangey grey very stiff silty fine grained sandy CLAY.

2.00 – 2.80: Slightly moist to wet light greyish brown silty fine grained sandy CLAY. Residual Shale.

NOTES

1) Final depth at 2.80m. Auger refusal.

2) Groundwater seepage at 1.10m.

3) Samples taken :
S1 0.00--1.10m (1 x Small)
S2 1.10--2.00m (1 x Small)
S3 2.00--2.80m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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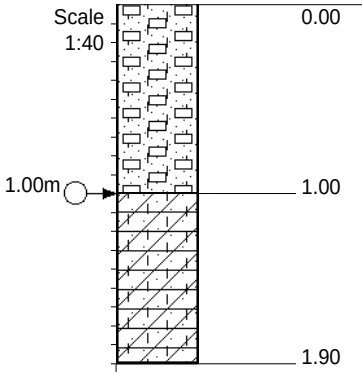
ELEVATION :
X-COORD : S33 51 02.4
Y-COORD : E18 48 43.2

HOLE No: **AH-B8**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B9**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brownish grey silty fine grained SAND containing small round calcrete stones.

1.00 Moist orangey grey silty fine grained sandy CLAY. Residual Shale.

1.90

NOTES

1) Final depth at 1.90m.
2) Groundwater seepage at 1.00m.
3) Sidewall collapse.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 01.8
Y-COORD : E18 48 48.0

HOLE No: **AH-B9**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B10**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00	Wet greyish brown silty fine grained SAND.
0.40	Moist orangey grey silty fine grained sandy CLAY containing very small white particles. Residual Shale.
1.20	Wet brownish grey silty fine grained sandy CLAY. Residual Shale.
1.60	

NOTES

1) Final depth at 1.60m.
2) Groundwater seepage at 0.40m.
3) Sidewall collapse at 1.20m.
4) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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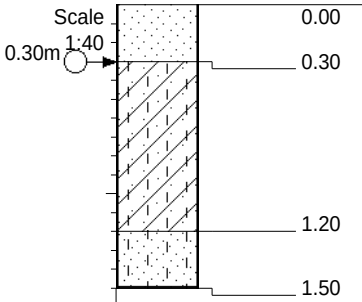
ELEVATION :
X-COORD : S33 51 08.2
Y-COORD : E18 48 39.0

HOLE No: **AH-B10**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B11**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00	Wet greyish brown medium grained SAND.
0.30	Moist orangey grey soft to very stiff silty fine grained sandy CLAY.
1.20	Slightly moist orange silty fine grained SAND. Ferruginized Horizon.
1.50	

NOTES

1) Final depth at 1.50m. Auger refusal on ferricrete.
2) Groundwater seepage at 0.30m.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 08.5
Y-COORD : E18 48 43.6

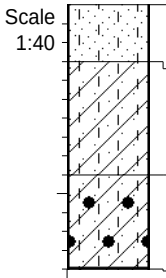
HOLE No: **AH-B11**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B12**
Sheet 1 of 1

JOB NUMBER: 23-071



Slightly moist brownish grey silty fine grained SAND.

Slightly moist greyish brown very dense silty fine grained sandy CLAY.

Slightly moist orangey grey silty fine grained sandy CLAY containing ferricrete nodules.

NOTES

1) Final depth at 1.40m. Auger refusal.
2) No groundwater seepage.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
TEXT : ..bosch\Logs\AHB1AHB15.doc

ELEVATION :
X-COORD : S33 51 08.3
Y-COORD : E18 48 31.2

HOLE No: **AH-B12**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B13**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Slightly moist brown silty fine grained SAND.

1.30 Slightly moist orangey grey soft to very stiff silty fine grained sandy CLAY. Residual Shale.

3.00

NOTES

1) Final depth at 3.00m. No refusal.
2) Groundwater seepage at 0.60m.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 15/11/2023 09:26
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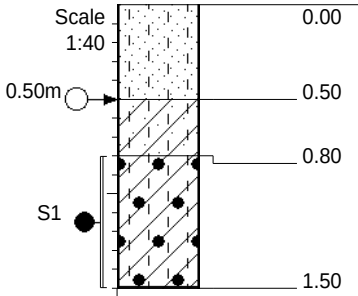
ELEVATION :
X-COORD : S33 51 06.2
Y-COORD : E18 48 46.0

HOLE No: **AH-B13**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B14**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet greyish brown silty fine grained SAND.

Moist greyish brown silty fine grained sandy CLAY.

Moist orange silty CLAY containing ferricrete nodules. Ferruginized Horizon.

NOTES

1) Final depth at 1.50m. Auger refusal.

2) Groundwater seepage at 0.50m.

3) Samples taken :
S1 0.80--1.50m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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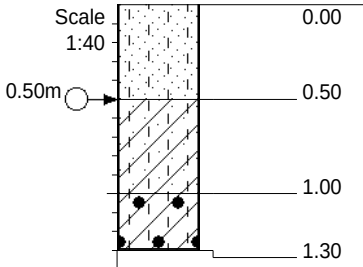
ELEVATION :
X-COORD : S33 51 07.8
Y-COORD : E18 48 43.1

HOLE No: **AH-B14**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-B15**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet greyish brown silty fine grained SAND.

Moist orangey grey silty fine grained sandy CLAY.

Moist orange silty CLAY containing ferricrete nodules.

NOTES

1) Final depth at 1.30m. Auger refusal.
2) Groundwater seepage at 0.50m.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 15/11/2023 09:26
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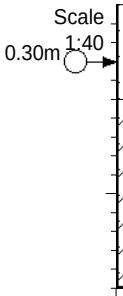
ELEVATION :
X-COORD : S33 51 07.8
Y-COORD : E18 48 41.2

HOLE No: **AH-B15**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-S1**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00 Wet greyish brown silty fine grained SAND.

0.50 Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Alluvium.

1.50

NOTES

1) Final depth at 1.50m. Auger refusal.
2) Groundwater seepage at 0.30m.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
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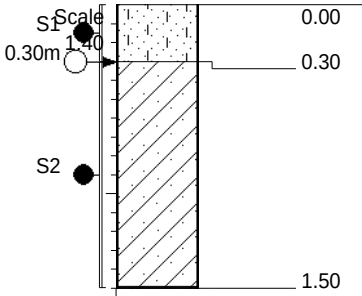
ELEVATION :
X-COORD : S33 51 07.9
Y-COORD : E18 48 29.5

HOLE No: **AH-S1**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-S2**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet greyish brown silty fine grained SAND.

Slightly moist orangey brown soft to very stiff fine grained sandy CLAY. Residual.

NOTES

1) Final depth at 1.50m. Auger refusal.

2) Groundwater seepage at 0.30m.

3) Samples taken :
S1 0.00--0.30m (1 x Small)
S2 0.30--1.50m (1 x Small)

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT
TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023
DATE : 14/11/2023 13:31
TEXT : ..nbosch\Logs\AHS1AHS4.doc

ELEVATION :
X-COORD : S33 51 08.8
Y-COORD : E18 48 33.5

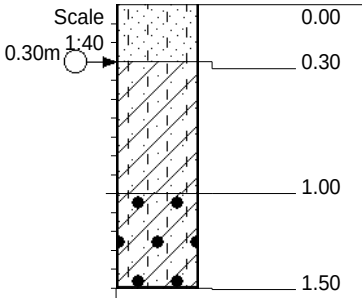
HOLE No: **AH-S2**

GONDWANA GEO SOLUTIONS

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-S3**
Sheet 1 of 1

JOB NUMBER: 23-071



Wet greyish brown silty fine grained SAND.

Slightly moist greyish brown silty fine grained sandy CLAY.

Slightly moist orangey brown silty fine grained sandy CLAY with ferricrete nodules. Ferruginized Horizon.

NOTES

1) Final depth at 1.50m. Auger refusal.
2) Groundwater seepage at 0.30m.
3) No samples taken.

DRAFT - FOR DISCUSSION PURPOSES

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:31
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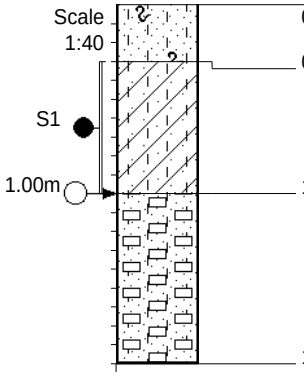
ELEVATION :
X-COORD : S33 51 08.8
Y-COORD : E18 48 42.1

HOLE No: **AH-S3**

BIGEN ENGINEERS
Calcutta Memorial Park
Stellenbosch

HOLE No: **AH-S4**
Sheet 1 of 1

JOB NUMBER: 23-071



0.00	Wet greyish brown silty fine grained SAND with roots.
0.30	Slightly moist greyish brown silty fine grained sandy CLAY.
1.00	Slightly moist brownish grey silty fine grained SAND with very small calcrete pieces.
1.90	

NOTES

1) Final depth at 1.90m. Auger refusal.

2) Groundwater seepage at 1.00m.

3) Samples taken :
S1 0.30--1.00m (1 x Small)

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY : PT

TYPE SET BY : MC
SETUP FILE : GGS-ST~1.SET

INCLINATION :
DIAM :
DATE : October 2023
DATE : October 2023

DATE : 14/11/2023 13:31
TEXT : ..nbosch\Logs\AHS1AHS4.doc

ELEVATION :
X-COORD : S33 51 10.8
Y-COORD : E18 48 43.0

HOLE No: **AH-S4**

DRAFT - FOR DISCUSSION PURPOSES

SGS MATROCAST

4 HARBOT CLOSE,BRACKENDUST , 7560
P.O BOX 1106 , BRACKENFELL

CIVIL ENG.LABORATORY SERVICES
Reg.No.:2000/030983/07 - VAT.Reg No.:4130197405
a SANAS Accredited Testing Laboratory,No.T0245

Tel 021 981 5558/9
Fax 021 981 6724
Email gregory.bell@sgs.com

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention : Mr M.Richter

Project : CALCUTTA CEMETERY, STELLENBOSCH

Your Reference : 23-071/1
Our Reference : 58054
Date Reported : 25.10.2023

PROFILE REPORT (JENNINGS & BRINK) , (TMH5 - MA2)

Km/Sv: Refer GPS Section : Cemetery
TEST PIT No. : 1 Off-Set : Lane : Shoulder



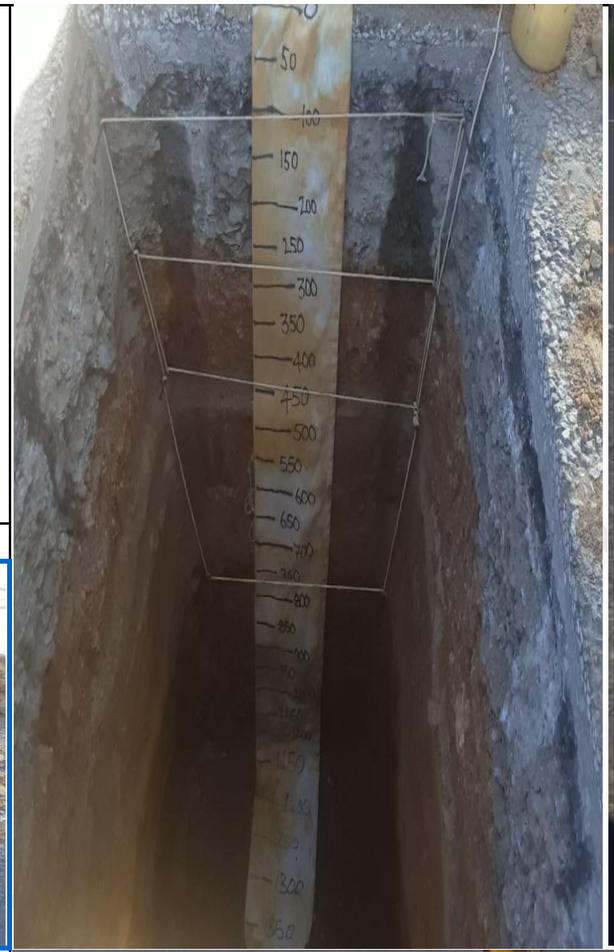


GPS POSITION
S 33.85051°
E 018.80542°
Elev : 171m

EXCAVATION METHOD
Hand & Powertools

PROFILED BY
Nelson Nqumama

DATE
09.10.2023





Water Table	Soil Legend	Depth (mm)	SOIL DESCRIPTION Moisture,Colour,Consistency,Structure,Soil Type,Origin,General	SAMPLING TYPE AND NUMBER
		0	Pre-Mixed Asphalt Wearingcourse Layer Bitumen Condition : Aged No Other Distress Paterns Noted	Not Sampled
		100	Moist, Grey, Dense, Uniform, Hornfels Imported Base Layer No Evidence of Previous Stabilization Found	Cbr & Indicator Sample No.D 2033
		260	Moist, Brown, Dense, Uniform, Gravel Silty Sand Imported SSG Layer	Cbr & Indicator Sample No.D 0234
		450	Moist, Brown, Dense, Uniform, Fine Grained Sand Imported Fill Layer	Cbr & Indicator Sample No.D 0235
		750	Very Moist, Dark Brown, Dense, Uniform, Clayey Sand Residual Layer No Water Seepage Observed Excavation Stopped , Required Depth Reached	Cbr & Indicator Sample No.D 0236
		1200		



FORM: A7 4.4(SGS)(2016.08.31) SANAS Technical Signatory : Gregory Bell

DRAFT - FOR DISCUSSION

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SGS MATROCAST

4 HARBOT CLOSE,BRACKENDUST , 7560
P.O BOX 1106 , BRACKENFELL

CIVIL ENG.LABORATORY SERVICES
Reg.No.:2000/030983/07 - VAT.Reg No.:4130197405
a SANAS Accredited Testing Laboratory,No.T0245

Tel 021 981 5558/9
Fax 021 981 6724
Email gregory.bell@sgs.com

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention : Mr M.Richter

Project : CALCUTTA CEMETERY, STELLENBOSCH

Your Reference : 23-071/1
Our Reference : 58054
Date Reported : 25.10.2023

PROFILE REPORT (JENNINGS & BRINK) , (TMH5 - MA2)

Km/Sv: Refer GPS Section : Cemetery
TEST PIT No. : 2 Off-Set : Lane : Shoulder



GPS POSITION
S 33.85037°
E 018.80533°
Elev : 169m

EXCAVATION METHOD
Hand & Powertools

PROFILED BY
Nelson Nqumama

DATE
09.10.2023







Water Table	Soil Legend	Depth (mm)	SOIL DESCRIPTION Moisture,Colour,Consistency,Structure,Soil Type,Origin,General	SAMPLING TYPE AND NUMBER
		0	Pre-Mixed Asphalt Wearingcourse Layer Bitumen Condition : Aged No Other Distress Paterns Noted	Not Sampled
		120	Moist, Grey, Dense, Uniform, Hornfels Imported Base Layer No Evidence of Previous Stabilization Found	Cbr & Indicator Sample No.D 2033
		250	Moist, Brown, Dense, Uniform, Gravel Silty Sand Imported SSG Layer	Cbr & Indicator Sample No.D 0234
		450	Moist, Brown, Dense, Uniform, Fine Grained Sand Imported Fill Layer	Cbr & Indicator Sample No.D 0235
		850	Very Moist, Dark Brown, Dense, Uniform, Clayey Sand Residual Layer No Water Seepage Observed Excavation Stopped , Required Depth Reached	Cbr & Indicator Sample No.D 0236
		1200		



DRAFT - FOR DISCUSSION

FORM: A7 4.4(SGS)(2016.08.31) SANAS Technical Signatory : Gregory Bell

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APPENDIX C

DRAFT - FOR DISCUSSION PURPOSES

GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

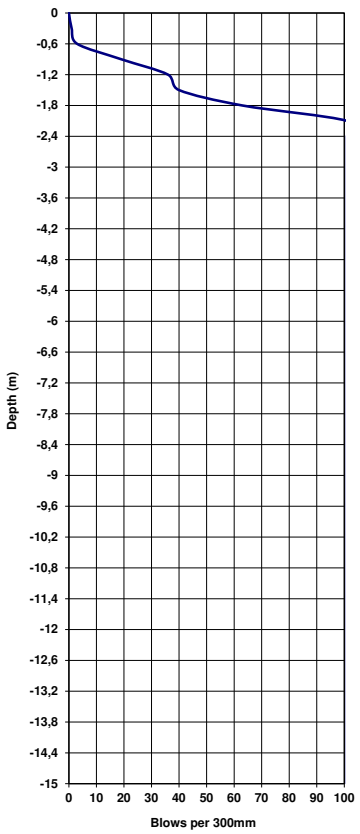
Ref.No. 23-071
Date: October 2023
Operator: PT

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-1***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	3	Very Loose
0,9	19	Med.Dense
1,2	36	Med.Dense
1,5	40	Stiff
1,8	63	Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

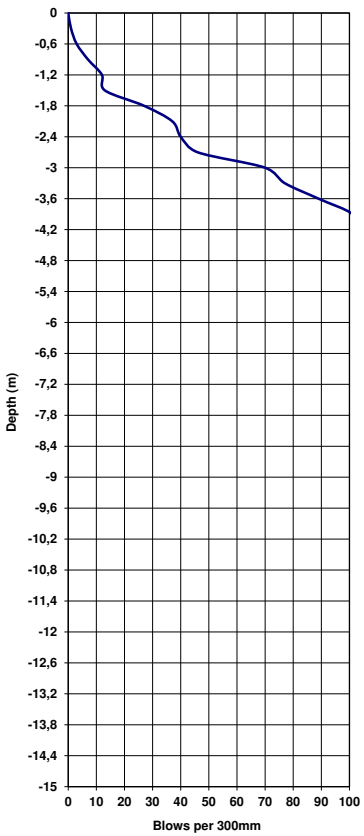


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-2***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	3	Very Loose
0,9	7	Loose
1,2	12	Loose
1,5	13	Soft
1,8	27	Firm
2,1	37	Stiff
2,4	40	Stiff
2,7	46	Stiff
3	70	Very Stiff
3,3	77	Very Stiff
3,6	89	Very Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

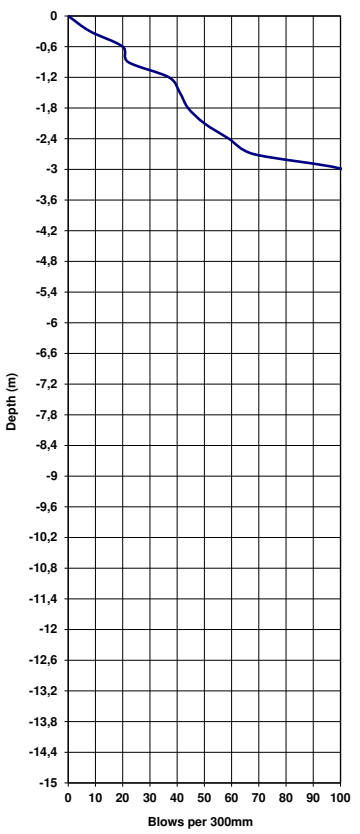


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-3***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	8	Loose
0,6	20	Med.Dense
0,9	22	Med.Dense
1,2	37	Med.Dense
1,5	41	Stiff
1,8	44	Stiff
2,1	50	Stiff
2,4	59	Stiff
2,7	68	Very Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0



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GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

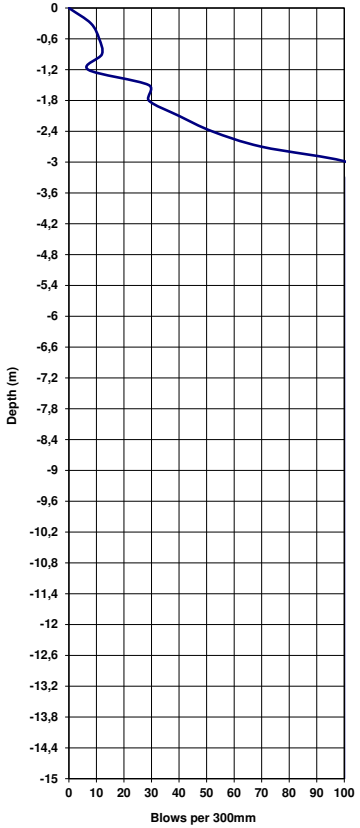
Ref.No. 23-071
Date: October 2023
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Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-4***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	8	Loose
0,6	11	Loose
0,9	12	Loose
1,2	7	Loose
1,5	29	Firm
1,8	29	Firm
2,1	40	Stiff
2,4	52	Stiff
2,7	70	Very Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

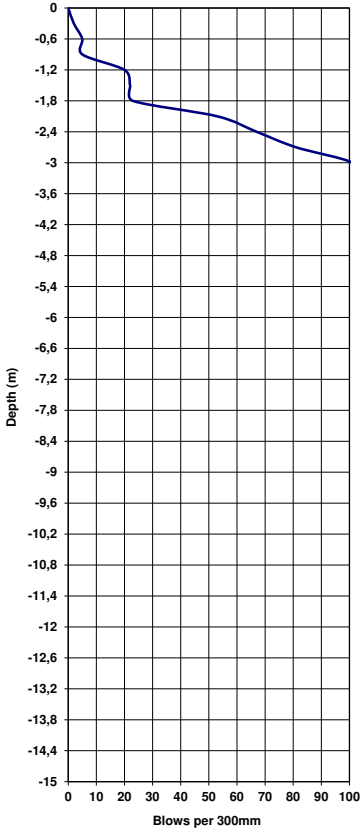


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-5***

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	
0,6	5	Very Loose	
0,9	5	Very Loose	
1,2	20	Med.Dense	
1,5	22	Firm	1
1,8	23	Firm	1
2,1	53	Stiff	1
2,4	67	Stiff	1
2,7	81	Very Stiff	1
	Ref		

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

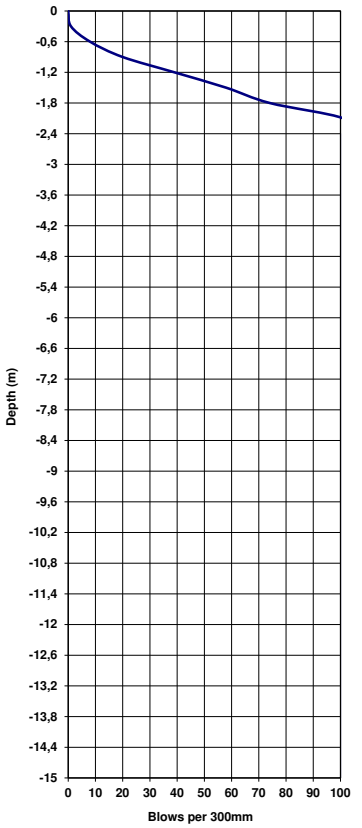


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-6***

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	1	Very Loose	
0,6	8	Loose	
0,9	20	Med.Dense	
1,2	39	Med.Dense	
1,5	58	Stiff	1
1,8	74	Very Stiff	1
	Ref		

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0



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GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

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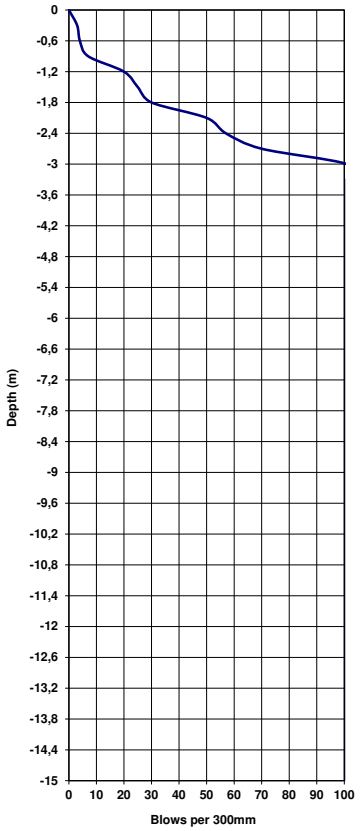
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-7***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	3	Very Loose
0,6	4	Very Loose
0,9	7	Loose
1,2	20	Med.Dense
1,5	25	Firm
1,8	30	Firm
2,1	50	Stiff
2,4	57	Stiff
2,7	70	Very Stiff
	Ref	

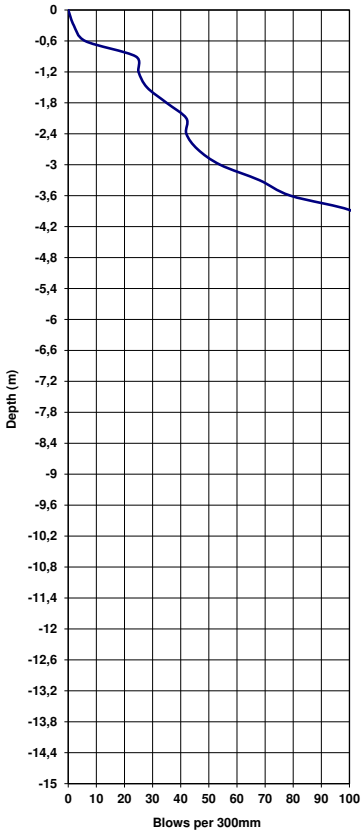


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-8***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	1
0,6	6	Very Loose	1
0,9	24	Med.Dense	1
1,2	25	Med.Dense	1
1,5	28	Firm	1
1,8	35	Stiff	1
2,1	42	Stiff	1
2,4	42	Stiff	1
2,7	46	Stiff	1
3	54	Stiff	
3,3	68	Very Stiff	
3,6	79	Very Stiff	
	Ref		

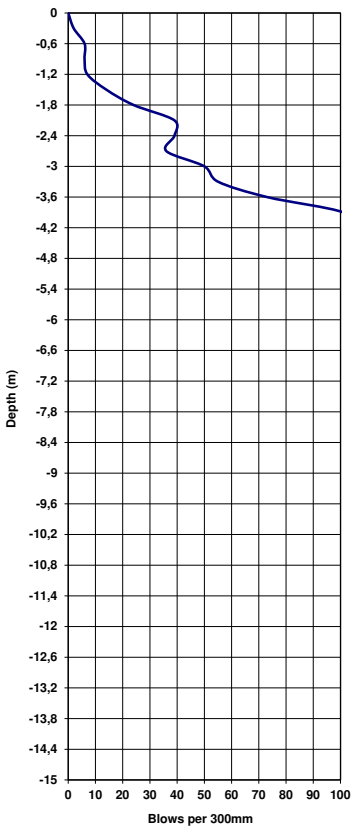


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-9***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	1
0,6	6	Very Loose	1
0,9	6	Very Loose	1
1,2	7	Loose	1
1,5	14	Soft	1
1,8	24	Firm	1
2,1	39	Stiff	1
2,4	39	Stiff	1
2,7	36	Stiff	1
3	50	Stiff	1
3,3	55	Stiff	1
3,6	73	Very Stiff	1
	Ref		



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Consulting Geotechnical Engineers & Engineering Geologists

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13 Rocklands Road
Simonstown
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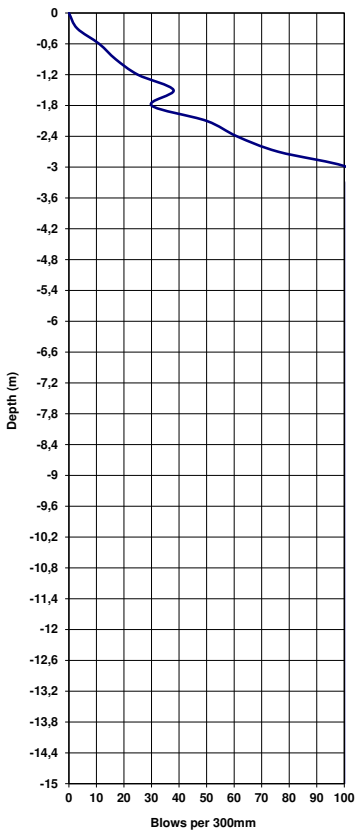
Ref.No. 23-071
Date: October 2023
Operator: PT

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-10***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	3	Very Loose
0,6	11	Loose
0,9	17	Med.Dense
1,2	25	Med.Dense
1,5	38	Stiff
1,8	30	Firm
2,1	50	Stiff
2,4	61	Stiff
2,7	76	Very Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

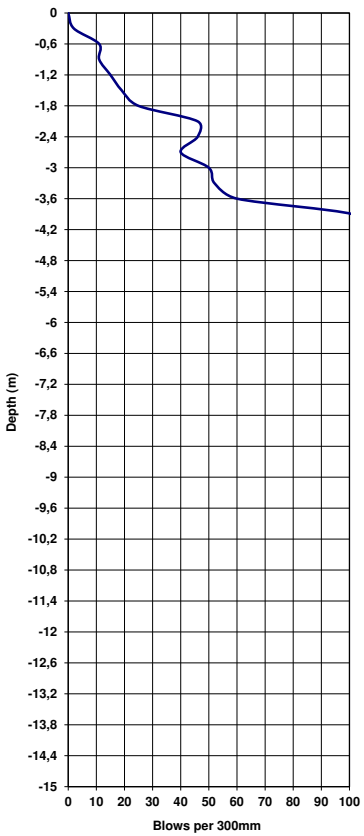


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-11***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	2	Very Loose
0,6	11	Loose
0,9	11	Loose
1,2	15	Loose
1,5	19	Firm
1,8	25	Firm
2,1	46	Stiff
2,4	46	Stiff
2,7	40	Stiff
3	50	Stiff
3,3	52	Stiff
3,6	60	Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

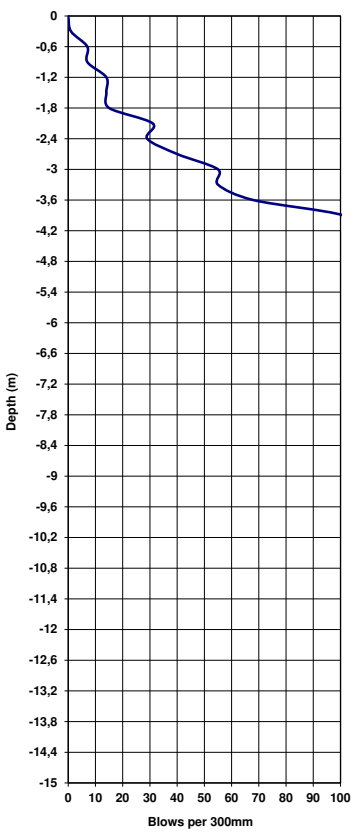


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-12***

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	7	Loose
0,9	7	Loose
1,2	14	Loose
1,5	14	Soft
1,8	15	Soft
2,1	31	Firm
2,4	29	Firm
2,7	40	Stiff
3	55	Stiff
3,3	55	Stiff
3,6	68	Very Stiff
	Ref	

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0



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GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

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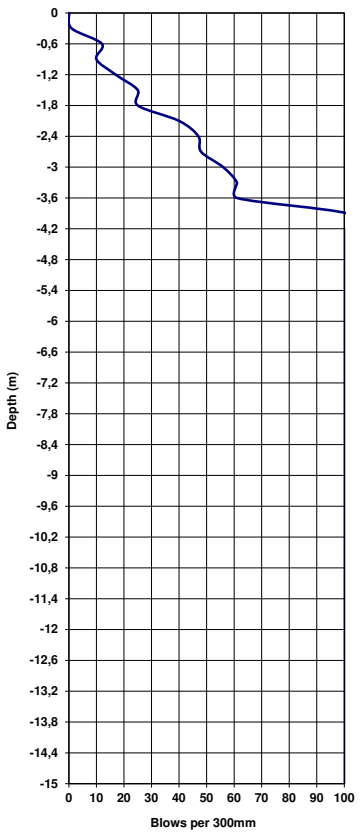
Ref.No. 23-071
Date: October 2023
Operator: PT

Light Dynamic Penetrometer Probe ---------- **Test No. DPL CAL-13**

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	1	Very Loose	1
0,6	12	Loose	1
0,9	10	Loose	1
1,2	17	Med.Dense	1
1,5	25	Firm	1
1,8	25	Firm	1
2,1	40	Stiff	1
2,4	47	Stiff	1
2,7	48	Stiff	1
3	56	Stiff	1
3,3	61	Stiff	1
3,6	61	Stiff	1
	Ref		

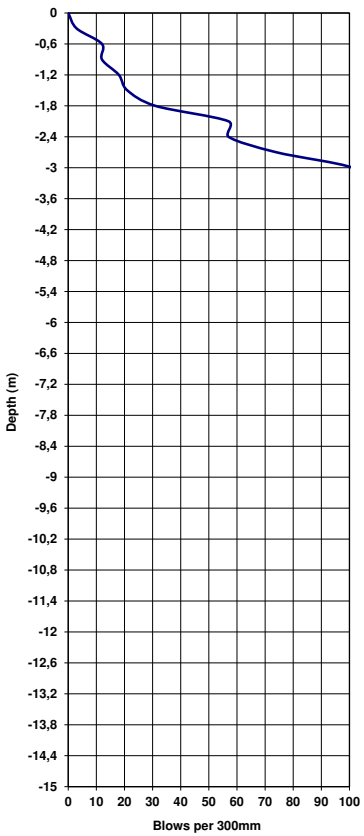


Light Dynamic Penetrometer Probe ---------- **Test No. DPL CAL-14**

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	3	Very Loose	1
0,6	12	Loose	1
0,9	12	Loose	1
1,2	18	Med.Dense	1
1,5	21	Firm	1
1,8	31	Firm	1
2,1	57	Stiff	1
2,4	57	Stiff	1
2,7	74	Very Stiff	1
	Ref		

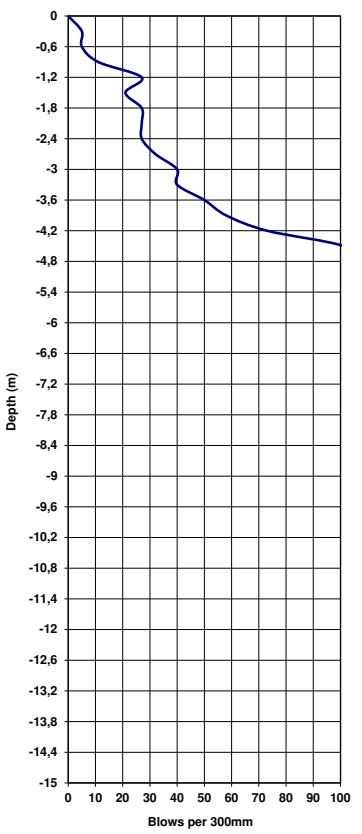


Light Dynamic Penetrometer Probe ---------- **Test No. DPL CAL-15**

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	5	Very Loose	1
0,6	5	Very Loose	1
0,9	11	Loose	1
1,2	27	Med.Dense	1
1,5	21	Firm	1
1,8	27	Firm	1
2,1	27	Firm	1
2,4	27	Firm	1
2,7	32	Firm	1
3	40	Stiff	1
3,3	40	Stiff	1
3,6	50	Stiff	1
3,9	58	Stiff	1
4,2	73	Very Stiff	1
	Ref		



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GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

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Section: Stellenbosch

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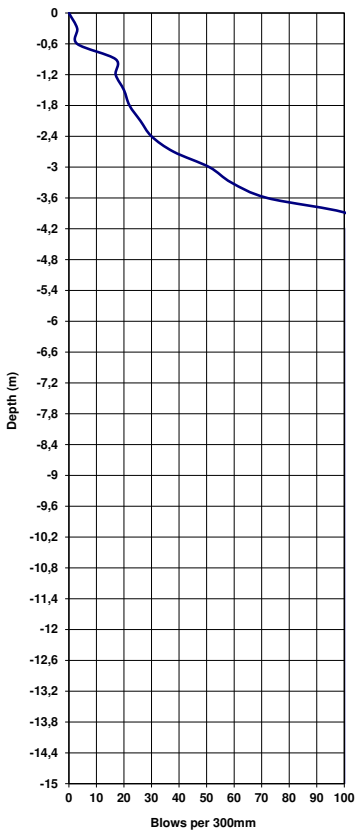
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-16***

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Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	3	Very Loose
0,6	3	Very Loose
0,9	17	Med.Dense
1,2	17	Med.Dense
1,5	20	Firm
1,8	22	Firm
2,1	26	Firm
2,4	30	Firm
2,7	38	Stiff
3	51	Stiff
3,3	59	Stiff
3,6	72	Very Stiff
	Ref	

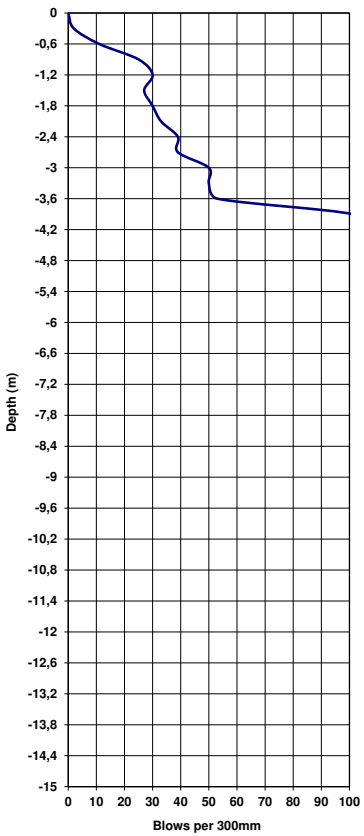


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-28***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	2	Very Loose
0,6	11	Loose
0,9	25	Med.Dense
1,2	30	Med.Dense
1,5	27	Firm
1,8	30	Firm
2,1	33	Firm
2,4	39	Stiff
2,7	39	Stiff
3	50	Stiff
3,3	50	Stiff
3,6	53	Stiff
	Ref	

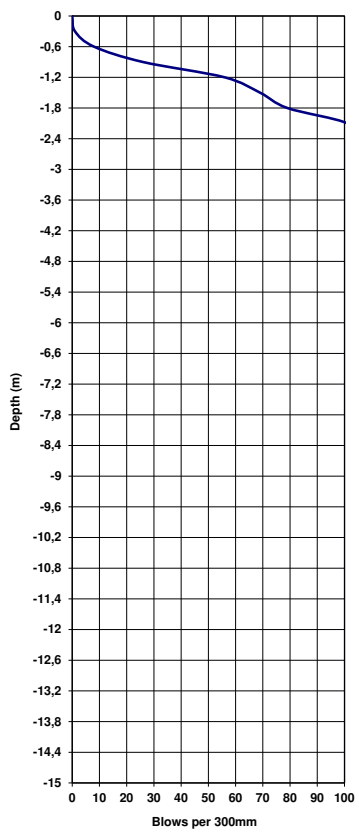


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-29***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	8	Loose
0,9	26	Med.Dense
1,2	56	Dense
1,5	69	Very Stiff
1,8	79	Very Stiff
	Ref	



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GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
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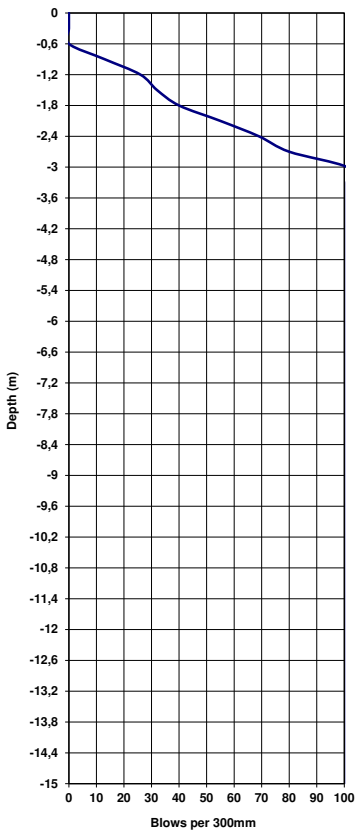
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-30***

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Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,6		
0,9	13	Loose
1,2	26	Med.Dense
1,5	32	Firm
1,8	40	Stiff
2,1	55	Stiff
2,4	69	Very Stiff
2,7	80	Very Stiff
	Ref	

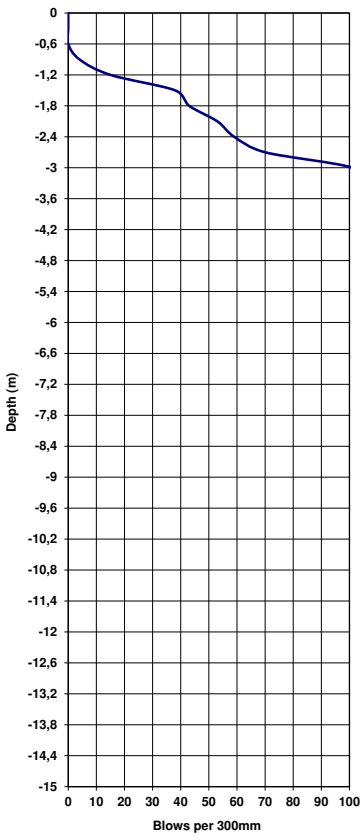


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-31***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,6			
0,9	4	Very Loose	
1,2	15	Loose	
1,5	38	Stiff	1
1,8	43	Stiff	1
2,1	53	Stiff	1
2,4	59	Stiff	1
2,7	70	Very Stiff	1
	Ref		

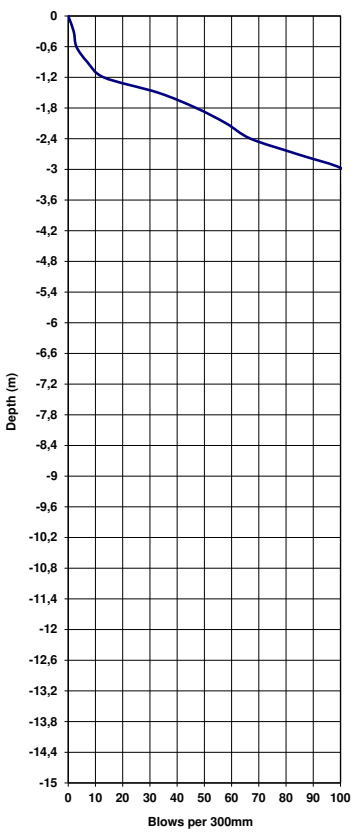


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-35***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	
0,6	3	Very Loose	
0,9	7	Loose	
1,2	13	Loose	
1,5	33	Firm	1
1,8	47	Stiff	1
2,1	58	Stiff	1
2,4	67	Stiff	1
2,7	84	Very Stiff	1
	Ref		



DRAFT FOR DISCUSSION PURPOSES

GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

Ref.No. 23-071
Date: October 2023
Operator: PT

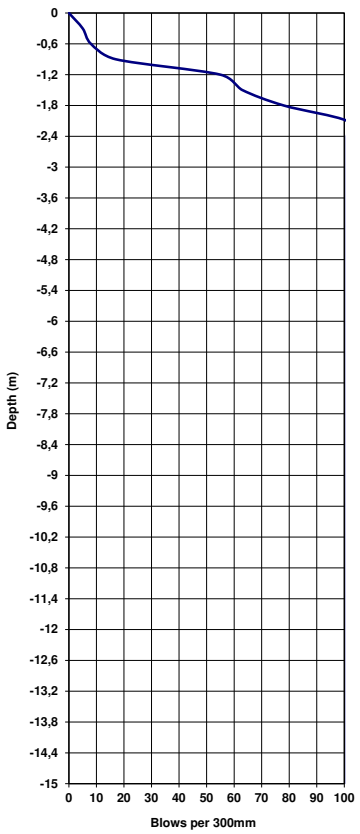
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-36***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	5	Very Loose
0,6	8	Loose
0,9	17	Med.Dense
1,2	55	Dense
1,5	63	Stiff
1,8	78	Very Stiff
	Ref	

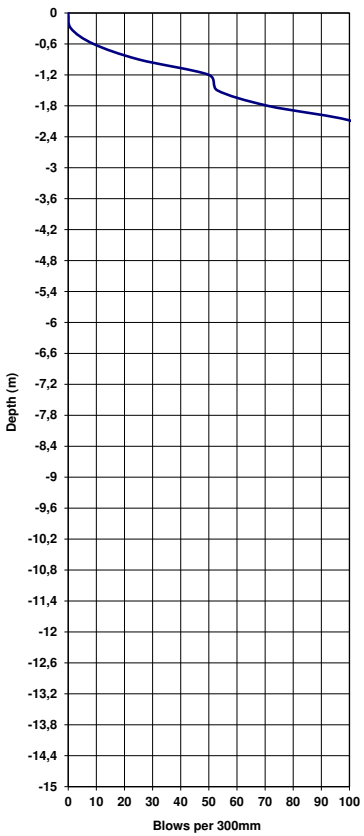


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-37***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	9	Loose
0,9	25	Med.Dense
1,2	50	Dense
1,5	53	Stiff
1,8	71	Very Stiff
	Ref	

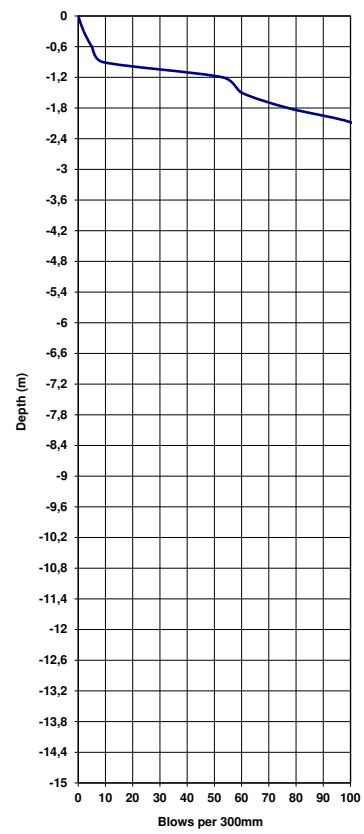


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-40***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	2	Very Loose
0,6	5	Very Loose
0,9	9	Loose
1,2	53	Dense
1,5	60	Stiff
1,8	77	Very Stiff
	Ref	



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Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

Ref.No. 23-071
Date: October 2023
Operator: PT

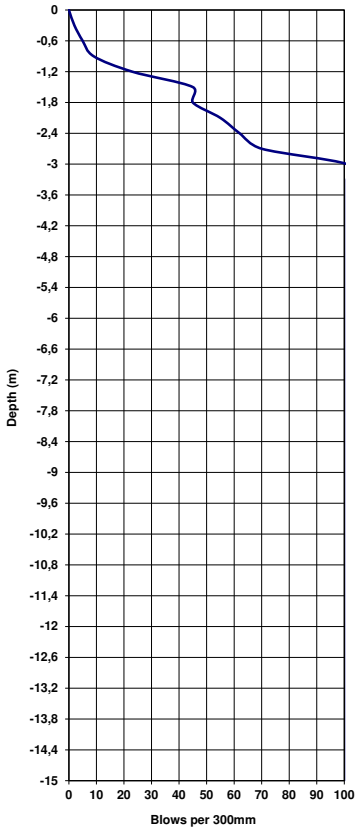
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-41***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	2	Very Loose
0,6	5	Very Loose
0,9	9	Loose
1,2	23	Med.Dense
1,5	45	Stiff
1,8	45	Stiff
2,1	55	Stiff
2,4	62	Stiff
2,7	70	Very Stiff
	Ref	

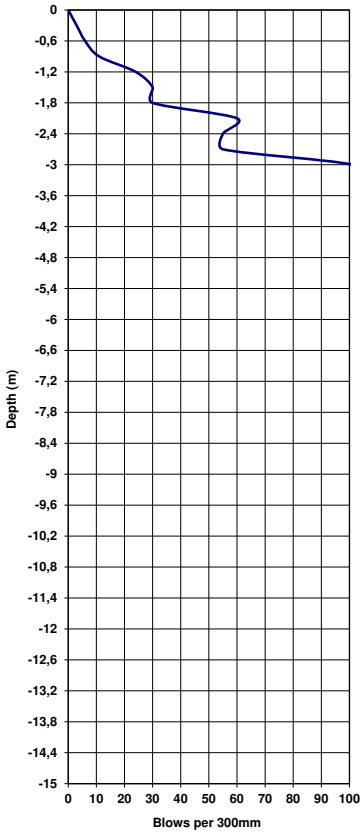


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-42***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	3	Very Loose	
0,6	6	Very Loose	
0,9	11	Loose	
1,2	24	Med.Dense	
1,5	30	Firm	1
1,8	30	Firm	1
2,1	60	Stiff	1
2,4	55	Stiff	1
2,7	55	Stiff	1
	Ref		

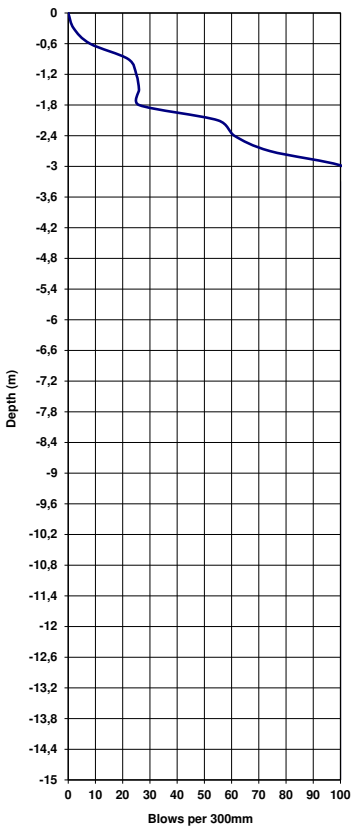


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-43***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	
0,6	8	Loose	
0,9	22	Med.Dense	
1,2	25	Med.Dense	
1,5	26	Firm	1
1,8	26	Firm	1
2,1	55	Stiff	1
2,4	61	Stiff	1
2,7	74	Very Stiff	1
	Ref		



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Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

Ref.No. 23-071
Date: October 2023
Operator: PT

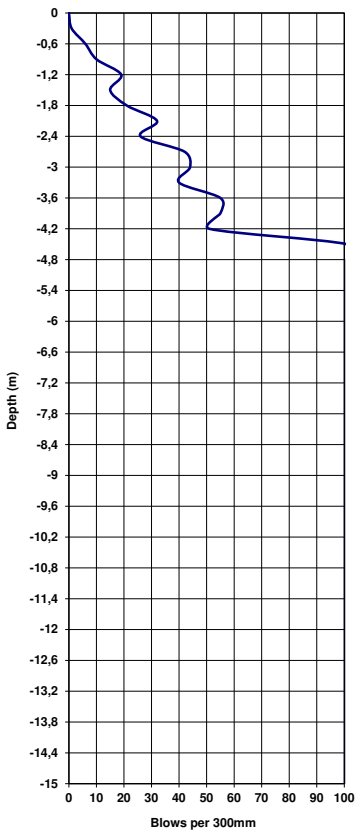
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-44***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	6	Very Loose
0,9	10	Loose
1,2	19	Med.Dense
1,5	15	Soft
1,8	21	Firm
2,1	32	Firm
2,4	26	Firm
2,7	42	Stiff
3	44	Stiff
3,3	40	Stiff
3,6	55	Stiff
3,9	55	Stiff
4,2	51	Stiff
	Ref	

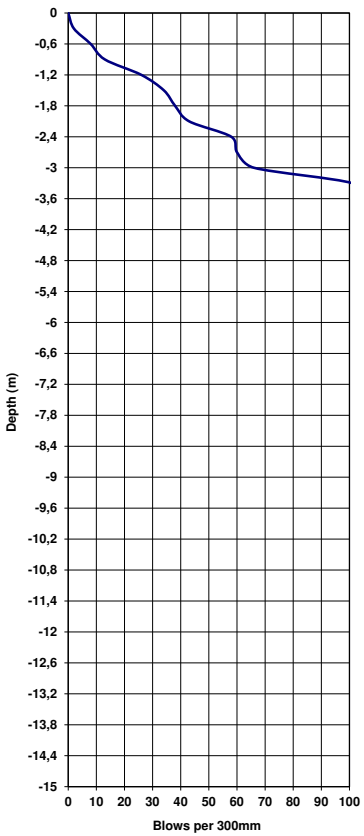


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-45***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	2	Very Loose	1
0,6	8	Loose	1
0,9	13	Loose	1
1,2	26	Med.Dense	1
1,5	34	Stiff	1
1,8	38	Stiff	1
2,1	43	Stiff	1
2,4	58	Stiff	1
2,7	60	Stiff	1
3	66	Stiff	1
	Ref		

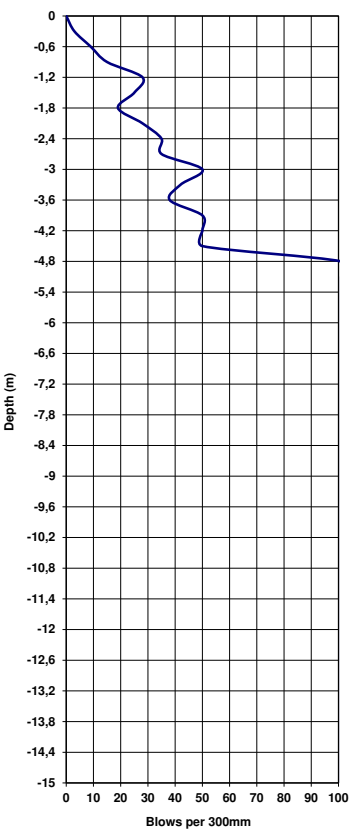


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-46***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency	
0			
0,3	3	Very Loose	1
0,6	9	Loose	1
0,9	15	Loose	1
1,2	28	Med.Dense	1
1,5	25	Firm	1
1,8	19	Firm	1
2,1	28	Firm	1
2,4	35	Stiff	1
2,7	35	Stiff	1
3	50	Stiff	1
3,3	42	Stiff	1
3,6	38	Stiff	1
3,9	50	Stiff	1
4,2	50	Stiff	1
4,5	50	Stiff	1
	Ref		



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Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

Ref.No. 23-071
Date: October 2023
Operator: PT

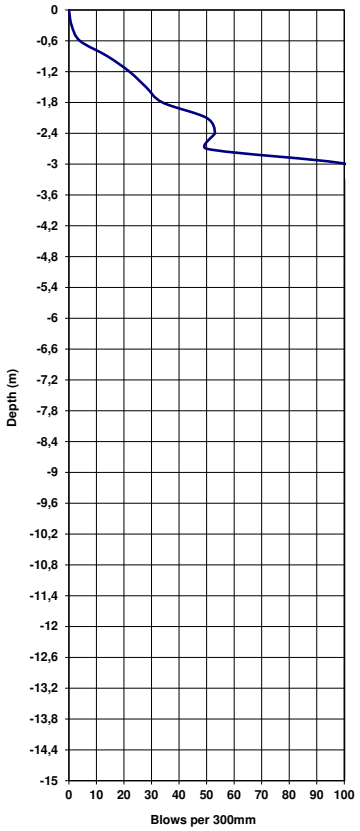
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-47***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	4	Very Loose
0,9	14	Loose
1,2	22	Med.Dense
1,5	28	Firm
1,8	34	Stiff
2,1	50	Stiff
2,4	53	Stiff
2,7	50	Stiff
	Ref	

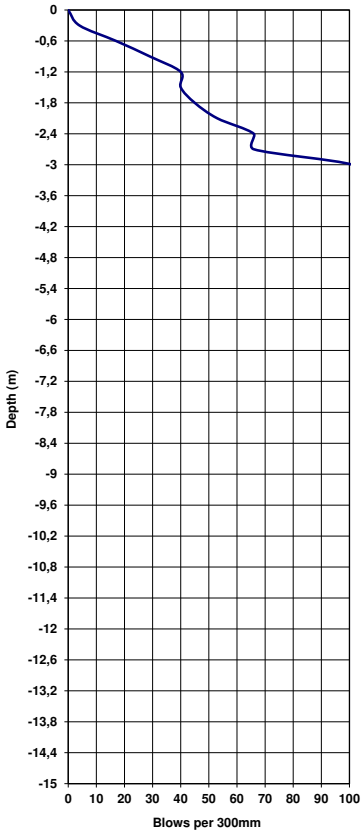


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-48***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	4	Very Loose
0,6	17	Med.Dense
0,9	29	Med.Dense
1,2	40	Med.Dense
1,5	40	Stiff
1,8	45	Stiff
2,1	53	Stiff
2,4	66	Stiff
2,7	66	Stiff
	Ref	

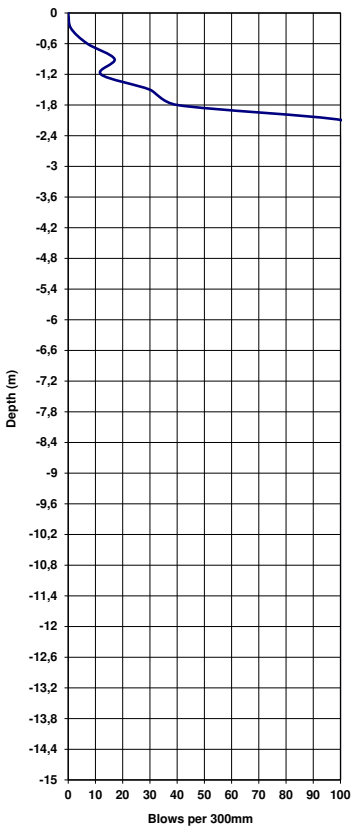


Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-49***

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings

C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	1	Very Loose
0,6	7	Loose
0,9	17	Med.Dense
1,2	12	Loose
1,5	30	Firm
1,8	40	Stiff
	Ref	



DRAFT FOR DISCUSSION PURPOSES

GONDWANA GEO SOLUTIONS

Consulting Geotechnical Engineers & Engineering Geologists

Cape Town Office:
13 Rocklands Road
Simonstown
CAPE TOWN
7975

Durban Office:
4 Haven Road
Westville
DURBAN
3629

Client: BIGEN ENGINEERS
Project: Calcutta Memorial Park
Section: Stellenbosch

Ref.No. 23-071
Date: October 2023
Operator: PT

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL CAL-50***

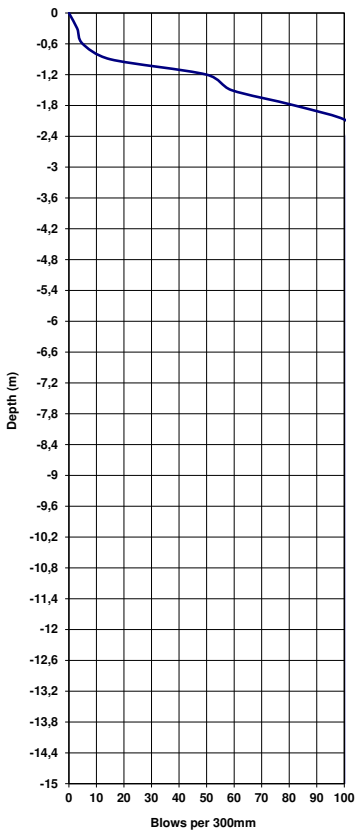
Light Dynamic Penetrometer Probe ---------- ***Test No. DPL***

Light Dynamic Penetrometer Probe ---------- ***Test No. DPL***

THE INSITU STRENGTH DEPENDS ON SOIL MOISTURE CONTENT AND GRAIN STRUCTURE WHICH HAVE NOT BEEN ASSESSED AND MAY CHANGE. THE VALUES GIVEN ARE THEREFORE INDICATIVE ONLY AND SHOULD BE VERIFIED BY TEST OR OBSERVATION

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings
C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		
0,3	3	Very Loose
0,6	5	Very Loose
0,9	15	Loose
1,2	50	Dense
1,5	59	Stiff
1,8	82	Very Stiff
	Ref	

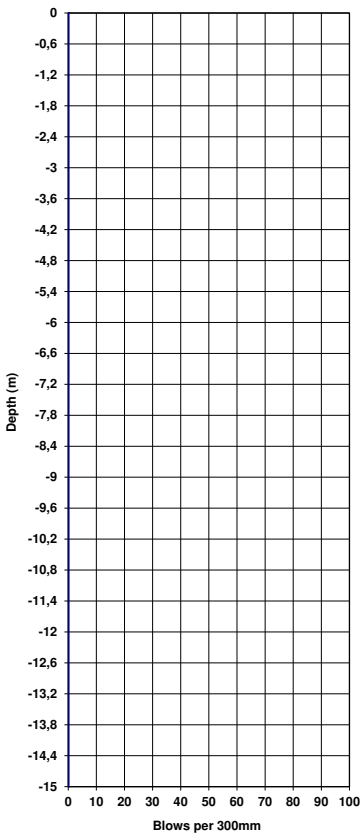


Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings
C=1
Phi=0

Depth metres	Blows per 300mm	Inferred Consistency
0		

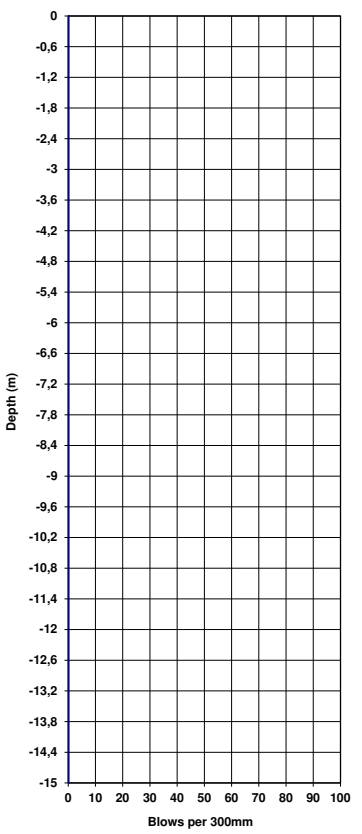
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1

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings
C=1
Phi=0



Depth metres	Blows per 300mm	Inferred Consistency
0		

Hammer: 10kg falling 550mm
Cone: 25mm diameter with 60 degree apex angle
Rods: 16mm diameter, 22mm diameter couplings
C=1
Phi=0



DRAFT FOR DISCUSSION PURPOSES

APPENDIX D

DRAFT - FOR DISCUSSION PURPOSES

SGS MATROCAST

SGS MATROCAST (PTY) LTD
- CIVIL ENGINEERING SERVICES -
Reg.No.: 2000/030983/07 - VAT. Reg.No.: 4130197405
a SANAS Accredited Testing Laboratory, No. T0245

4 HARBOT CLOSE , BRACKENDUST ,7560
P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

CLIENT :	GONDWANA GEOSOLUTIONS	OUR REF.:	58054
ADDRESS :	17 KINGSMEAD DRIVER WESTVILLE DURBANVILLE	YOUR REF.:	23-071/1
ATTENTION :	MR M.RICHTER	DATE :	24.10.2023

PROJECT : CALCUTTA CEMETERY, STELLENBOSCH

SGS MATROCAST

a SANAS Accredited Testing Laboratory, No. T0245

Tests marked * "Not SANAS Accredited" in this Report are not included in the SANAS Schedule of Accreditation for the laboratory.

TEST REPORT / RESULTS

Sample/s:

Sampled by :	SGS
Date Received / Sampled :	05.10.2023
Date Tested :	05.10.2023-24.10.2023
Tested at :	SGS MATROCAST (PTY) LTD

Sampling method : Sampled by client and results apply to the sample as received
Test Pit 1 & 2 (Tested by Nelson Nqumama)
Weather Condition @ time of testing :Clear

Section / Position tested identified by : CUSTOMER

Number of pages in this Report : 17

General : CBR CLASSIFICATION, MDD & FOUNDATION INDICATOR TEST RESULTS

Opinions and interpretations expressed herein are outside the Scope of SANAS Accreditation.
Results only have bearing on the samples tested.
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Sections may only be reproduced with written approval from SGS MATROCAST

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Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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4 HARBOT CLOSE , BRACKENDUST ,7560
P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

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Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

4.5.0(SGS)(2021.05.05)

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P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

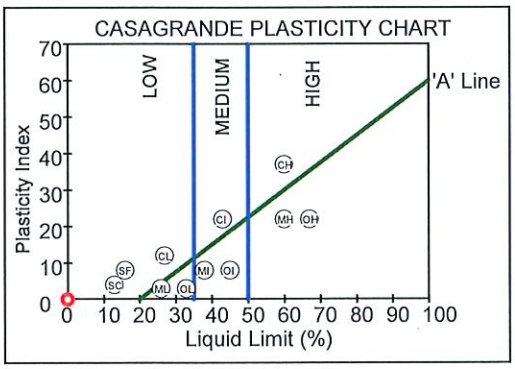
Your Ref : 23-071/2
Our Ref : 58224
Date Reported : 27.10.2023

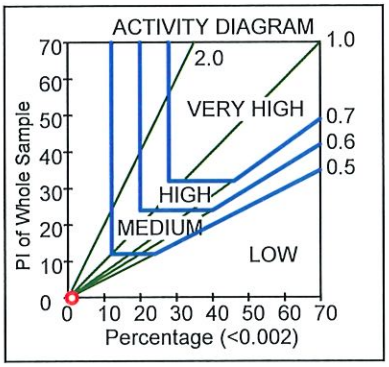
FOUNDATION INDICATOR (ASTM: D422)

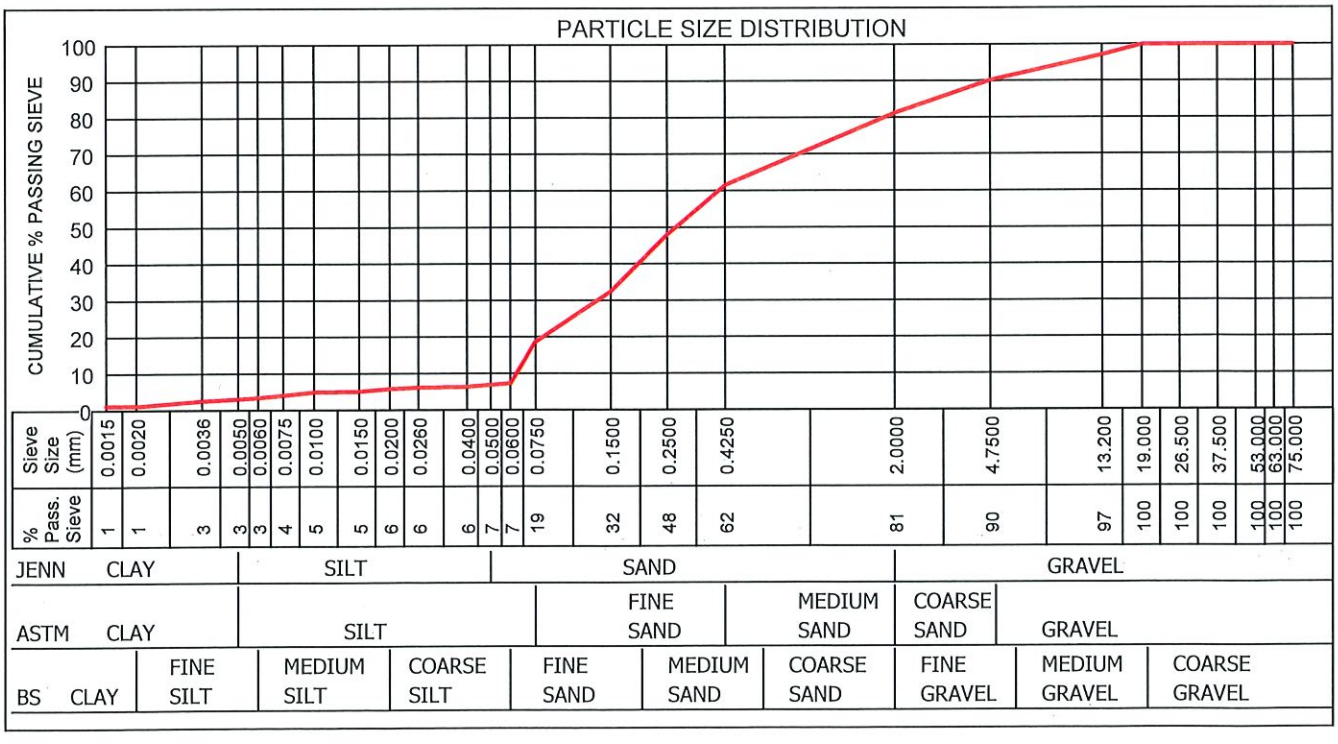
Sample No.	: D 02148
Hole No.	: AH-A7
Depth	: 0.0 - 0.5
Liquid Limit (%)	: -
Plasticity Index	: NP
Linear Shrinkage (%)	: 0,0
PI of Whole Sample	: 0
P.R.A. Classification	: A-2-4(0)
Unified Soil Classificati	: SC
Activity	: 0,00
Heave Classification	: LOW
Grading Modulus	: 1,38
Percentage (<0.002)	: 1,0
Moisture Content (%)	: 3,5
Relative Density	: 2,565

Material Description : BROWN GREY SILTY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	3,1	3,8	74,4	18,7	SAND
Astm	3,1	15,5	71,5	9,8	SILTY SAND
British Standard	1,2	6,1	73,9	18,7	SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	1	1	3	3	3	4	5	5	6	6	6	7	7	19	32	48	62	81	90	97	100	100	100	100	100	100

JENN	CLAY		SILT		SAND			GRAVEL		
ASTM	CLAY		SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL	
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

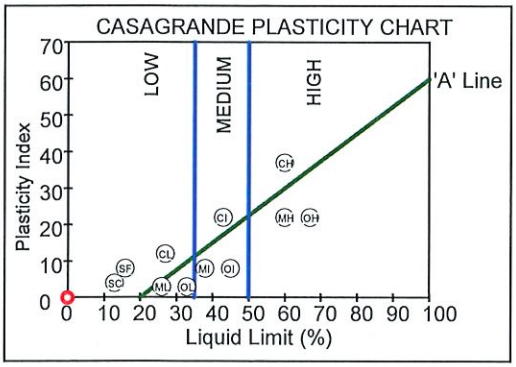
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Our Ref : 58224
Date Reported : 27.10.2023

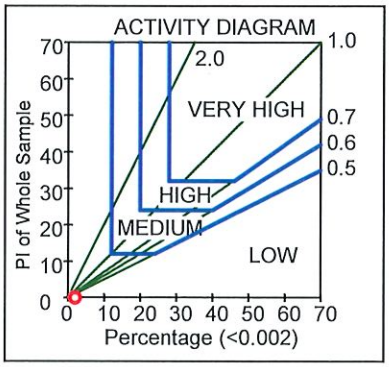
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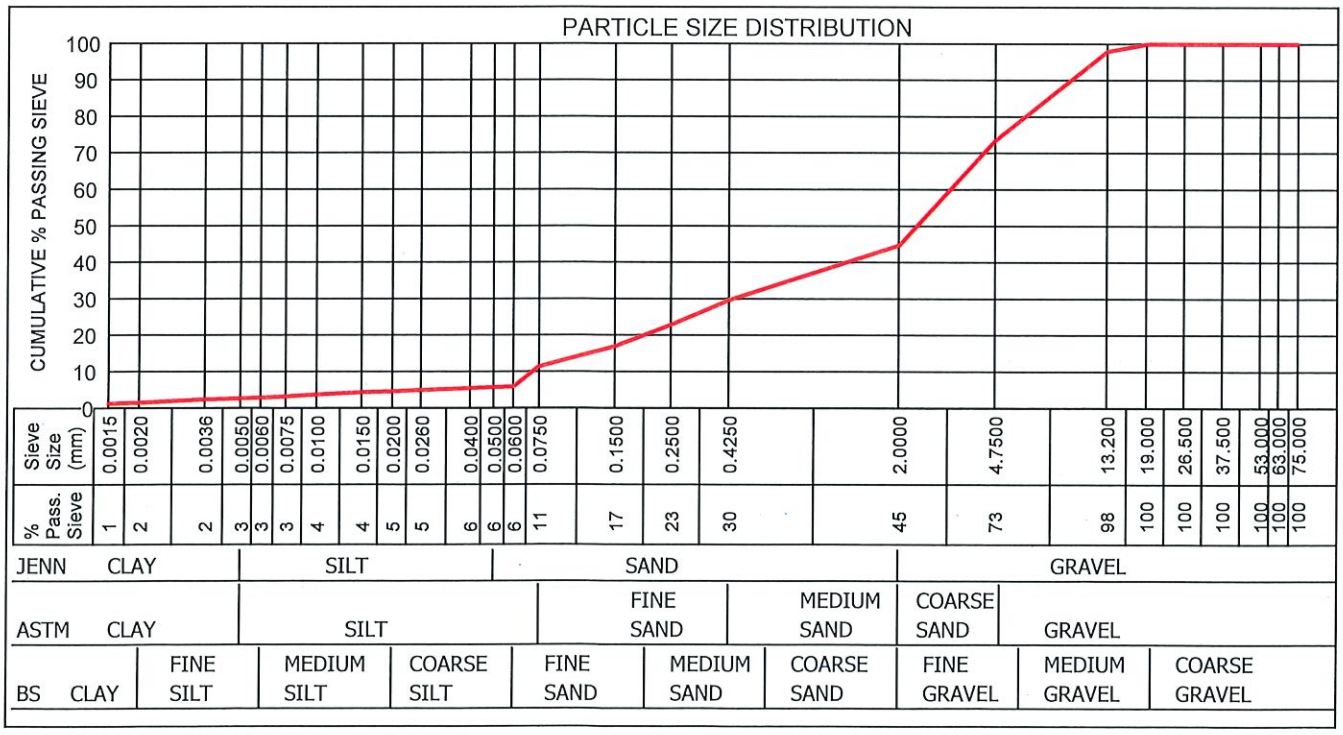
Sample No.	: D 02149
Hole No.	: AH-A7
Depth	: 0.5-0.9
Liquid Limit (%)	: -
Plasticity Index	: NP
Linear Shrinkage (%)	: 0,0
PI of Whole Sample	: 0
P.R.A. Classification	: A-1-a(0)
Unified Soil Classificati	: SW-SC
Activity	: 0,00
Heave Classification	: LOW
Grading Modulus	: 2,14
Percentage (<0.002)	: 2,0
Moisture Content (%)	: 5,1
Relative Density	: 2,617

Material Description : ORANGE GREY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	2,7	3,0	39,0	55,3	SAND
Astm	2,7	8,7	62,0	26,6	SAND
British Standard	1,5	4,5	38,8	55,3	SAND







Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

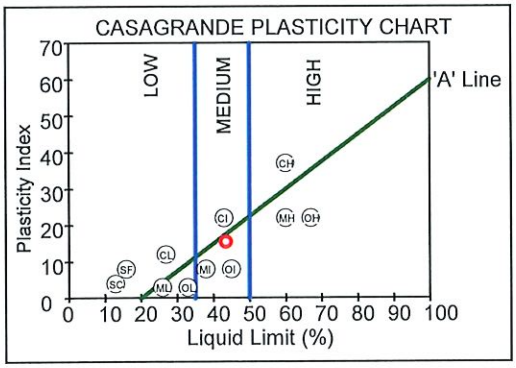
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Our Ref : 58224
Date Reported : 27.10.2023

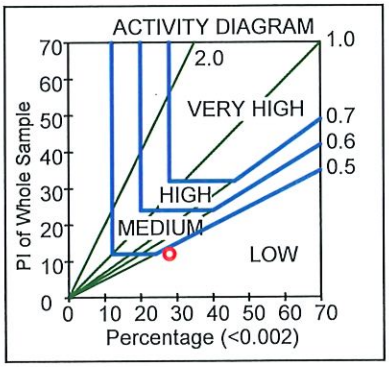
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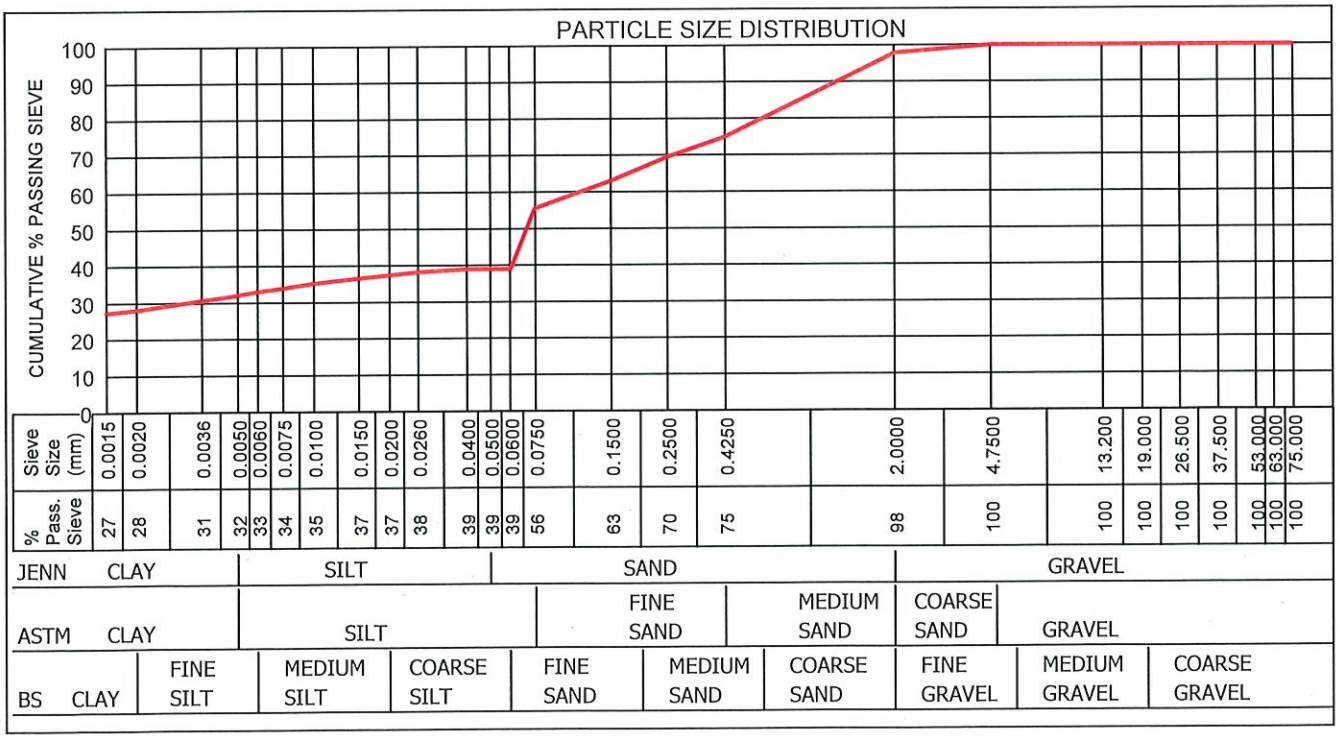
Sample No.	: D 02152
Hole No.	: AH-4B
Depth	: 0.5-1.4
Liquid Limit (%)	: 44
Plasticity Index	: 16
Linear Shrinkage (%)	: 8,0
PI of Whole Sample	: 12
P.R.A. Classification	: A-7-6(7)
Unified Soil Classificati	: ML
Activity	: 0,43
Heave Classification	: LOW
Grading Modulus	: 0,71
Percentage (<0.002)	: 28,0
Moisture Content (%)	: 17,2
Relative Density	: 2,517

Material Description : GEYISH BROWN SANDY CLAY

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	32,1	6,9	58,9	2,1	SANDY CLAY
Astm	32,1	23,5	44,4	0,0	SANDY CLAY
British Standard	28,1	10,9	58,9	2,1	CLAYEY SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	27	28	31	32	33	34	35	37	37	38	39	39	39	56	63	70	75	98	100	100	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL		
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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Fax : 021 9816724
Email : gregory.bell@sgs.com

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

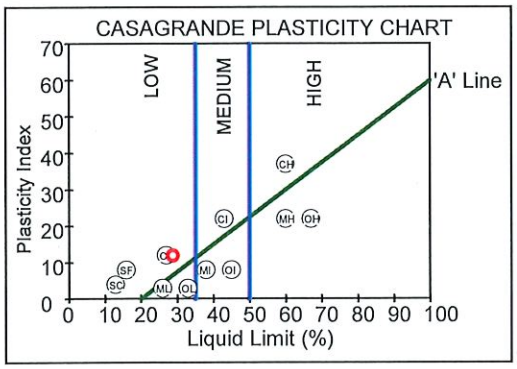
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Our Ref : 58224
Date Reported : 27.10.2023

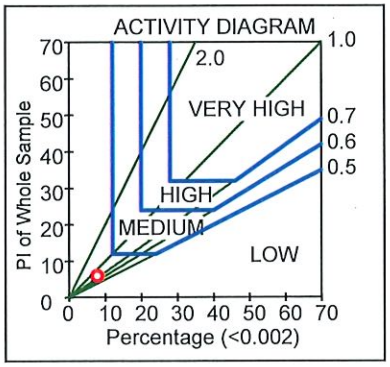
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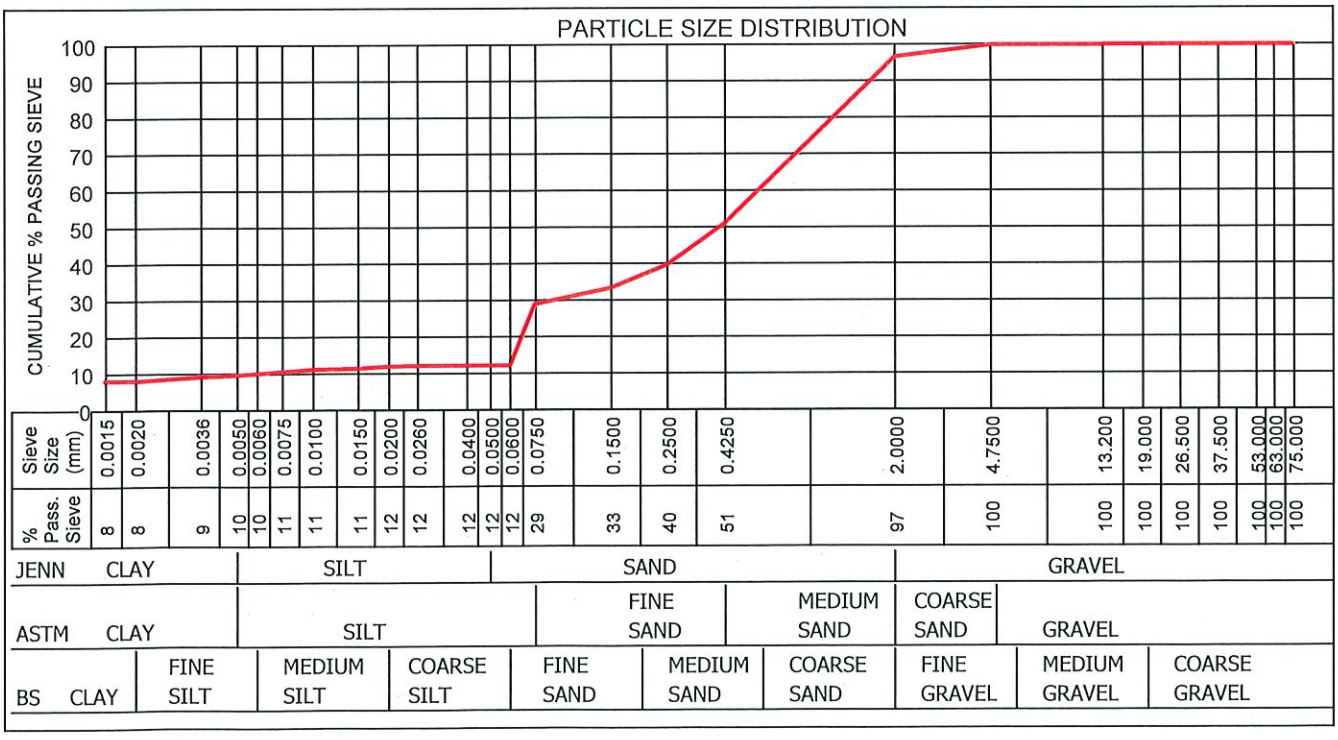
Sample No.	: D 02153
Hole No.	: AH-4B
Depth	: 1.4-2.5
Liquid Limit (%)	: 29
Plasticity Index	: 12
Linear Shrinkage (%)	: 6,0
PI of Whole Sample	: 6
P.R.A. Classification	: A-2-6(0)
Unified Soil Classificati	: SC
Activity	: 0,75
Heave Classification	: LOW
Grading Modulus	: 1,23
Percentage (<0.002)	: 8,0
Moisture Content (%)	: 7,4
Relative Density	: 2,574

Material Description : GEYISH BROWN SILTY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	9,8	2,5	84,5	3,3	SAND
Astm	9,8	19,3	70,8	0,2	SILTY SAND
British Standard	8,2	4,1	84,5	3,3	SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	8	8	9	10	10	11	11	11	12	12	12	12	12	29	33	40	51	97	100	100	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL		
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

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Fax : 021 9816724
Email : gregory.bell@sgs.com

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

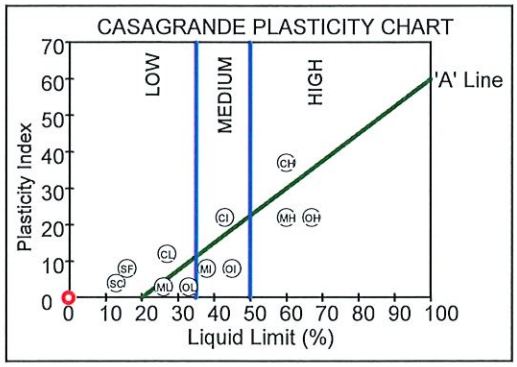
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Our Ref : 58224
Date Reported : 27.10.2023

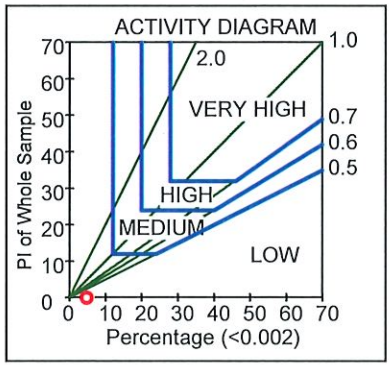
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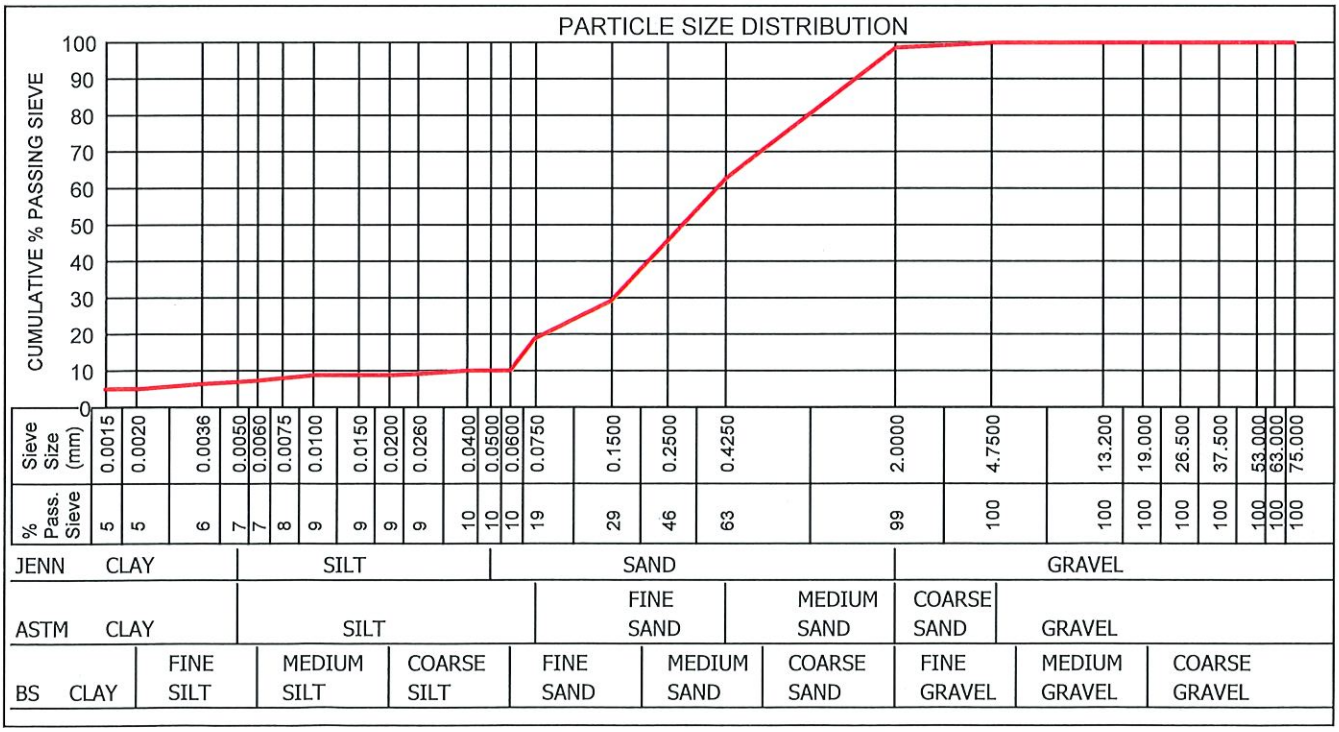
Sample No.	: D 02155
Hole No.	: AH-B7
Depth	: 1.2-2.10
Liquid Limit (%)	: -
Plasticity Index	: SP
Linear Shrinkage (%)	: 0,5
PI of Whole Sample	: 0
P.R.A. Classification	: A-2-4(0)
Unified Soil Classificati	: SC
Activity	: 0,00
Heave Classification	: LOW
Grading Modulus	: 1,19
Percentage (<0.002)	: 5,0
Moisture Content (%)	: 8,0
Relative Density	: 2,596

Material Description : ORANGE SILTY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	7,0	3,1	88,6	1,4	SAND
Astm	7,0	11,9	81,1	0,0	SAND
British Standard	5,0	5,0	88,6	1,4	SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	5	5	6	7	7	8	9	9	9	9	10	10	10	19	29	46	63	99	100	100	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND		MEDIUM SAND	COARSE SAND	GRAVEL	
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

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TEST RESULTS

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17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK - STELLENBOSCH

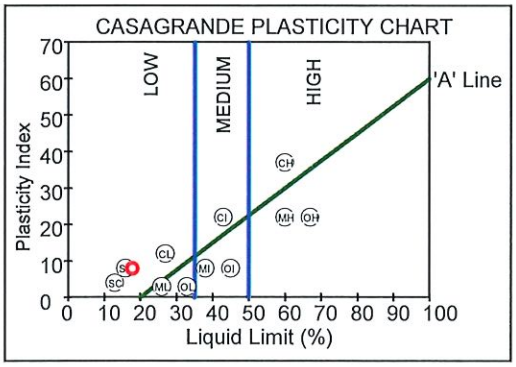
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Date Reported : 27.10.2023

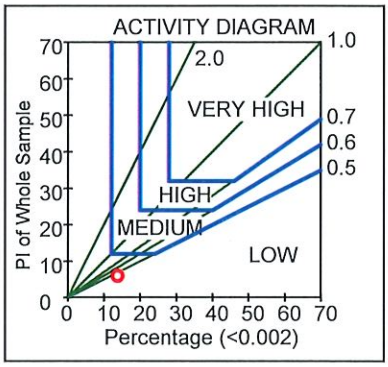
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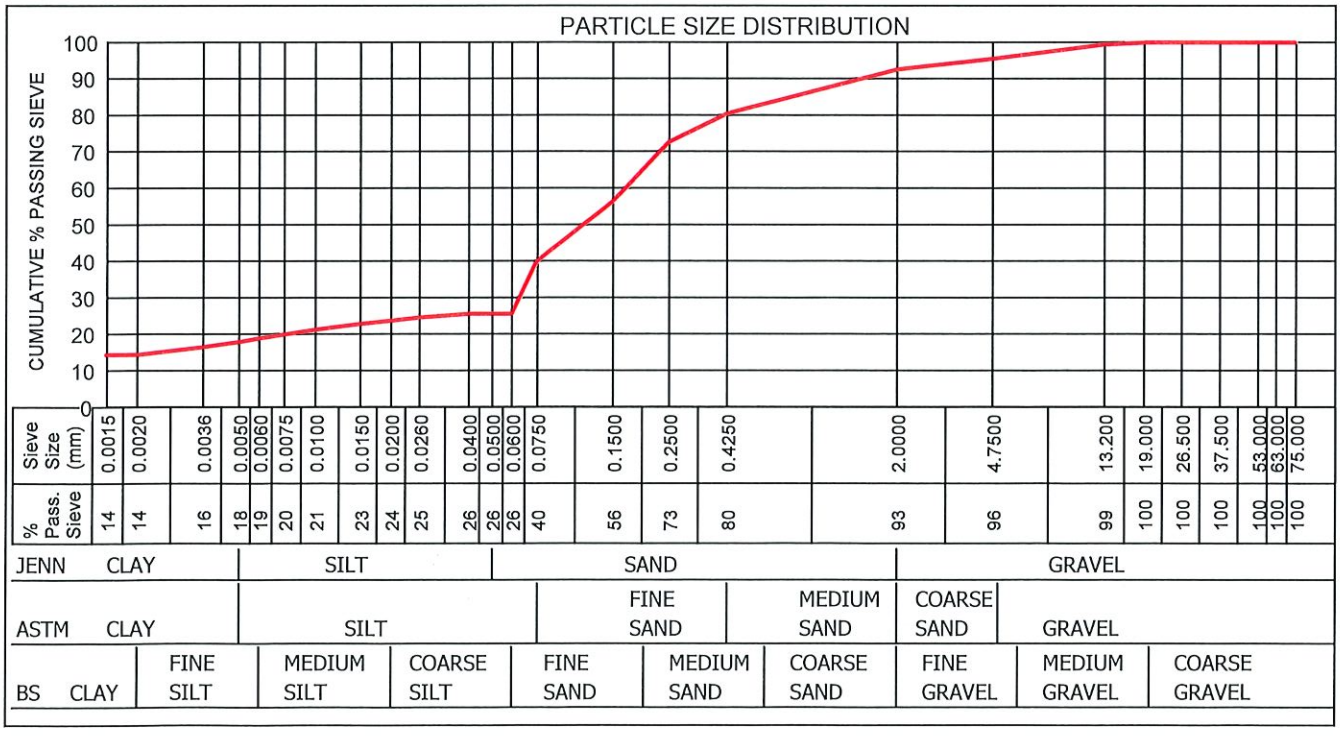
Sample No.	: D 02157
Hole No.	: AH-B8
Depth	: 1.1-2.0
Liquid Limit (%)	: 18
Plasticity Index	: 8
Linear Shrinkage (%)	: 4,0
PI of Whole Sample	: 6
P.R.A. Classification	: A-4(1)
Unified Soil Classificati	: SC
Activity	: 0,43
Heave Classification	: LOW
Grading Modulus	: 0,87
Percentage (<0.002)	: 14,0
Moisture Content (%)	: 13,2
Relative Density	: 2,520

Material Description : ORANGE GREY SILTY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	17,9	7,7	66,9	7,5	SILTY SAND
Astm	17,9	22,0	55,6	4,5	SILTY SAND
British Standard	14,4	11,2	66,9	7,5	SILTY SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	14	14	16	18	19	20	21	23	24	25	26	26	26	40	56	73	80	93	96	99	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL		
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

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Attention: MR M.RICHTER

Project : CALCUTTA CEMETRY STELLENBOSCH

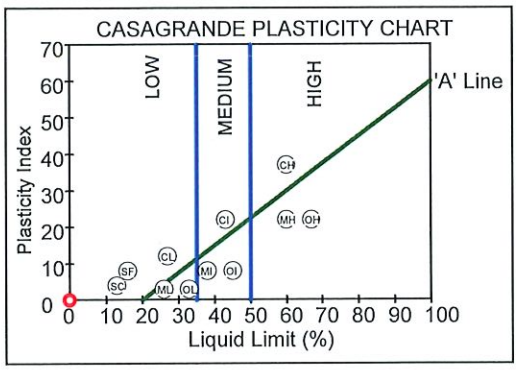
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Our Ref : 58054
Date Reported : 24.10.2023

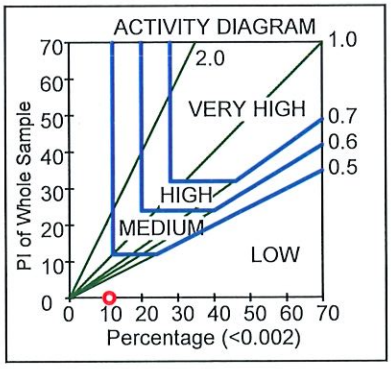
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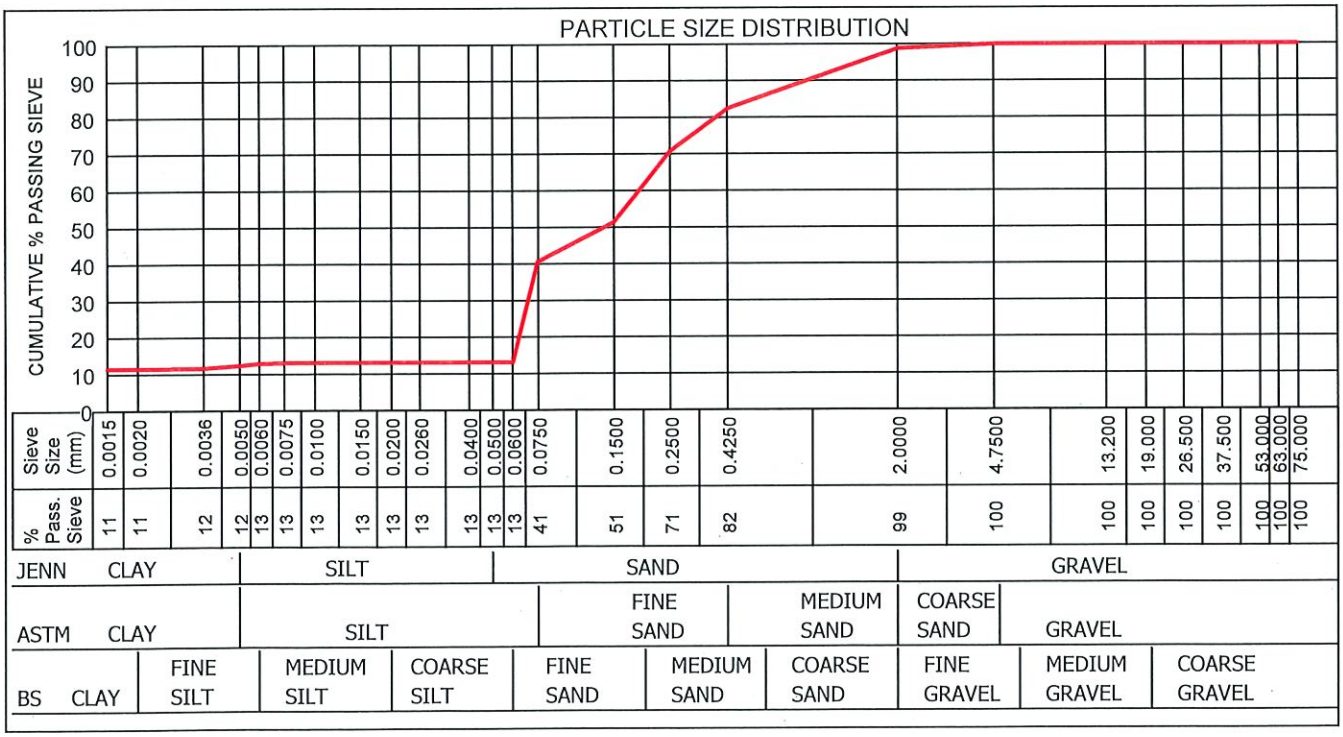
Sample No.	: D 02088
Hole No.	: AHS
Depth	: 2.00-0.30
Liquid Limit (%)	: -
Plasticity Index	: SP
Linear Shrinkage (%)	: 1,0
PI of Whole Sample	: 0
P.R.A. Classification	: A-4(1)
Unified Soil Classificati	: SC
Activity	: 0,00
Heave Classification	: LOW
Grading Modulus	: 0,78
Percentage (<0.002)	: 11,0
Moisture Content (%)	: 17,8
Relative Density	: 2,580

Material Description : GREYISH BROWN SILTY SAND

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	12,4	0,7	85,7	1,2	SAND
Astm	12,4	28,2	59,4	0,0	SILTY SAND
British Standard	11,5	1,6	85,7	1,2	SAND







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	11	11	12	12	13	13	13	13	13	13	13	13	13	41	51	71	82	99	100	100	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL		
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA CEMETRY STELLENBOSCH

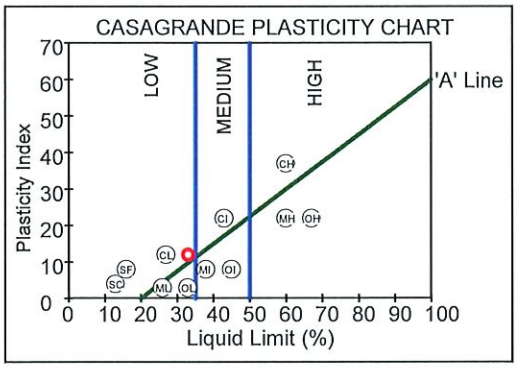
Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 24.10.2023

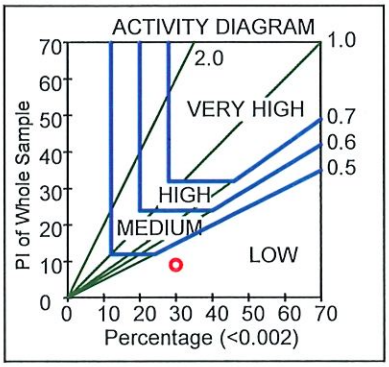
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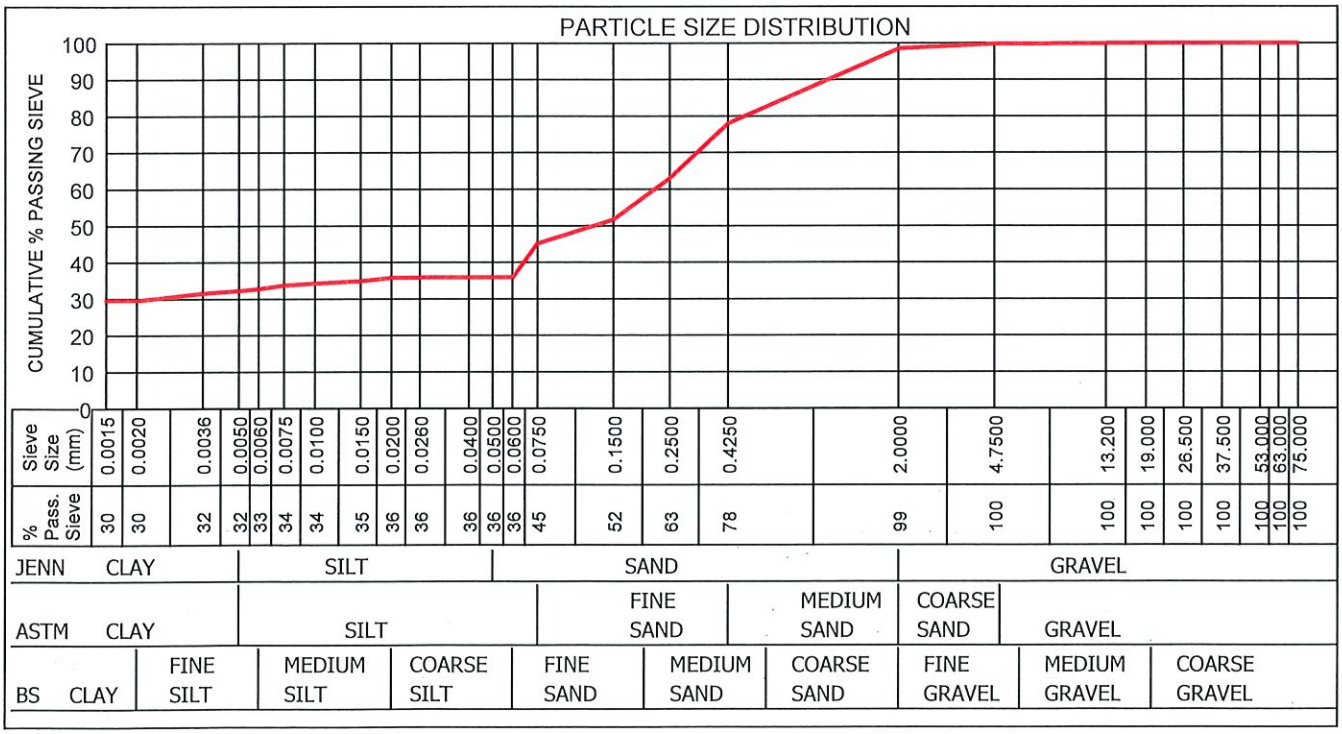
Sample No.	: D 02089
Hole No.	: AHS
Depth	: 0.30-1.50
Liquid Limit (%)	: 33
Plasticity Index	: 12
Linear Shrinkage (%)	: 6,0
PI of Whole Sample	: 9
P.R.A. Classification	: A-6(3)
Unified Soil Classificati	: SC
Activity	: 0,30
Heave Classification	: LOW
Grading Modulus	: 0,78
Percentage (<0.002)	: 30,0
Moisture Content (%)	: 53,3
Relative Density	: 2,612

Material Description : DARK BROWN SANDY CLAY

	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Classification
Jennings	32,3	3,6	62,7	1,5	SANDY CLAY
Astm	32,3	12,8	54,7	0,2	SANDY CLAY
British Standard	29,6	6,2	62,7	1,5	SANDY CLAY







Sieve Size (mm)	0.0015	0.0020	0.0036	0.0050	0.0060	0.0075	0.0100	0.0150	0.0200	0.0260	0.0400	0.0500	0.0600	0.0750	0.1500	0.2500	0.4250	2.0000	4.7500	13.200	19.000	26.500	37.500	53.000	63.000	75.000
% Pass. Sieve	30	30	32	32	33	34	34	35	36	36	36	36	36	45	52	63	78	99	100	100	100	100	100	100	100	100

JENN	CLAY	SILT			SAND			GRAVEL		
ASTM	CLAY	SILT			FINE SAND	MEDIUM SAND	COARSE SAND	GRAVEL		
BS	CLAY	FINE SILT	MEDIUM SILT	COARSE SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL

Remarks : SAMPLED AND DELIVERED BY CUSTOMER IN A GOOD CONDITION

FORM: A6

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054.1
Date Reported : 24.10.2023

SIEVE ANALYSIS, CONSTANTS, CBR(SANS 3001:GR1,GR10,GR12,GR20,GR30,GR40)

SAMPLE NO.	D 02081	D 02082			Preparation Method:
HOLE NO.	TP-R1	TP-R1			Sample was scalped on the 37.5mm sieve
ROAD NO.	Calcutta Cemetry	Calcutta Cemetry			
DEPTH	0.0-0.07	0.70-1.00			
CHAINAGE	On Site	On Site			
LAYER TYPE	-	-			
STABILISED WITH	Neat	Neat			
SUPPLIER	N/a	N/a			
CURING METHOD	N/a	N/a			
DATE TESTED	12.10.2023	12.10.2023			
DESCRIPTION	Brown Silty Sand +Roots	Brown Silty Sandy Clay			- Specification
SIEVE ANALYSIS (% PASSING)					
100.0 mm					
75.00 mm					
63.00 mm					
50.00 mm					
37.50 mm					
28.00 mm					
20.00 mm					
14.00 mm					
5.000 mm	100	100			
2.000 mm	100	100			
0.425 mm	85	89			
0.075 mm	37	38			
SOIL MORTAR					
COARSE SAND <2.0mm >0.425mm	14	11			
FINE SAND <0.425mm >0.075mm	49	51			
MATERIAL <0.075mm	37	38			
CONSTANTS					
GRADING MODULUS	0,78	0,74			
PRA CLASSIFICATION	A-4(0)	A-4(1)			
UNIFIED SOIL CLAS.	SC	SM-SC			
COLTO CLASSIFICATION	---	---			
LIQUID LIMIT (%)	-	19			
PLASTICITY INDEX (0.425mm)	NP	6			
LINEAR SHRINKAGE (%)	0,0	3,0			
MDD					
MAXIMUM DRY DENSITY (kg/m^3)	1850	1858			
OPTIMUM MOISTURE CONTENT(%)	14,3	13,2			
MOULDING MOISTURE (%)	14,2	19,1			
TYPE OF TEST	CBR	CBR			
CBR-UCS @ 100% MDD	4,2	4,2			
CBR-UCS @ 98% MDD	3,8	3,9			
CBR-UCS @ 97% MDD	3,6	3,7			
CBR-UCS @ 95% MDD	3,3	3,4			
CBR-UCS @ 93% MDD	3,0	3,1			
CBR-UCS @ 90% MDD	2,5	2,8			

CBR-UCS @ % MDD derived from calculation.

% SWELL MOULD [A][B][C]	0,00	0,00	0,00	0,11	0,15	0,19							

Remarks :

FORM: GR40

4.5.0(SGS)(2021.05.05)

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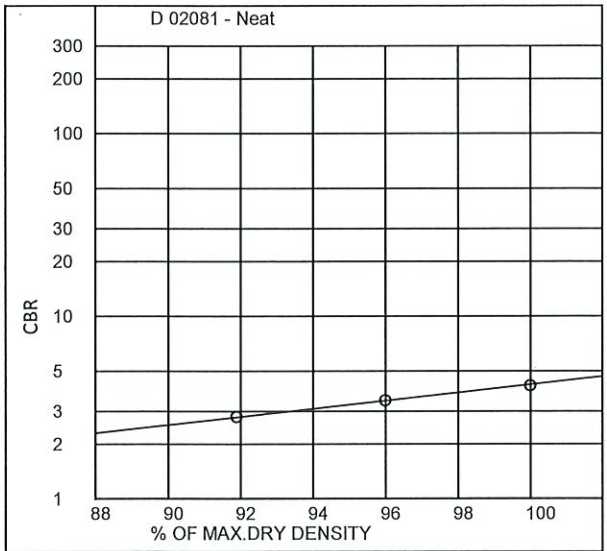
TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

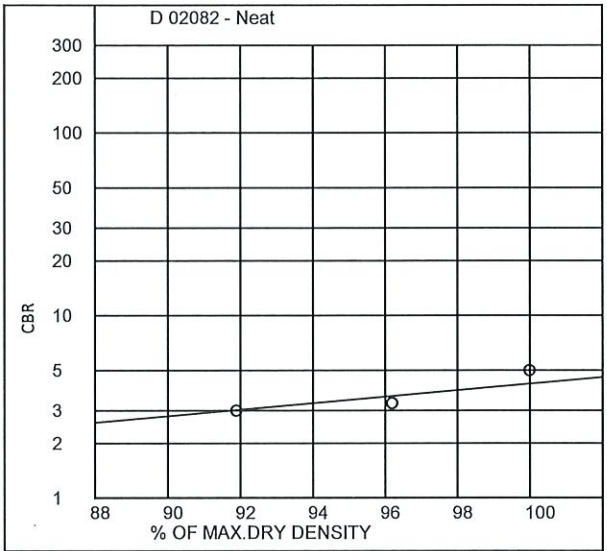
Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054.1
Date Reported : 24.10.2023

CBR-UCS GRAPH/S (OPTIONAL INFORMATION)



	PROC	NRB	MOD
COMPACTION (%)	91,9	96,0	100,0
CBR	2,8	3,5	4,2



	PROC	NRB	MOD
COMPACTION (%)	91,9	96,2	100,0
CBR	3,0	3,3	5,0

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P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : Nico.Engelbrecht@sgs.com

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

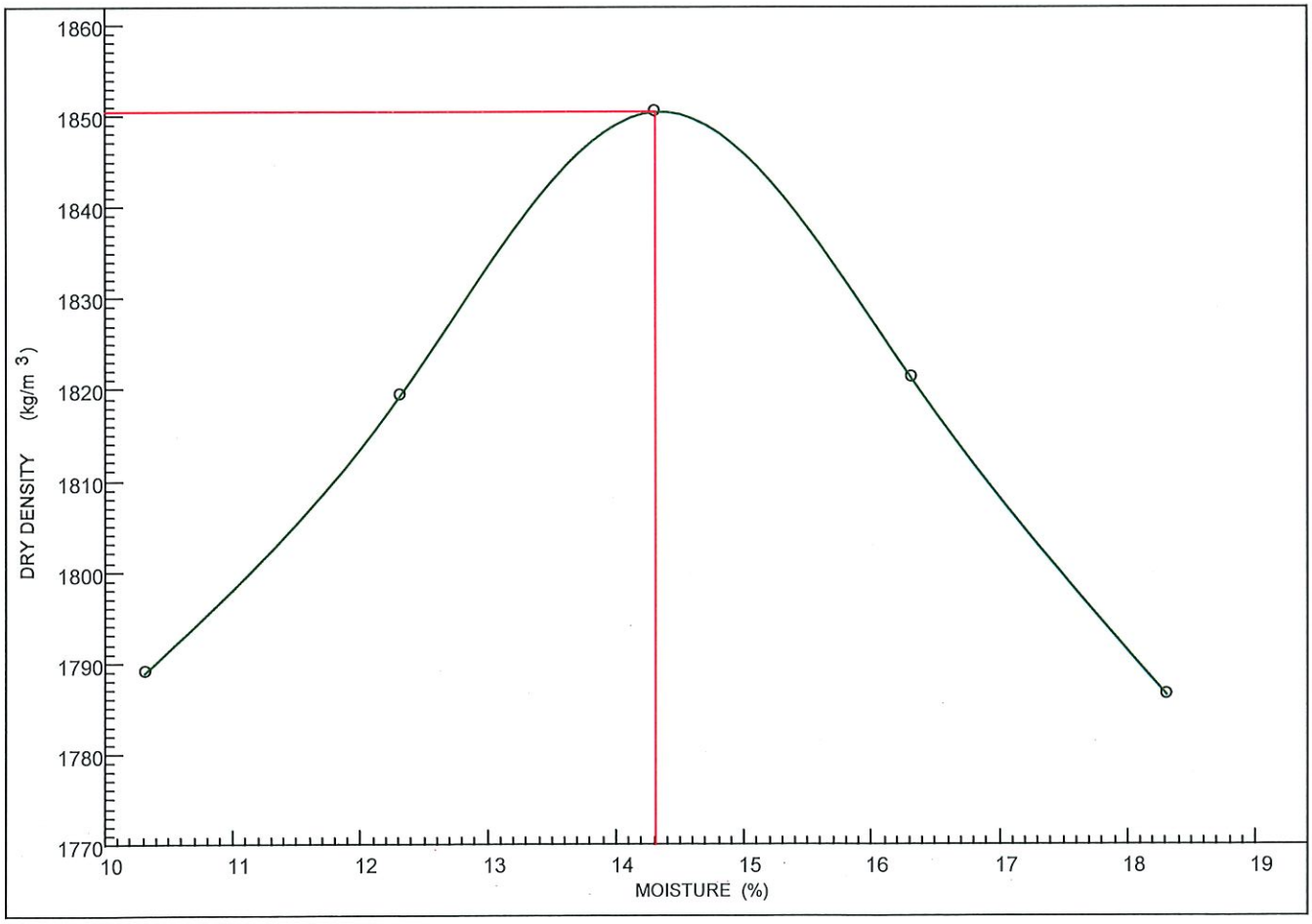
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02081	Hole No. : TP-R1	Depth (mm) : 0-0 - 0.7
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Brown Silty Sand + Roots		

Maximum Dry Density (kg/m^3): 1850

Optimum Moisture Content (%) : 14,3

Point No.	1	2	3	4	5			
Moisture (%)	10,3	12,3	14,3	16,3	18,3			
Density (kg/m^3)	1789	1819	1850	1821	1786			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

Technical Signatory : Mr Gregory F.Bell (N.Dip Civ.Eng)

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

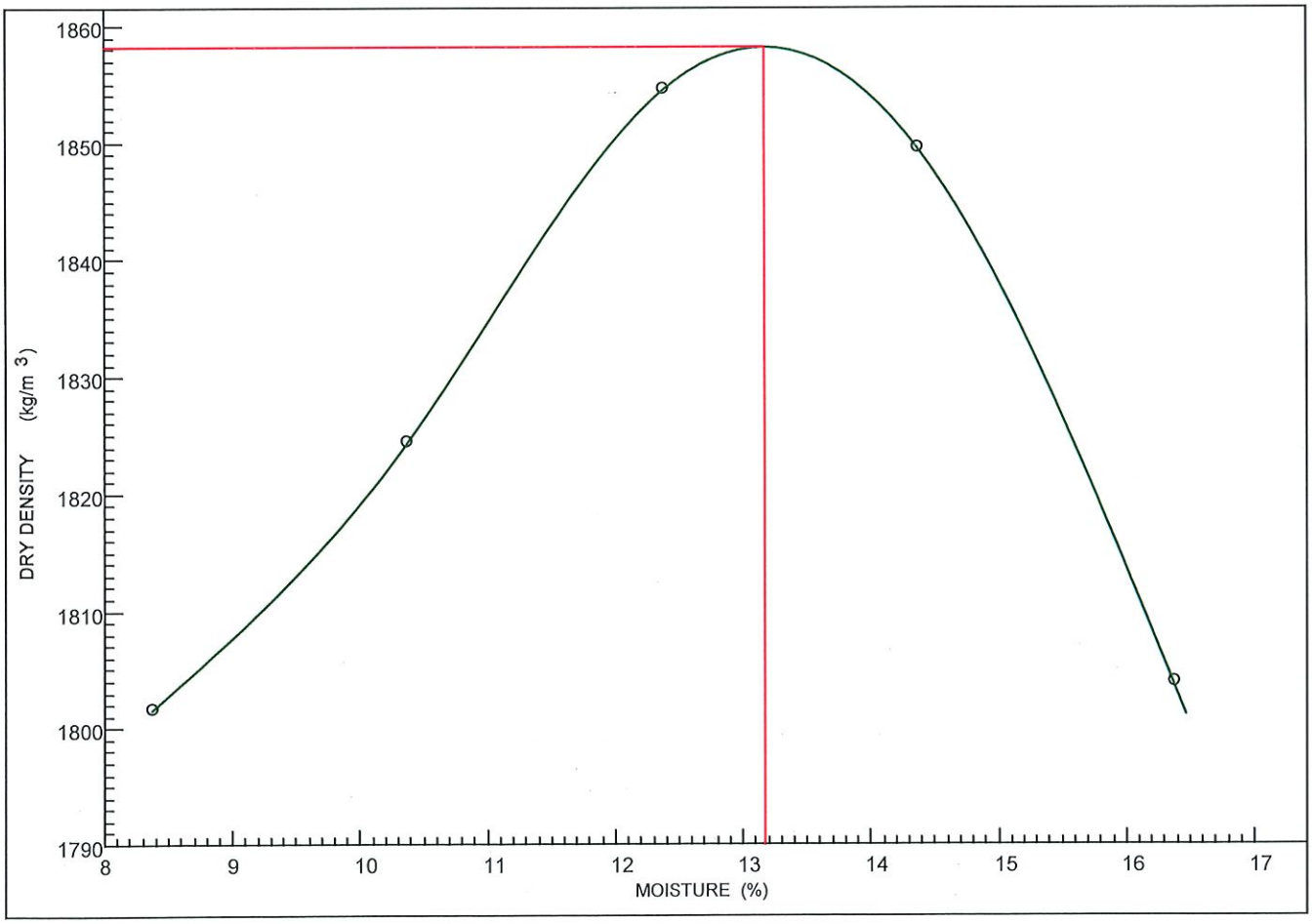
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02082	Hole No. : TP-R1	Depth (mm) : 0.7-1.0
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Greyish Brown Silty Sndy Clay		

Maximum Dry Density (kg/m^3): 1858

Optimum Moisture Content (%) : 13,2

Point No.	1	2	3	4	5			
Moisture (%)	8,4	10,4	12,4	14,4	16,4			
Density (kg/m^3)	1802	1824	1854	1850	1804			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

Technical Signatory : Mr Gregory F.Bell (N.Dip Civ.Eng)

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054.2
Date Reported : 24.10.2023

SIEVE ANALYSIS, CONSTANTS, CBR(SANS 3001:GR1,GR10,GR12,GR20,GR30,GR40)

SAMPLE NO.	D 02085	D 02086			Preparation Method:
HOLE NO.	TP-R5	TP-R5			Sample was scalped on the 37.5mm sieve
ROAD NO.	Calcutta Cemetry	Calcutta Cemetry			
DEPTH	0.00-0.40	0.40-0.80			
CHAINAGE	On Site	On Site			
LAYER TYPE	-	-			
STABILISED WITH	Neat	Neat			
SUPPLIER	N/a	N/a			
CURING METHOD	N/a	N/a			
DATE TESTED	12.10.2023	12.10.2023			
DESCRIPTION	Greyish Bown Silty Sand	Orange Grey Silty Sand			- Specification
SIEVE ANALYSIS (% PASSING)					
100.0 mm					
75.00 mm					
63.00 mm					
50.00 mm		100			
37.50 mm	100	98			
28.00 mm	97	97			
20.00 mm	96	89			
14.00 mm	93	89			
5.000 mm	60	83			
2.000 mm	29	74			
0.425 mm	10	66			
0.075 mm	7	61			
SOIL MORTAR					
COARSE SAND <2.0mm >0.425mm	64	11			
FINE SAND <0.425mm >0.075mm	12	7			
MATERIAL <0.075mm	24	82			
CONSTANTS					
GRADING MODULUS	2,54	0,98			
PRA CLASSIFICATION	A-2-6(0)	A-7-6(7)			
UNIFIED SOIL CLAS.	SP-SC	ML			
COLTO CLASSIFICATION	G8	---			
LIQUID LIMIT (%)	26	40			
PLASTICITY INDEX (0.425mm)	10	14			
LINEAR SHRINKAGE (%)	5,0	7,0			
MDD					
MAXIMUM DRY DENSITY (kg/m^3)	2304	1759			
OPTIMUM MOISTURE CONTENT(%)	7,1	13,5			
MOULDING MOISTURE (%)	6,9	13,7			
TYPE OF TEST	CBR	CBR			
CBR-UCS @ 100% MDD	33	1,9			
CBR-UCS @ 98% MDD	24	1,5			
CBR-UCS @ 97% MDD	21	1,3			
CBR-UCS @ 95% MDD	15	1,0			
CBR-UCS @ 93% MDD	11	0,8			
CBR-UCS @ 90% MDD	7,1	0,5			

CBR-UCS @ % MDD derived from calculation.

% SWELL MOULD [A][B][C]	0,09	0,13	0,17	0,14	0,20	0,25							

Remarks :

FORM: GR40

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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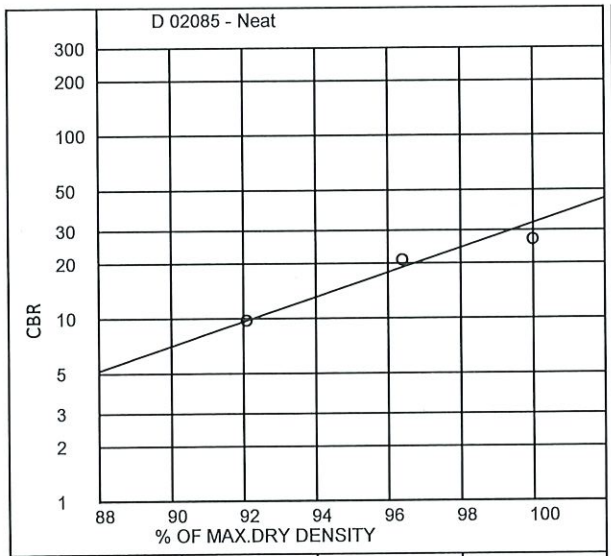
TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

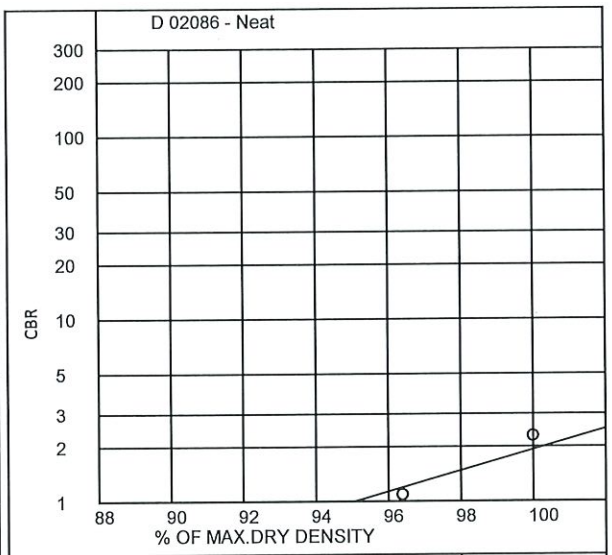
Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054.2
Date Reported : 24.10.2023

CBR-UCS GRAPH/S (OPTIONAL INFORMATION)



	PROC	NRB	MOD
COMPACTION (%)	92,1	96,4	100,0
CBR	9,8	21	27



	PROC	NRB	MOD
COMPACTION (%)	92,3	96,4	100,0
CBR	0,7	1,1	2,3

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

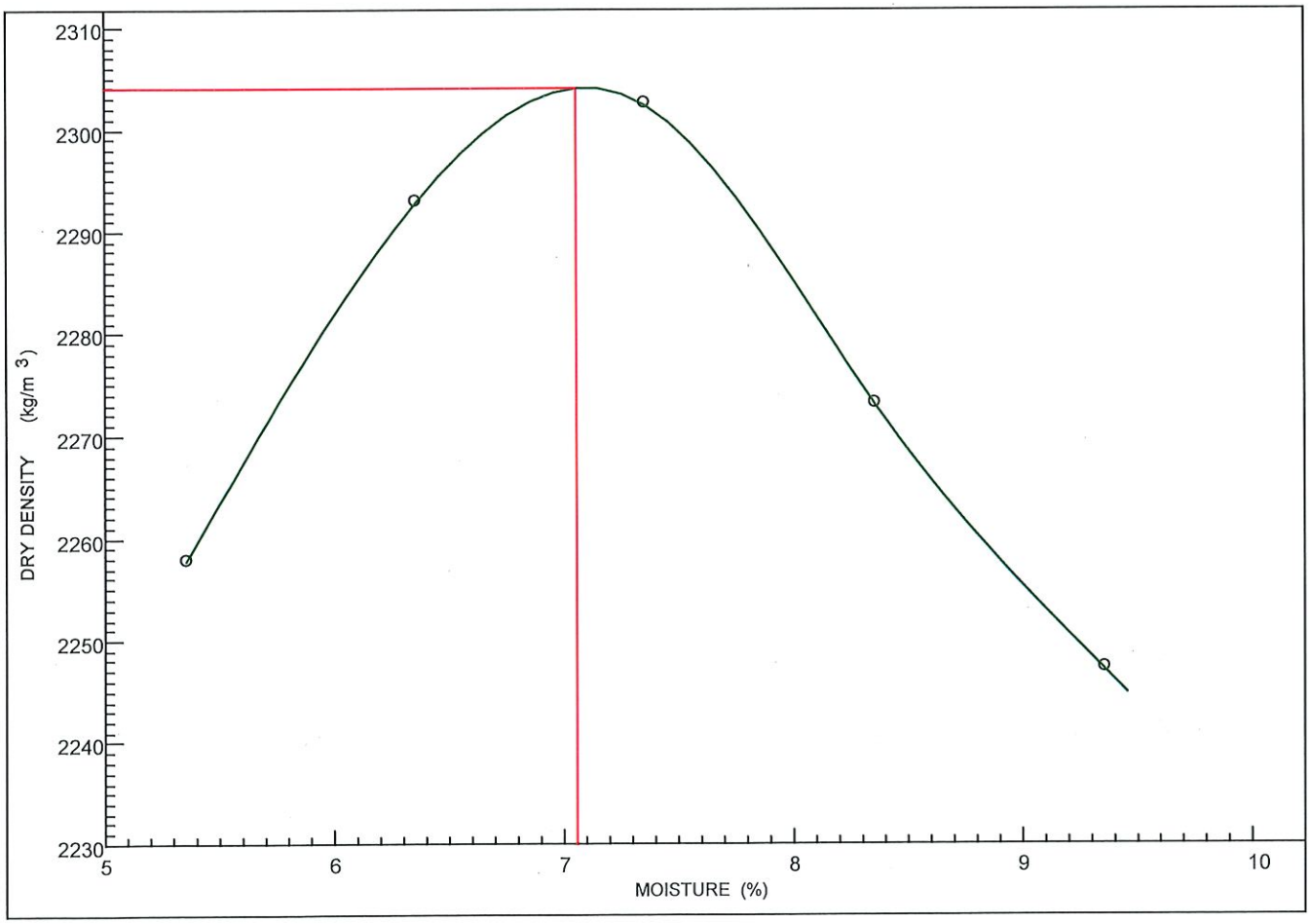
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02085	Hole No. : TP-R5	Depth (mm) : 0.0-0.4
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Greyish Brown Silty Sandy Clay		

Maximum Dry Density (kg/m^3): 2304

Optimum Moisture Content (%) : 7,1

Point No.	1	2	3	4	5			
Moisture (%)	5,4	6,4	7,4	8,4	9,4			
Density (kg/m^3)	2258	2293	2302	2273	2247			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

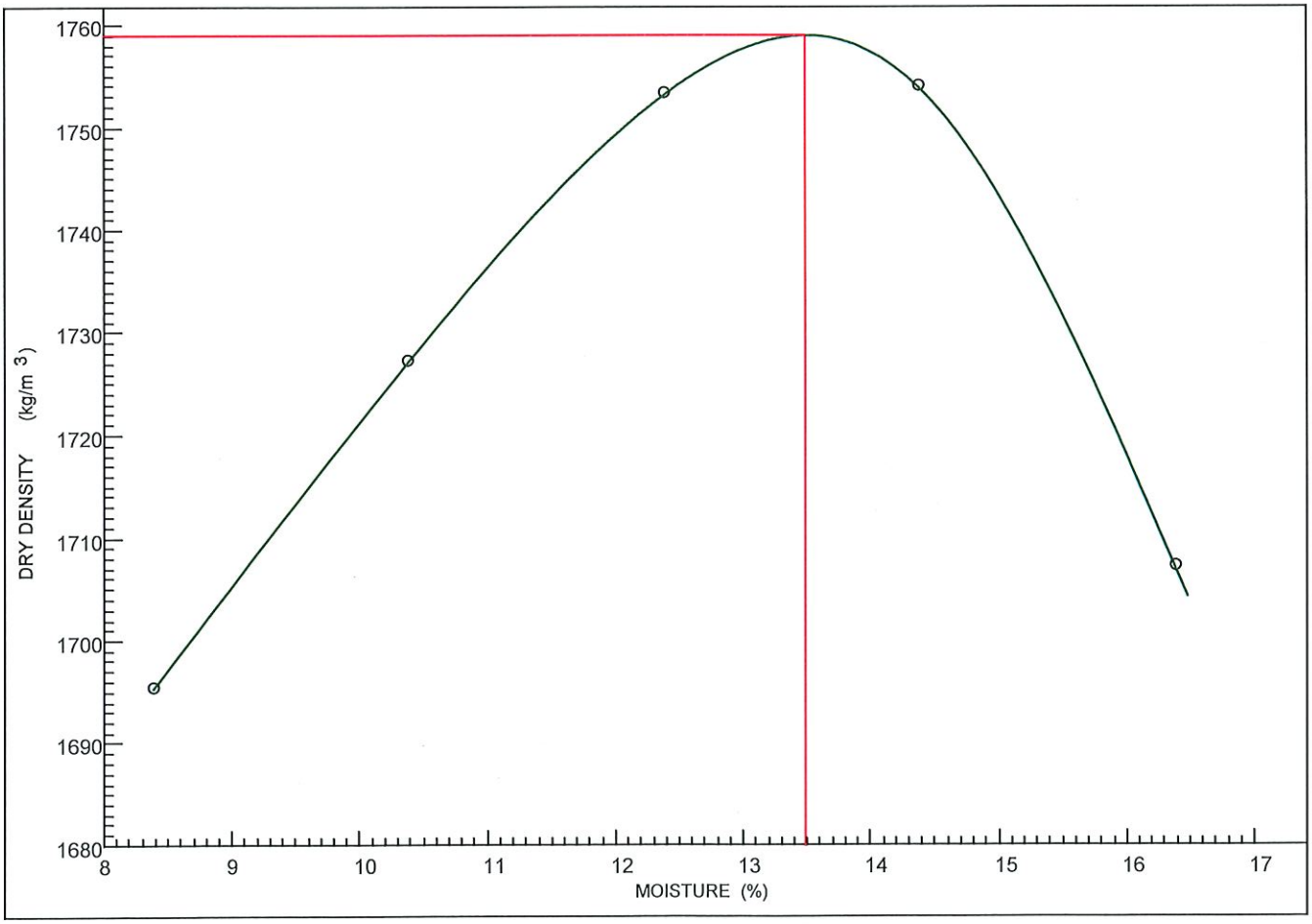
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02086	Hole No. : TP-R5	Depth (mm) : 0.4-0.8
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Orange Grey Slity Sand		

Maximum Dry Density (kg/m^3): 1759

Optimum Moisture Content (%) : 13,5

Point No.	1	2	3	4	5			
Moisture (%)	8,4	10,4	12,4	14,4	16,4			
Density (kg/m^3)	1695	1727	1753	1754	1707			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

Technical Signatory : Mr Gregory F.Bell (N.Dip Civ.Eng)

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4 HARBOT CLOSE , BRACKENDUST ,7560
P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : gregory.bell@sgs.com

sanas Testing Laboratory T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 24.10.2023

SIEVE ANALYSIS, CONSTANTS, CBR(SANS 3001:GR1,GR10,GR12,GR20,GR30,GR40)

SAMPLE NO.	D 02033	D 02034	D 02035	D 02036	Preparation Method:
HOLE NO.	TP.1	TP.1	TP.1	TP.1	Sample was scalped on the 37.5mm sieve
ROAD NO.	Calcutta Cemetry	Calcutta Cemetry	Calcutta Cemetry	Calcutta Cemetry	
DEPTH	100-260	260-450	450-750	750-1200	
CHAINAGE	See GPS Coordinates	See GPS Coordinates	See GPS Coordinates	See GPS Coordinates	
LAYER TYPE	Subbase	SSG	Insitu	Subgrade	
STABILISED WITH	Neat	Neat	Neat	Neat	
SUPPLIER	N/a	N/a	N/a	N/a	
CURING METHOD	N/a	N/a	N/a	N/a	
DATE TESTED	12.10.2023	12.10.2023	12.10.2023	12.10.2023	
DESCRIPTION	Grey Hornfels	Gravel Silty Sand	Brown Sand	Dark Brown Clayey Sand	- Specification
SIEVE ANALYSIS (% PASSING)					
100.0 mm					
75.00 mm					
63.00 mm		100			
50.00 mm		98			
37.50 mm	100	98		100	
28.00 mm	99	97	100	100	
20.00 mm	94	95	99	99	
14.00 mm	80	88	97	92	
5.000 mm	48	73	94	84	
2.000 mm	37	59	89	72	
0.425 mm	21	36	57	39	
0.075 mm	8	17	19	17	
SOIL MORTAR					
COARSE SAND <2.0mm >0.425mm	43	38	36	46	
FINE SAND <0.425mm >0.075mm	35	32	43	31	
MATERIAL <0.075mm	22	30	21	23	
CONSTANTS					
GRADING MODULUS	2,35	1,87	1,35	1,72	
PRA CLASSIFICATION	A-1-a(0)	A-1-b(0)	A-2-4(0)	A-1-b(0)	
UNIFIED SOIL CLAS.	GP-GC	SM-SC	SC	SC	
COLTO CLASSIFICATION	G5	G6	---	---	
LIQUID LIMIT (%)	-	15	-	8	
PLASTICITY INDEX (0.425mm)	SP	4	NP	5	
LINEAR SHRINKAGE (%)	0,5	2,0	0,0	2,5	
MDD					
MAXIMUM DRY DENSITY (kg/m^3)	2326	2194	2055	2164	
OPTIMUM MOISTURE CONTENT(%)	5,7	6,7	11,5	7,8	
MOULDING MOISTURE (%)	5,5	6,6	11,5	8,0	
TYPE OF TEST	CBR	CBR	CBR	CBR	
CBR-UCS @ 100% MDD	125	66	2,4	57	
CBR-UCS @ 98% MDD	86	47	2,2	26	
CBR-UCS @ 97% MDD	72	39	2,1	18	
CBR-UCS @ 95% MDD	49	28	1,9	8,0	
CBR-UCS @ 93% MDD	34	20	1,8	3,7	
CBR-UCS @ 90% MDD	19	12	1,5	1,1	

CBR-UCS @ % MDD derived from calculation.

% SWELL MOULD [A][B][C]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,09	0,13	0,18

Remarks : S:33,85051° - E:018.80542 / Elev = 171m (Shoulder)

FORM: GR40

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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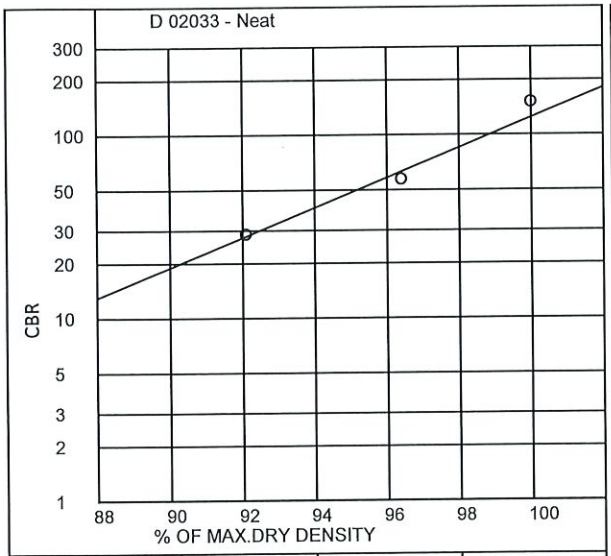
TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: MR M.RICHTER

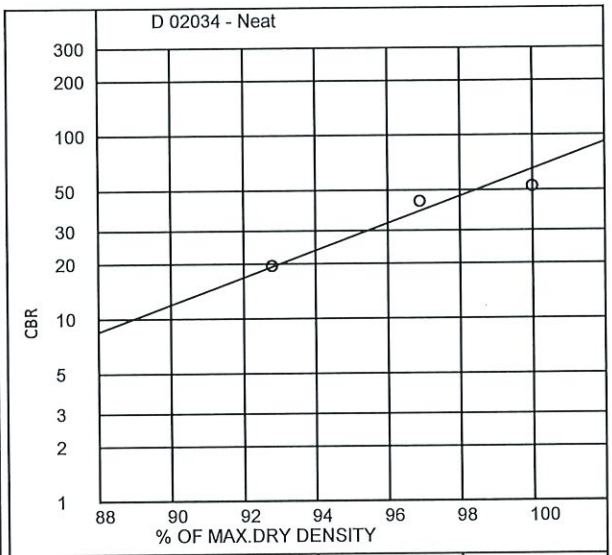
Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 24.10.2023

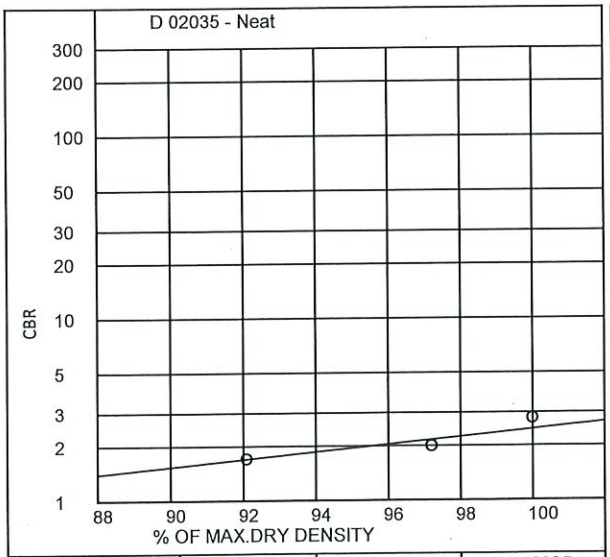
CBR-UCS GRAPH/S (OPTIONAL INFORMATION)



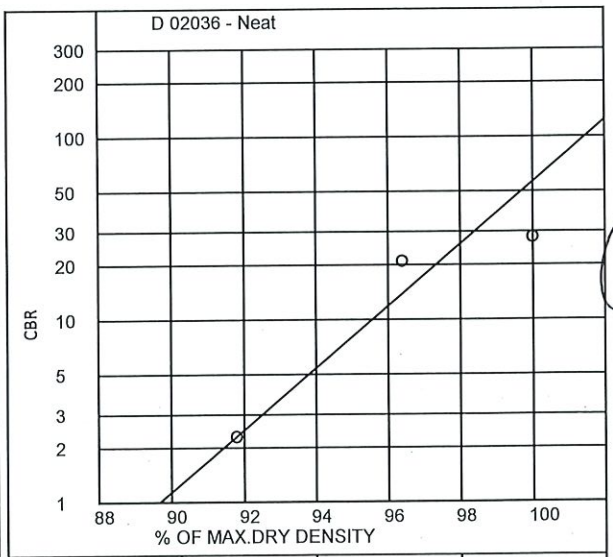
	PROC	NRB	MOD
COMPACTION (%)	92,1	96,4	100,0
CBR	29	58	152



	PROC	NRB	MOD
COMPACTION (%)	92,8	96,9	100,0
CBR	19	44	53



	PROC	NRB	MOD
COMPACTION (%)	92,1	97,2	100,0
CBR	1,7	2,0	2,8



	PROC	NRB	MOD
COMPACTION (%)	91,8	96,4	100,0
CBR	2,3	21	28

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P.O.BOX 1106 , BRACKENFELL
Tel. : 021 9815558/9
Fax : 021 9816724
Email : Nico.Engelbrecht@sgs.com

T0245

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

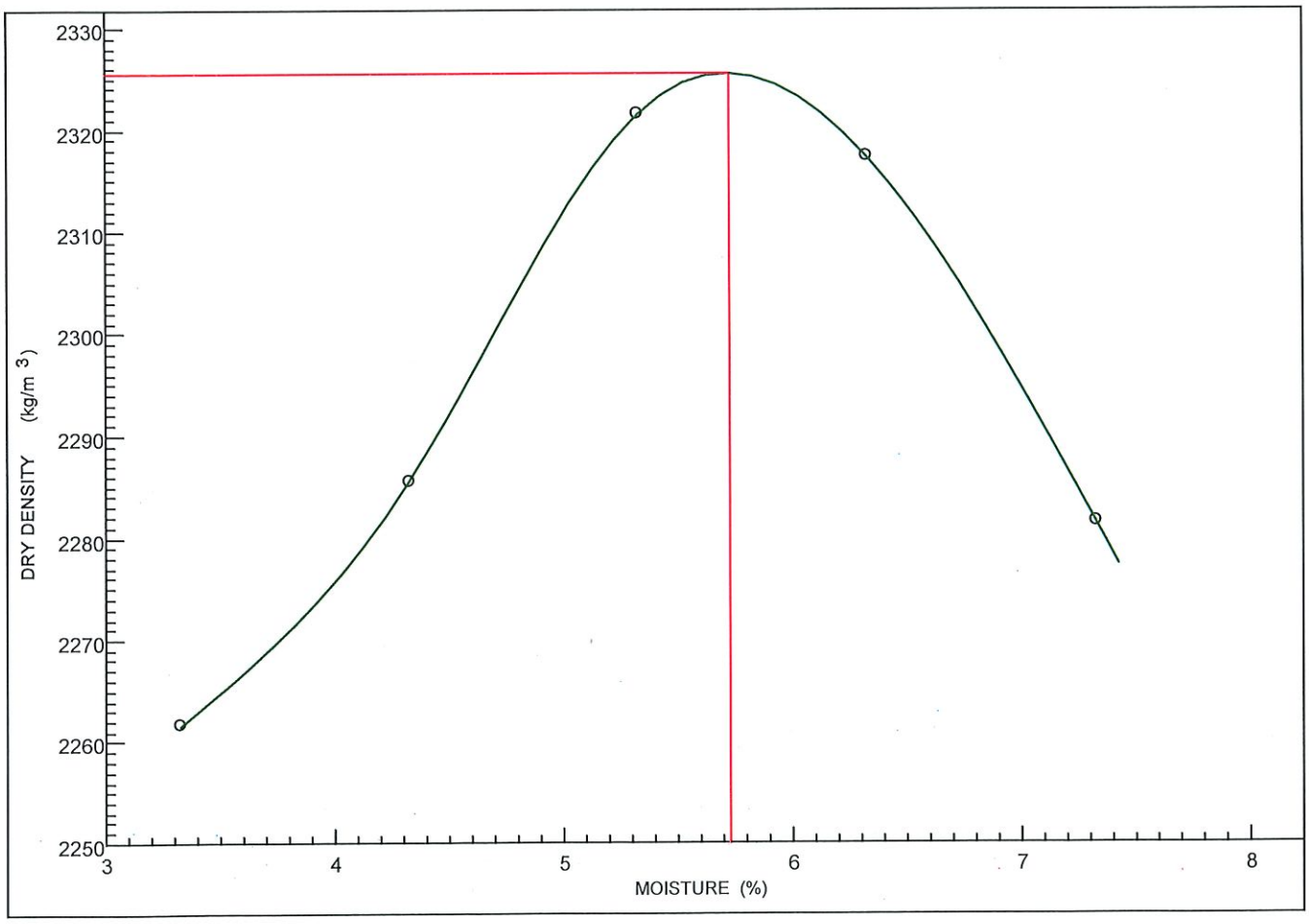
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02033	Hole No. : TP.1	Depth (mm) : 100-260
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Grey Hornfels		

Maximum Dry Density (kg/m^3): 2326

Optimum Moisture Content (%) : 5,7

Point No.	1	2	3	4	5			
Moisture (%)	3,3	4,3	5,3	6,3	7,3			
Density (kg/m^3)	2262	2286	2322	2317	2282			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

Technical Signatory : Mr Gregory F.Bell (N.Dip Civ.Eng)

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Tel. : 021 9815558/9
Fax : 021 9816724
Email : Nico.Engelbrecht@sgs.com

TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

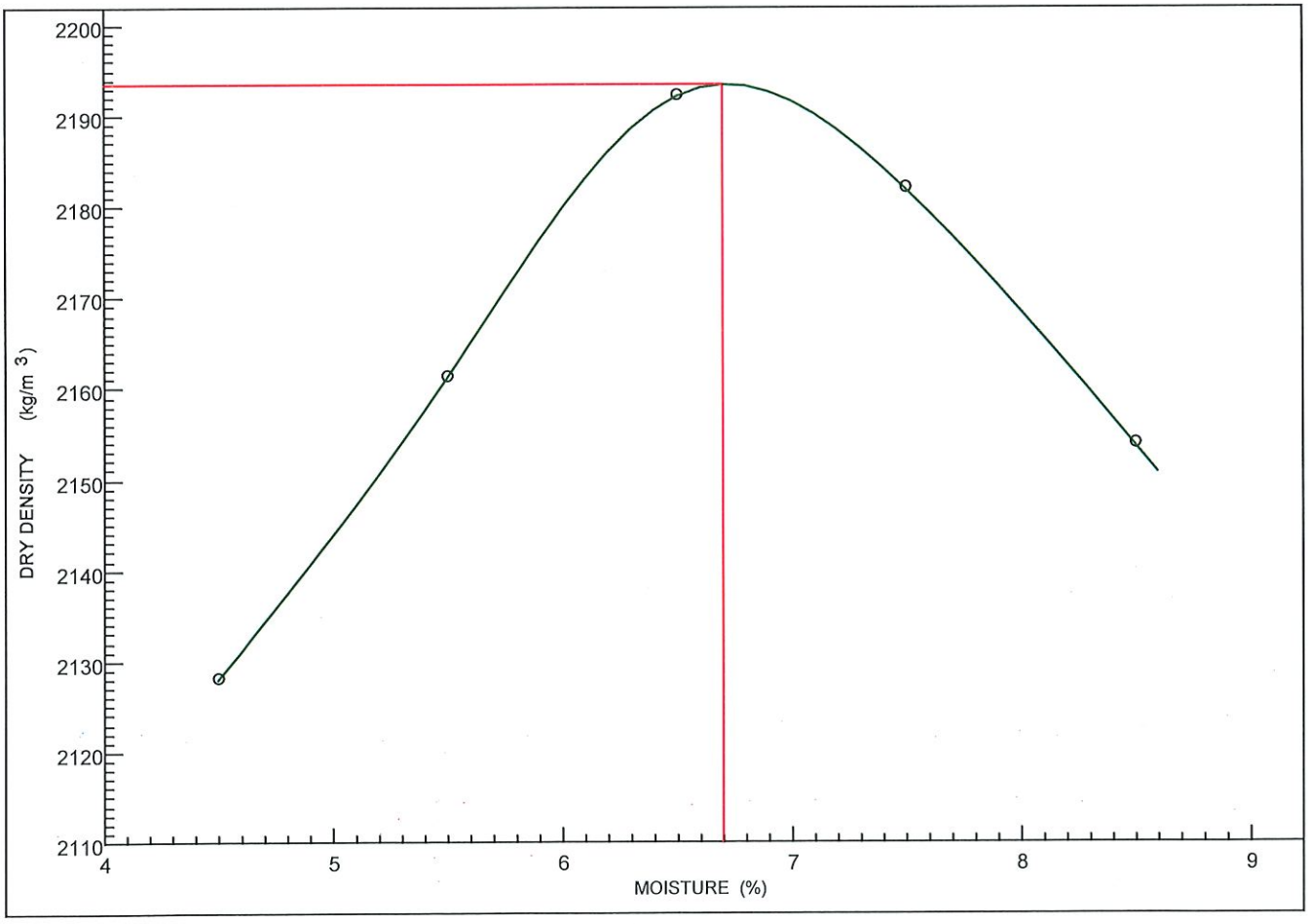
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02034	Hole No. : TP.1	Depth (mm) : 260-450
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Gravel Silty Sand		

Maximum Dry Density (kg/m^3): 2194

Optimum Moisture Content (%) : 6,7

Point No.	1	2	3	4	5			
Moisture (%)	4,5	5,5	6,5	7,5	8,5			
Density (kg/m^3)	2128	2161	2192	2182	2154			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

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TEST RESULTS

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Project : CALCUTTA CEMETERY STELLENBOSCH

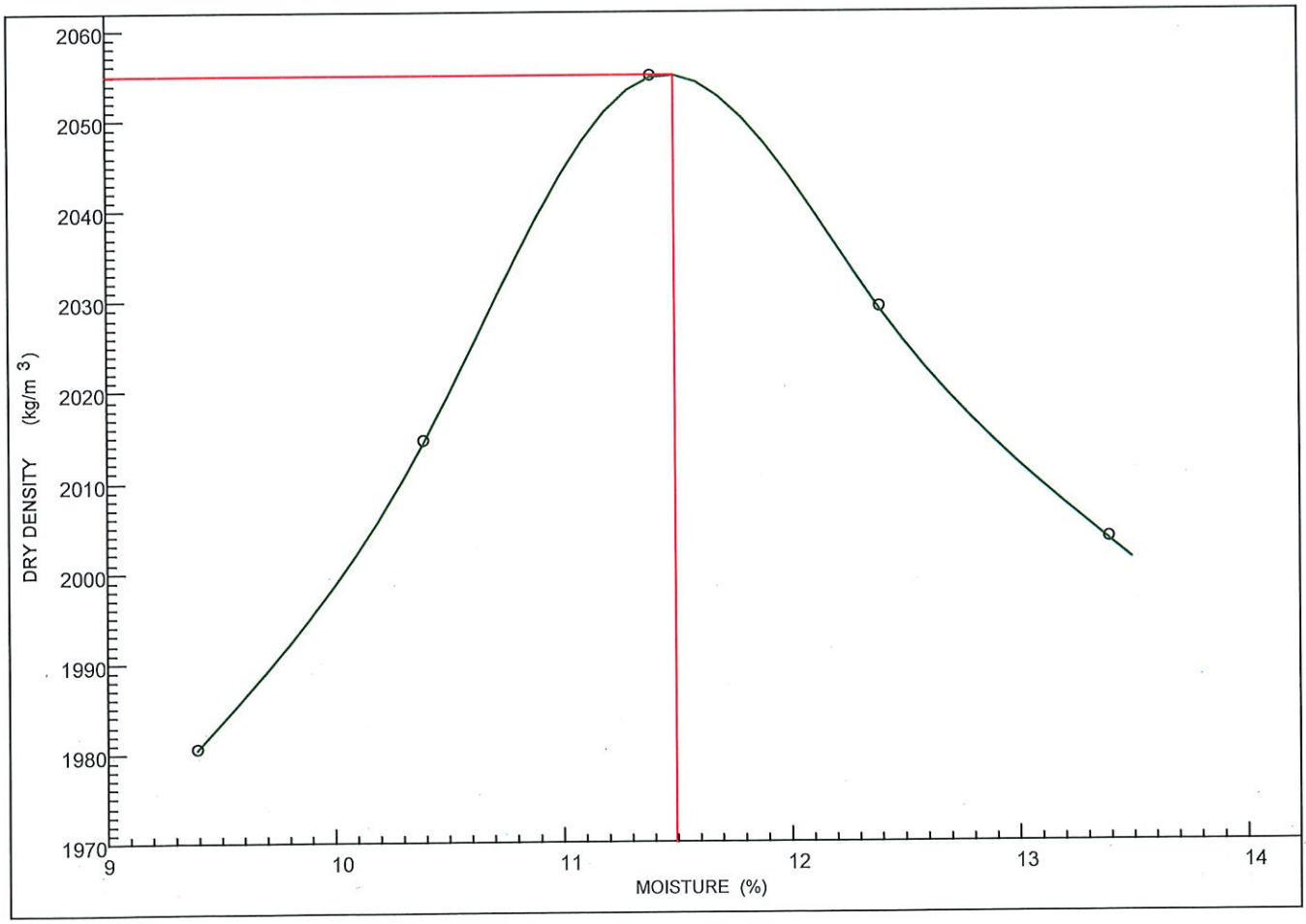
Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02035	Hole No. : TP.1	Depth (mm) : 450-750
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Brown Sand		

Maximum Dry Density (kg/m^3): 2055
Optimum Moisture Content (%) : 11,5

Point No.	1	2	3	4	5			
Moisture (%)	9,4	10,4	11,4	12,4	13,4			
Density (kg/m^3)	1980	2014	2055	2029	2003			



Remarks :
FORM: GR30

4.4.1(SGS)(2019.12.04)

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TEST RESULTS

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17 KINGSMEAD DRIVE
WESTVILLE
3630
Attention: MR M.RICHTER

Project : CALCUTTA CEMETERY STELLENBOSCH

Your Ref : 23-071/1
Our Ref : 58054
Date Reported : 19.10.2023

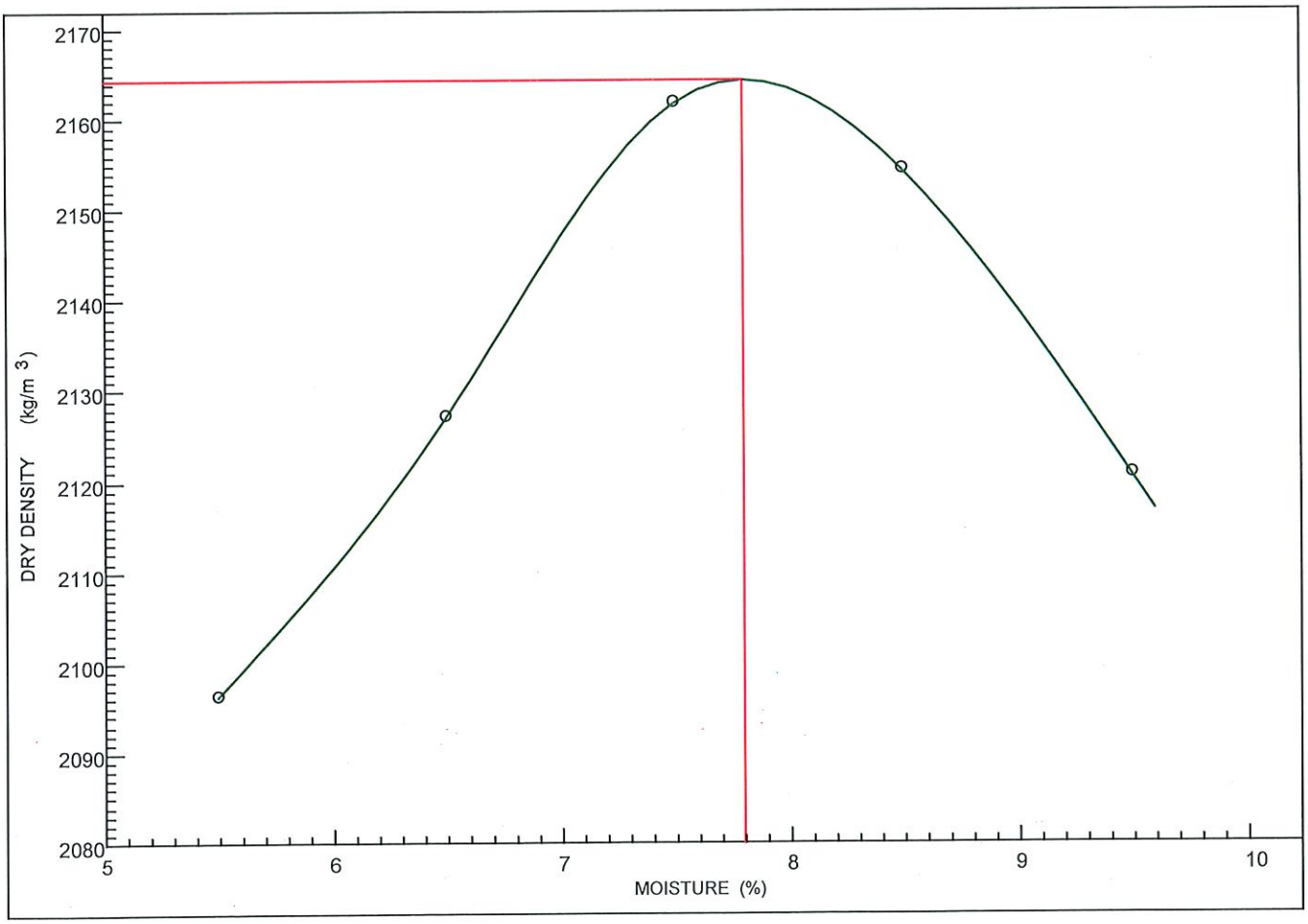
MOISTURE / DENSITY RELATIONSHIP(SANS 3001: GR30(MOD))

Sample No.: D 02036	Hole No. : TP.1	Depth (mm) : 750-1200
Origin : -	Stabilized With : Neat	Compaction Energy :
Material Description : Dark Brown Clayey Sand		

Maximum Dry Density (kg/m^3): 2164

Optimum Moisture Content (%) : 7,8

Point No.	1	2	3	4	5			
Moisture (%)	5,5	6,5	7,5	8,5	9,5			
Density (kg/m^3)	2096	2127	2162	2154	2121			



Remarks :

FORM: GR30

4.4.1(SGS)(2019.12.04)

Technical Signatory : Mr Gregory F.Bell (N.Dip Civ.Eng)

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4 HARBOT CLOSE,BRACKENDUST , 7560
P.O BOX 1106 , BRACKENFELL
Tel : 021 981 5558/9
Fax 021 981 6724
Email : Gregory.bell@sgs.com

GONDWANA GEOSOLUTIONS (PTY)LTD
17 KINGSMEAD DRIVER
WESTVILLE
DURBAN , 3629
Attention : MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK STELLENBOSCH
You're Ref. :
Our Ref : 58224
Date Reported : 27.10.2023

TEST RESULTS
CHEMICAL PROPERTIES OF SOILS

LABORATORY TECHNICIAN

GILMORE ZIMRI (N.DIP. CHEM.ENG.)

Material Description		Orange Silty Sand	Brown Grey Silty Sand	Brown Silty Sand	Greyish Brown Silty Sand
SGS Lab. Number	UOM	D 02154	D 02156	D 02151	D 02146
Client Sample Number		AHB7	AHB8	AHB4	AHA1
Depth	mm	0.20-1.20	0.00-1.10	0.00-0.50	0.00-0.30
'Organic Content (ASTM D 2974-87)	-	7.1	7.8	3.8	3.6

.....

Technical Signatory: Gregory Belll

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TEST RESULTS

GONDWANA GEOSOLUTIONS
17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: Mr. M.Richter

Project CALCUTTA CEMETARY - STELLENBOSCH

Your Ref : 23-091/1
Our Ref : 58054

AGGREGATE REPORT
(ASTM D2974-87)

SAMPLE NO.	D02090			Specification
DESCRIPTION	AH-S4: 0.30-1.00m			
	Greyish Brown Silty Clay			Min : Max
ORGANIC CONTENT (%)	**8.8**			

Remarks :

FORM: AG1

4.5.0(SGS)(2021.05.05)

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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Tel : 021 981 5558/9
Fax 021 981 6724
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GONDWANA GEOSOLUTIONS (PTY)LTD
17 KINGSMEAD DRIVER
WESTVILLE
DURBAN , 3629
Attention : MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK
STELLENBOSCH
You're Ref. :
Our Ref : 58224
Date Reported : 27.10.2023

TEST RESULTS
CHEMICAL PROPERTIES OF SOILS

LABORATORY TECHNICIAN

GILMORE ZIMRI (N.DIP. CHEM.ENG.)

Material Description		Orange Grey Silty Sandy Clay	Orange Grey Silty Sandy Clay
SGS Lab. Number	UOM	D 02147	D 02150
Client Sample Number		AH-A1	AH-A10
Depth	mm	0.30-2.20	0.70-2.40
pH (Sans 5854)	%	6.89	6.88
Conductivity (SANS 6240)	Sm-1	0.0860	0.1120

End of report

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TEST RESULTS

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17 KINGSMEAD DRIVER
WESTVILLE
DURBANVILLE
Attention: Mr. M.Richter

Project : CALCUTTA CEMETARY - STELLENBOSCH

Your Ref : 23-091/1
Our Ref : 58054

AGGREGATE REPORT
(SANS 3001:SANS 5854,6240)

SAMPLE NO.	D02088	D02083	D02084	Specification
DESCRIPTION	AH-S2: 0.30-1.50m	TP-R2: 0.00-0.70m	TP-R2: 0.70-0.90m	
				Min : Max
pH	6.4	6.9	7.1	
CONDUCTIVITY @ 25`C (S/m)	0.0530	0.0300	0.0400	

Remarks :

FORM: AG1

Technical Signatory : Mr Gregory Bell (N.DIP Civ.Eng)

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Fax 021 981 6724
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WESTVILLE
DURBAN , 3629
Attention : MR M.RICHTER

Project : CALCUTTA MEMORIAL PARK STELLENBOSCH
You're Ref. :
Our Ref : 58054
Date Reported : 19.10.2023

TEST RESULTS
CHEMICAL PROPERTIES OF SOILS

LABORATORY TECHNICIAN

GILMORE ZIMRI (N.DIP. CHEM.ENG.)

Material Description		Grey Hornfels	Gravel Silty Sand	Brown Sand	Dark Brown Clayey Sand	Dark Brown Clayey Sand
SGS Lab. Number	UOM	D 02033	D 02034	D 02035	D 02036	D 02040
Client Sample Number		Tp.1	Tp.1	Tp.1	Tp.1	Tp.2
Depth	mm	100-260	260-450	450-750	750-1200	850-1200
pH (Sans 5854)	%	8.73	7.35	6.92	6.85	6.88
Conductivity (SANS 6240)	Sm-1	0.0100	0.0150	0.0230	0.0300	0.0320
'Organic Impurities (SAN 5832)	-	Lighter Colour as Ref Solution	Lighter Colour as Ref Solution	Same Colour as Ref Solution	Darker Colour as Ref Solution	Darker Colour as Ref Solution

.....
Technical Signatory: Gregory Belll

End of report

MATROCAST IS NOW PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

FIGURES

DRAFT - FOR DISCUSSION PURPOSES

NORTH

ROAD R304

PHASE 1

PHASE 2

PHASE 3

AREA A

AREA B

Parking

Bus Parking

Yard

Columbarium

Staff

Garden Nursery

RTP2* 1.20

RTP 1* 1.20

TP 1 1.00

TP 2 0.90

TP 3 0.80

TP 4 0.80

TP 5 0.80

TP 6 3.00

TP 7 0.80

TP 8 0.80

TP 9 0.80

TP 10 0.80

TP 11 0.80

TP 12 0.80

DPL 1 (0.9) TP 1 (2.20)

DPL 2 (0.6) TP 2 3.10

DPL 3 (0.6) TP 3 3.40

DPL 4 (2.1) TP 4 3.00

DPL 5 (0.3) TP 5 2.80

DPL 6 (0.6)

DPL 7 (1.2) TP 7 (2.20)

DPL 8 (2.4) TP 8 3.20

DPL 9 (1.5) TP 9 3.30

DPL 17 (0.0)

DPL 18 (0.0)

DPL 19 (0.0)

DPL 20 (0.0)

DPL 21 (0.0)

DPL 22 (0.0)

DPL 23 (0.0)

DPL 24 (0.0)

DPL 25 (0.0)

DPL 26 (0.0)

DPL 27 (0.0)

DPL 28 (3.6)

DPL 29 (1.8)

DPL 30 (2.7)

DPL 31 (2.7)

DPL 32 (0.0)

DPL 33 (0.0)

DPL 34 (0.0)

DPL 35 (2.7)

DPL 36 (1.8)

DPL 37 (1.8)

DPL 38 (0.0)

DPL 39 (0.0)

DPL 40 (1.8)

DPL 41 (2.7)

DPL 42 (2.7)

DPL 43 (2.7)

DPL 44 (4.2)

DPL 45 (3.0)

DPL 46 (4.5)

DPL 47 (2.7)

DPL 48 (2.7)

DPL 49 (1.8)

DPL 50 (1.8)

AH A1 3.00

AH A2 3.00

AH A3 3.00

AH A4 2.40

AH A5 2.60

AH A6 1.80

AH A7 2.50

AH A8 (0.90)

AH A9 1.00

AH A10 (2.40)

AH A11 (0.40)

AH A12 (Ref)

AH B1 (1.00)

AH B2 3.00

AH B3 3.00

AH B4 3.00

AH B5 1.40

AH B6 (Ref)

AH B7 (2.50)

AH B8 (2.80)

AH B9 1.90

AH B10 1.60

AH B11 (1.50)

AH B12 (1.40)

AH B13 3.00

AH B14 1.50

AH B15 (1.30)

AH S1 (1.50)

AH S2 (1.50)

AH S3 (1.50)

AH S4 (1.90)

KEY :

TP 1 (2.20)	Historical (May 2018) Test Pit showing final depth or depth to refusal ( ) in metres below existing ground level.
DPL 1 (0.9)	Historical (May 2018) Dynamic Cone Penetrometer Test (Light) showing depth to refusal in metres below existing ground level.

KEY :

TP 1 1.50	Approximate position of Test Pit showing final depth or depth to refusal ( ) in metres below existing ground level.
DPL 1 (3.3)	Approximate position of Dynamic Cone Penetrometer Test (Light) showing depth to refusal in metres below existing ground level.
AH 1 1.50 (1.50)	Approximate position of Auger Hole showing final depth or depth to refusal ( ) in metres below existing ground level.

0m 25m 50m 100m

Graphic Scale
1 / 2 000

NB : Please note that the bar scale supercedes the verbal scale due to print sizes etc.

DRAWING DESCRIPTION

Site Plan showing approximate positions of :

a.) Test Pits.

b.) Dynamic Cone Penetrometer Tests (Light)

c.) Auger Holes

DRAFT

Scale 1 : 2 000 (On A2 Original)

CLIENT

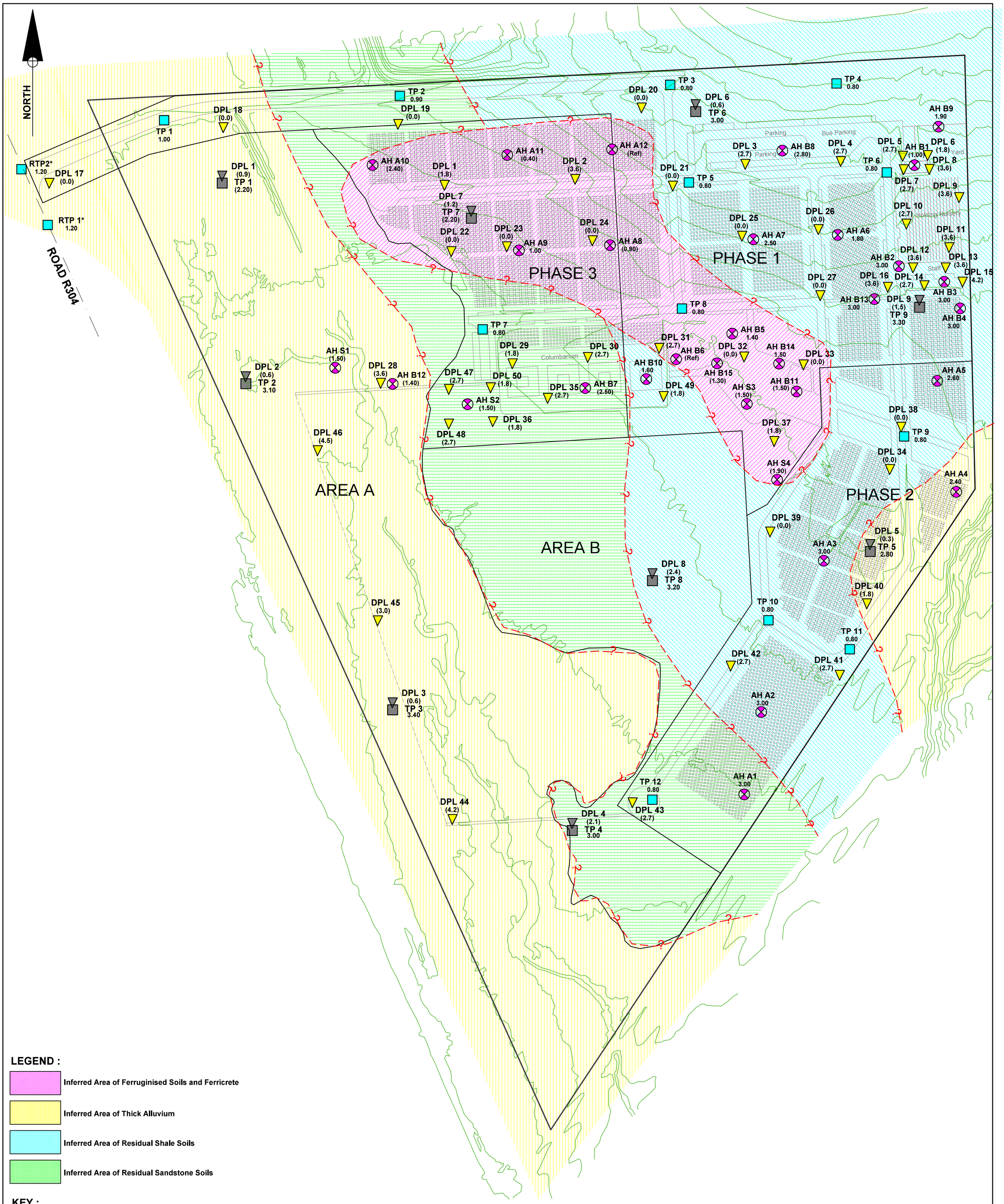
BIGEN ENGINEERS

PROJECT

Geotechnical Investigation for Calcutta Memorial Park. Stellenbosch

GONDWANA GEO SOLUTIONS

DATE	13/11/2023
DRAWN	A.S.
CHECK	M.V.R.
REFERENCE No.	23 - 071
FIGURE No.	2
REV.	0



LEGEND :

- Inferred Area of Ferruginised Soils and Ferricrete
- Inferred Area of Thick Alluvium
- Inferred Area of Residual Shale Soils
- Inferred Area of Residual Sandstone Soils

KEY :

- TP 1 (2.20) — Historical (May 2018) Test Pit showing final depth or depth to refusal ( ) in metres below existing ground level.
- DPL 1 (0.9) — Historical (May 2018) Dynamic Cone Penetrometer Test (Light) showing depth to refusal in metres below existing ground level.

KEY :

- TP 1 1.50 — Approximate position of Test Pit showing final depth or depth to refusal ( ) in metres below existing ground level.
- DPL 1 (3.3) — Approximate position of Dynamic Cone Penetrometer Test (Light) showing depth to refusal in metres below existing ground level.
- AH 1 1.50 (1.50) — Approximate position of Auger Hole showing final depth or depth to refusal ( ) in metres below existing ground level.

0m 25m 50m 100m

Graphic Scale
1 / 2 000

NB : Please note that the bar scale supercedes the verbal scale due to print sizes etc.

DRAWING DESCRIPTION

Site Plan showing Inferred Soil Geology Beneath Site

DRAFT

Scale 1 : 2 000 (On A2 Original)

CLIENT

BIGEN ENGINEERS

PROJECT

Geotechnical Investigation for Calcutta Memorial Park. Stellenbosch

GONDWANA GEO SOLUTIONS

DATE	13/11/2023
DRAWN	A.S.
CHECK	M.V.R.
REFERENCE No.	23 - 071
FIGURE No.	4
REV.	0

STELLENBOSCH
STELLENBOSCH • PNIEL • FRANSCHHOEK
MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

33. HEALTH AND SAFETY SPECIFICATION

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

CAIRNMEAD

HEALTH & SAFETY

Specification Report for

Project: Calcutta Cemetery & Memorial Park

Our Offices

Building C1
Waterkloofrand Corporate Park

358 Buffelsdrift Street
Erasmusrand
Pretoria, 0165

Contact Us

012 346 5752
admin@cairnmead.co.za

CAIRNMEAD

Health and Safety Specifications in terms of Construction Regulation 5 (1)(a) & (b)	REV	06 Aug 25
	Project Number	8539

The Principal Contractor will have to prove that they comply with the Occupational Health & Safety Act – Act 85 of 1993 and Regulations as well as all the incorporated safety standards, when appointed, by proving to the appointed Health and Safety Agent that they have a documentation management system to deal with all the aspects of the requirements of the Act, Regulations and Safety Standards. The Cairnmead representative will take photos of all the documents during documentation audits, personal records of all employees will only be taken once as example and all the details will be expected that the Principal Contractor keep record, these photo records will serve as a consolidation which can be submitted to the client at the end of the project. These photo records of the documents will be summarized by the Agent on a one-page document "Contractors Matrix" which will indicate the compliance status of the responsibilities of the Principal Contractor and their appointed Contractors (Sub-Contractors) audited at the time of the site visit once a month. Any non-compliance can result in a specific activity of the Contractor being stopped, and that stoppage will be for the account of the Principal Contractor or the appointed Contractor. The Health and Safety Agent will do audits on-site at agreed intervals to determine whether the Principal Contractor and the appointed Contractors do comply with the legal requirements. Cairnmead has developed a site auditing system to measure the compliance of sites, this is called high-risk activities, we have identified 16 high-risk activities that commonly occur on sites and the front page of the report provides the high-risk activity statistics for the project. It is expected from the Principal Contractor and appointed Contractors to supply their employees all the required personal protective equipment and clothing required for the applicable task.

This specification is copyrighted by Cairnmead and should not be copied, in full or partially, or used for any other purpose than the original intended purpose for the specific project.

1. Project Information

1.1. Project Name: Calcutta Cemetery & Memorial Park

1.2. Client Name: Nuvorm

1.3. Project Address: Calcutta, Farm 29, Stellenbosch, Western Cape

1.4. Principal Contractor: Tender

2. List special conditions on site:

2.1. (The special conditions on site are items that need special attention or items that are agreed upon between the Client and Principal Contractor or principal contractor and Contractor before the start of the construction activities, for example, underground services, overhead power lines, site access control (fencing), etc.

3. Construction Work Permit

Not Applicable

4. Notification of Construction

4.1. The Principal Contractor must submit a Notification of Construction to the Department of Labour in the form of Annexure 2 at least 7 days before the work is carried out.

4.2. The Principal Contractor must upon receipt of the stamped Notification of Construction ensure that it is placed in their Health and Safety file and made available upon request.

5. Client Documentation

5.1. The Principal Contractor must on receipt of the Client's baseline risk assessment ensure that is signed off by the Construction Manager and placed in their Health and Safety File and made available upon request.

5.2. The Principal Contractor must ensure that the Client Health and Safety Specification is included in the tender documentation sent out to all protentional sub-contractors in the tender phase of the project.

5.3. The Principal Contractor must ensure that the Baseline Risk assessment is included in the tender documentation from their side.

5.4. The Principal Contractor will be appointed under CR5(1)(k) in writing, the Principal Contractor will ensure that this appointment is placed in their Health and Safety File and made available upon request.

5.5. The principal contractor should provide their health and safety file to Cairnmead at least one week before the commencement of work, for a file approval audit to be conducted, this is to ensure that the file is compliant before work commencing on site to prevent any delays in the starting of the project.

5.6. Cairnmead will keep a record of the Health and safety documentation on the Contractor matrix to report on the legal requirements of the site. The Contractor matrix got an assessment with it and these assessments will be done every month (See Annexure 1 attached to this document for guidelines on the legal compliance audit).

5.7. The Principal Contractor must ensure that a close-out report is issued to Cairnmead within three working days after a Cairnmead report was issued to the site.

5.8. Cairnmead has developed a site auditing system to measure the compliance of sites, this is called high-risk activities, we have identified 16 high-risk activities that commonly occur on sites and the front page of the report provides the high-risk activity statistics for the project, when issued with this report the principal contractor and contractor should close out the report within three days after the issue date of the report.

5.9. The Principal Contractor should ensure that Project monthly statistics (Principal Contractor and all subcontractors) are recorded in writing regarding the hours worked, near-miss incidents, first aid cases, medical treatment, lost time incidents, etc. Cairnmead will collect these statistics from the Principal Contractor. (See Annexure 2 attached to this document that can be used as guidance regarding the collection of site statistics).

5.10. The Client must in cases where a substantial risk exists that the workplace may be flooded, take measures to be informed forthwith of any imminent flooding risk.
The Client shall take measures to be informed of any imminent flooding from constructions for conserving water, or which may cause water to converge or accumulate on the premises, and shall, prior to the erection of such a construction, give notice in writing to all persons situated in the danger zone below such construction of the possibility of flooding owing to such construction.

5.11. The Principal Contractor and their appointed Contractors must take note that if it is found that an employee committed an unsafe act or caused an unsafe condition on-site Cairnmead will take action against the foreman/management/legal appointee responsible for this activity. The most likely action will be that Cairnmead will instruct the foreman/management/legal appointee in question to stop that activity with immediate effect. It will not be tolerated that management allows unsafe conditions and acts on site.

6. Duties of the Designer

6.1. All Appointed Designers will take into consideration the requirements of the OHS Act, applicable Regulations, By-laws and Health and Safety specifications in their designs.

6.2. All Appointed Designers must before the tender phase ensure that a report is issued to the client outlining the health and safety information applicable to the structure that may influence the costing, the Load that the structure is designed to with stand, and where appropriate the geotechnical science aspects of the project.

6.3. All Appointed Designers will in writing inform the Client of any Hazards or damages in the building prior to and during the project should they arise on a later stage of the project and supply the client and the contractor intended for the task with the relevant information to ensure that work is safely executed.

6.4. Any Temporary Work Designer must ensure that all structures designed are done in the manner that such structure can support all anticipated lateral and vertical loads that may be applied and identified in such design.

6.5. Any Temporary Work Designer must ensure that such design is done in close reference to the structural design.

6.6. Any Temporary Work Designer must ensure that a record is kept of all drawings and calculations about such design and made available upon request.

6.7. All Appointed Designers will be required to sign a design declaration for the intended designs if the project will be working under a construction permit.

6.8. All appointed Designers must ensure that they take Regulation 6 (Duties of designers, manufacturers, importers and suppliers) of the Noise Exposure Regulations, 2024 into consideration and incorporate into their design when designing the building.

6.9. All appointed Designers must ensure that they take Regulation 5 (Duties of designers, manufacturers, importers and suppliers) of the Physical Agents Regulations, 2024 into consideration and incorporate into their design when designing the building.

6.10. As per the Government Gazette - 6 March 2025: notice regarding amendment to General Safety Regulations, the appointed Designers must ensure that they take the regulation into consideration and incorporate into their design when designing the building.

7. Principal Contractor and Contractors

7.1. The Principal Contractor is to ensure that a medical fitness certificate, in the form of an Annexure 3 issued by a registered Occupational Practitioner is available for every employee on site, the medical fitness certificates are to be kept secure at all times. As part of the Incident Management Procedure there must also be a written procedure available to indicate how the certified ID copies and next-to-kin information of each individual will be made available during an incident on site where such information will be needed, the procedure must outline who can be contacted to access the information for each Contractor working on site, and where the information will be kept to secure the privacy of each individual.

7.2. The Principal Contractor must implement a documented medical screening programme as per Noise Exposure Regulations, 2024, specifically Regulation 9, for any employee who may be exposed to noise at or above the noise-rating limit or noise action level, particularly when there is simultaneous exposure to ototoxic chemicals and/or whole-body vibration. Additionally, for vulnerable employees, the employer must seek the opinion of an occupational medicine practitioner to assess whether medical screening is necessary.

7.3. The Principal Contractor must ensure compliance with Regulation 14 of the Noise Exposure Regulations, 2024, regarding the maintenance of records.

7.4. The Principal Contractor must implement a physical agent exposure monitoring programme as per Physical Agent Exposure Regulations, 2024, where required in terms of Regulation 7 of Physical Agent Exposure Regulations.

7.5. The Principal Contractor must ensure an employee is placed under a documented medical screening programme if required in terms of Regulation 8 (Medical screening and medical surveillance) of the Physical Agent Exposure Regulations, 2024 and that all requirements which is applicable in terms of the regulation are complied with.

7.6. Where applicable, the Principal Contractor must ensure that cold stress is eliminated at the source if reasonably practicable and if this cannot be done, then the requirements of Regulation 9(2) of the Physical Agent Exposure Regulations must be complied with.

7.7. Where applicable, the Principal Contractor must ensure that heat stress is eliminated at the source if reasonably practicable and if this cannot be done, then the requirements of Regulation 10(2) of the Physical Agent Exposure Regulations must be complied with.

7.8. The Principal Contractor must ensure that they provide illumination in the workplace / construction site in the form of either natural light, artificial light or a combination thereof, and that the illumination complies with the Regulation 11 of the Physical Agent Exposure Regulation.

7.9. Where applicable, the Principal Contractor must ensure that risk of exposure to hazardous biological, chemical and physical agents impacting indoor air quality is eliminated at the source, where reasonably practicable as required in terms of Regulation 12 (1) of the Physical Agent Exposure Regulation. Where this is not reasonably practicable, the Principal Contractor must control indoor air quality to guidance levels as required in terms of Regulation 12(2) of the Physical Agent Exposure Regulation.

7.10. Where applicable, the Principal Contractor must ensure that hand-arm vibration or whole-body vibration is eliminated at the source, where reasonably practicable as required in terms of Regulation 13(1) of the Physical Agent Exposure Regulation. Where this is not reasonably practicable, the Principal Contractor must take relevant action as required in terms of Regulation 13(2) and 13(3) of the Physical Agent Exposure Regulation.

7.11. The Principal Contractor must ensure compliance with Regulation 18 of the Physical Agent Exposure Regulation, 2024, regarding the maintenance of records.

7.12. The Principal Contractor is responsible for the access/security control to the construction site and only persons with a unique identification, which they have received during the induction for the site, must be allowed into the site and this includes the Client representative and the professional team. This induction must include as a minimum emergency procedure what construction activities are currently on site, and how a person must identify and behave to not be exposed to this hazard. The Principal Contractor must however ensure that every person on site can be identified by means of a tag/access card or the construction company name on their overalls.

7.13. Before any commencement of work, the Principal Contractor must submit proof that they are in Good Standing with the Compensation Fund, such documentation must be kept in their Health and Safety file and made available upon request.

7.14. The Principal Contractor must ensure that before the commencement of any contractors they are in Good Standing with the Compensation fund, such documentation must be kept in their Health and Safety file and made available upon request.

7.15. The Principal Contractor will appoint all Contractors under CR7(1)(c)(v) in writing and ensure that this is placed on their Health and Safety file and made available upon request.

7.16. The Principal Contractor will ensure that a signed Sect 37(2) Mandatary agreement is available between the Principal Contractor and their appointed contractors, and a copy of such agreement is placed in their Health and Safety file and made available upon request.

7.17. The Principal Contractor will ensure that an approved copy of their Health and Safety Plan which has been communicated to all employees is available in their Health and Safety File.

7.18. The Principal Contractor will ensure that their contractor's Health and Safety Plans have been approved and a copy of such Health and Safety Plan which has been communicated to all employees is available in the Health and Safety File of each contractor.

7.19. The Principal Contractor along with their appointed Contractors will ensure that a Health and Safety Policy which has been signed off and communicated is placed in their Health and Safety File and made available upon request.

7.20. The Principal Contractors will conduct health and safety audits and document verification with their Contractors, this will be placed in their Health and Safety file and made available upon request.

7.21. The principal contractor will in the case of found unsafe activity stop such activity which is not by the Safety Regulations and by-laws, the Client's specification, and the Principal Contractors Health and Safety Plan.

7.22. The Principal Contractor must ensure that all Health & Safety files are updated for the month during the first week of the month.

7.23. Task-specific PPE is required to be used for specific scope of work, such as welding, working at heights, confined space work, etc. These PPE requirements must be addressed in the task-specific risk assessment of each contractor.

7.24. Pre-task analysis is to be completed by each contractor to ensure that sufficient task planning is done regarding PPE, equipment, and tools required for each task.

7.25. As per Construction Regulation 7, the principal, contractor must ensure that they audit the health & safety files of their contractors at least once every 30 days.

8. Management and Supervision on Site

8.1. The Principal Contractor must appoint in writing a full-time Construction Manager in terms of CR8(1) who will be responsible for managing all construction work on a site. This appointed Construction Manager must have the required formal tertiary qualifications relevant to construction management or be registered as a Construction Manager with the SACPCMP.

8.2. The Principal Contractor and their appointed Contractors must appoint in writing a Construction Supervisor in terms of CR8(7) who will be responsible for supervising all construction work on site

8.3. The Principal Contractor must always have supervision on site for all construction activities then, which include work after hours and weekends, under no circumstances may a subcontractor be allowed on site without supervision being available from the appointed principal contractor.

8.4. The Principal Contractor must in writing appoint a Part Time Health & Safety Officer (registered with SACPCMP) to monitor the Health and Safety compliance on site.

9. Risk Assessments

9.1. The Principal Contractor and his appointed Contractor must in writing appoint a Risk Assessor in terms of CR9(1) whose competency is in line with the required unit standard.

9.2. The Principal Contractor and his appointed contractor must have a Risk Assessment which is compiled based on their methodology and processes, for each of the items as listed in the Clients Baseline Risk Assessment, to reduce the high rating of the activity which will be placed in their Health and safety file and made available upon request.

9.3. The Principal Contractor and his appointed contractor must ensure that all their activities are addressed in the site and task-specific risk assessments and must be available in their Health and Safety File.

9.4. The Principal Contractor and his appointed contractor must ensure that all method statements, risk assessments safe work procedures, and, job hazard analyses are signed off by the risk assessor, construction manager, and construction supervisor, and proof of this must be available in their Health and Safety File.

9.5. The Risk Review and Monitor Plan must also be available in the Health and Safety File.

9.6. The Principal Contractor and their appointed Contractor must ensure that all Method Statements, Risk Assessment and Safe Work Procedures, and Job Hazard Analysis have been communicated to all employees and proof of such communication is placed in their Health and Safety file and made available upon request.

9.7. As part of the risk assessments the contractors are to ensure that they include in their risk assessments the following items that may require permits from the principal contractor before the work can commence; hot work, confined space entry work, excavation work, critical lifting/rigging, energized electric work, working at heights, ladders, and energy isolation.

9.8. A pre-task analysis shall be completed for each task prior to starting the task and prepared with the employees who will be involved in the task.

9.9. The Principal Contractor must in respect of the workplace / construction site under their control, cause a noise exposure risk assessment to be done as far as is reasonably practicable, before exposure to noise and then thereafter where applicable at intervals not exceeding 24-months. This risk assessment must be conducted by a competent person.

9.10. The Principal Contractor must ensure that Regulation 7(2), Regulation 7(3), Regulation 7(4) and Regulation 7(5) of the Noise Exposure Regulations, 2024 is taken into consideration and complied with regarding the noise exposure risk assessment.

9.11. The Principal Contractor is responsible for ensuring the implementation of a noise exposure monitoring programme if the noise exposure risk assessment, or a review of the assessment, reveals that any employee may be exposed to noise levels at or above the noise-rating limit or the noise action level, especially when there is simultaneous exposure to ototoxic chemicals and/or whole-body vibration, as outlined in the Noise Exposure Regulations.

9.12. The Principal Contractor must ensure that Regulation 8(2), Regulation 8(3), and Regulation 8(4) of the Noise Exposure Regulations, 2024 is taken into consideration and complied with regarding the noise exposure monitoring.

9.13. The Principal Contractor must ensure when applicable as per Regulation 6 (Physical agent exposure risk assessment) of the Physical Agents Regulations, 2024 that a documented physical agent exposure risk assessment is conducted as far as is reasonably practicable, before exposure to a physical agent; thereafter where applicable at intervals not exceeding 24-months and this risk assessment must be conducted by a competent person.

9.14. The Principal Contractor must ensure the physical agent exposure risk assessment includes at least all items as listed in Regulation 6(2) of the Physical Agents Regulations, 2024.

9.15. The Principal Contractor and his appointed contractors must ensure that all risk assessment templates include the tasks being performed, hazard and risks, raw or initial risk ratings, control measures / preventative measures and residual risk ratings.

10. Fall Protection

10.1. The Principal Contractor must in writing appoint a Fall Protection Plan Developer in terms of CR10(1)(a) whose competency is in line with the required unit standard to develop a Site-Specific Fall Protection plan in line with CR10(2).

10.2. The Principal Contractor and their appointed Contractors must ensure that the Construction Manager CR8(1) has a copy of such Fall Protection Plan.

10.3. The Principal Contractor and their appointed contractors must ensure that all employees at a fall-risk position, have in place a valid working at heights training certificate which has been done in line with the required SAQA unit standard.

10.4. The principal and their appointed Contractors will ensure that all fall arrest equipment is inspected by a competent person before use and recorded on a register which will be kept in the Health and Safety file and made available upon request.

10.5. The fall arrest equipment used must be fitted with a self-rescuing kit where it is not possible for an alternative rescue method to take place due to height or location

10.6. The Principal Contractor and their appointed contractors will ensure that all fall arrest equipment will be hooked at all times on a structure or similar secured anchorage point that has been approved as suitable with the necessary stability and sufficient strength to safely support the equipment and any person who could fall. A 100% tie-off is required if a worker will be working at a fall risk position of 1.8 meters or greater, measured from the floor to the feet of the employee where the employee cannot be safeguarded from the fall risk.

10.7. Fall risk positions must be barricaded/fenced with a solid material (for example scaffold tubing, not just plastic barricading) at a height of 1 m, the use of safety netting is not permitted as a sole means of fall protection.

10.8. The Principal Contractor must have a daily inspection record on site for the barricading of all fall dangers specific to each fall risk area identified.

10.9. Any openings in a floor or roof not otherwise protected by a handrail must be closed and secured with a solid guarding or cover system.

10.10. All edge barricading used on site must be of solid material, if scaffold tubing or a similar method is being used, it must be installed that a knee and handrail are fitted, scaffold tubing or similar material must also be securely fixed to the posts being used.

10.11. Drop-off edges of decking, and all platforms must be fitted with toe-boards to prevent material from falling from the edges onto working areas below, where these toe-boards are not able to be used. An exclusion zone must be demarcated below the required working area to prevent any employees from accessing the area while the work is taking place on the level above.

10.12. Exclusion zone planning must be done when activities are planned for the day/week to ensure that high risk work areas are securely closed off to restrict access to the high-risk activity.

10.13. The employees conducting any steel erection are prohibited from climbing of columns and all steel erection employees must always maintain 100% tie-off while at a fall risk position of 1.8metres or greater, measured from the floor to the feet of the employee.

10.14. Overhead work required to take place must be planned in such a manner that exclusion zones are created to prevent access below the working area, tools used while working in overhead positions should also be tied-off and secured at all times

10.15. The Principal Contractor will ensure that all work at heights which is exposed to the elements will be stopped at the immediate sign of inclement weather conditions or any hazardous health and safety conditions.

11. Structures

11.1. A Contractor must take all reasonable steps to prevent an uncontrolled collapse of an existing or new structure.

11.2. Ensure that a structure is not bearing any additional weight over the limit which has been indicated by the Designer or Engineer.

11.3. All designs issued for construction intended for such structure is kept on site and made available upon request.

11.4. The Client must ensure that the structure is inspected periodically by a competent person to ensure the safety of such structure for further use.

11.5. The Client must ensure that any new structure for the first 2 years inspected at least every 6 months by a competent person and at least once a year after the first 2 years.

11.6. The Client must ensure that record is kept of the maintenance and inspections of such structure and made available upon request

12. Temporary Works

12.1. The Principal Contractor or their appointed Sub Contractor must appoint in writing a Temporary works designer in line with Construction Regulation 6 and Construction Regulation 12 with the required technical qualifications the Temporary work designer to design and sign off on all temporary works intended for the project, all designs must meet the requirements as stipulated in Construction Regulation 6 and Construction Regulation 12 and record must be kept of calculations made to ensure the load being carried will be supported fully.

12.2. The Principal Contractor or their appointed Sub Contractor must appoint in writing a Temporary Works Supervisor in line with construction regulation 12 whom will be responsible to ensure that all temporary works on site is done as per the Temporary Works Design and Method Statement as well as ensure compliance in line with the OHS Act 85 of 1993 and any applicable regulations, by-laws, and Standards.

12.3. The Principal Contractor or their appointed contractor will in writing appoint a Temporary Works Inspector who will be responsible for performing daily inspection of the temporary works structure in line with the temporary works design as well as the OHS Act 85 of 1993 and any applicable regulations, by-laws and Standards which will be recorded on a register that will be kept on site and ensure that it is available upon request.

12.4. No Concrete work or other intended work may commence on such structure unless it has been signed off as safe by the appointed competent person and such record kept on site and made available upon request.

12.5. The Principal Contractor must submit to Cairnmead the detail of the type of temporary work they intend to use, and proof of the competency of the temporary work supervisor, prior to any temporary work activities starting on site. All temporary work must be inspected daily and must be recorded in a register which will be placed in the safety file and made available upon request, until the temporary work and support work has been removed.

12.6. No steel fixing or similar activities can take place on the temporary works decking areas until the installation is signed off by the appointed Temporary Works Designer / Temporary Works Inspector appointed as the competent person.

12.7. The Temporary Works Erectors must be trained on the specific Temporary Works System used on site.

12.8. Protection should be provided on rebar where there are hazards associated with laceration and related injuries in addition to impalement.

13. Excavations

13.1. All excavations must be barricaded/fenced with a solid material (for example scaffold tubing, not just plastic barricading) with a minimum height of 1 meter. if scaffold tubing or a similar method is being used, it must be installed that a knee and guard rail/handrail is installed at the open edges. The scaffold tubing or similar material must also be securely fixed to the posts being used.

13.2. The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins.

13.3. The Principal Contractor will have a daily inspection record of excavations showing the integrity of the soil and that requirements are followed and checked as per all applicable regulations on-site.

13.4. The Principal Contractor will not allow any person to work or enter any unsafe excavation which has not complied with all requirements as per Construction Regulation 13.

13.5. No spoil material may be permitted to be placed on the edge of the excavation within at least 1 meter from the excavation edge.

13.6. Safe and secured means of access must be provided to each excavation and may not exceed 6 meters from the point where any person is working inside the excavation.

13.7. The contractor is responsible for locating services and utilities prior to commencing with excavation work, these services or utilities must be clearly marked, and measures should be implemented to safeguard the employees from the services or utilities.

13.8. Where a Deep Excavation is taking place, the Principal Contractor must ensure that there is safe and secured pedestrian access created to ensure that the safety of pedestrians is not affected, and separation of pedestrians and construction vehicles must be implemented as far as is reasonably practicable, especially at the access areas to the site.

13.9. Access on the ramp must also be controlled by means of stop / go operations, the employees selected for this purpose must be appointed and trained. No pedestrians can be allowed on the ramp if there is a vehicle driving on the ramp at the same time.

13.10. If the walkway as described above is not practical, then access scaffold stairs must be provided.

13.11. The ground conditions of all excavations must be assessed and precautionary measures in terms of shoring, bracing or similar means must be implemented before employees can be allowed inside and excavation should the ground conditions require such measures.

13.12. The contractor conducting excavation work must have a detailed rescue plan available in case of an emergency for assisting and rescuing any employees inside the excavation.

14. Demolition Works

14.1. The Principal Contractor must also ensure that dust control measures are implemented during the demolition stages, as far as reasonably practical.

14.2. The Principal Contractor will in writing appoint a Demolition Supervisor in line with Construction Regulation 14(1) who will supervise all demolition work on site and ensure that it is carried out as per applicable regulations.

14.3. Before any demolition work commences the Principal Contractor will ensure that there is a method statement in place provided from the structural engineer indicating the process which is to be followed by the Principal Contractor.

14.4. The Principal Contractor will ensure that during demolition work the appointed demolition supervisor will inspect the structural integrity of the building as often as stipulated in the method statement provided by the structural engineer.

14.5. The Principal Contractor will in writing inform the relevant parties e.g., Client, Engineer and Cairnmead of any changes that need to be made in the method statement prior to commencing with any task or if the structural integrity is affected in any way.

14.6. The Principal Contractor and the Demolitions Supervisor must also ensure that all rubble on site is removed from the building at regular intervals, and not accumulated and stacked in an unsafe manner, to prevent any part of the structure from being overloaded with debris and rubble.

14.7. The principal contractor must ensure that no rubble and debris is dispersed from a high place unless a chute that complies to the legal requirements are used.

14.8. All demolition permits and documentation from the local authority must be in place for the demolition work that is required.

15. Tunnelling and Confined Space

Not Applicable

16. Scaffolding

16.1. The Principal Contractor will ensure that all work on scaffolding that is exposed to the elements will be stopped at the immediate sign of inclement weather conditions.

16.2. All scaffolding on site to be erected in accordance with SANS 10085/1:2024 an inspected daily prior to use and after inclement weather irrespective of the height of the scaffolding. Scaffolding is part of temporary works and required a scaffolding design, the person designing scaffolding must be a component temporary works designer

16.3. All scaffolding erected on site may only be erected by trained and appointed scaffolding erectors and must be supervised and signed off by trained and appointed scaffolding inspector and supervisor.

16.4. Any scaffolding structures that will be erected adjacent to a public way or area must be fitted with pavement gantries or fans as per the scaffolding requirements to prevent any material from falling into or onto the public area.

16.5. The Principal Contractor is to ensure that where other forms of screening/aprons or fans are used on the scaffolding structure for the protection and prevention of falling material that such screens/aprons or fans are designed by a competent person appointed in writing.

16.6. All scaffolding platforms must as per the scaffolding requirements of SANS 10085/1:2024 be provided with toe boards before any commencement of work can be allowed on the scaffolding. This is applicable to all scaffolding platforms on site.

16.7. All special scaffolding must be as per the scaffolding requirements and temporary work requirements have a design done by the competent person appointed in writing with the relevant qualifications. The installation of special scaffolding must then also be signed off after installation to confirm that the installation is as per design.

17. Suspended Platforms

Not Applicable

18. Rope Access Works

Not Applicable

19. Material Hoist

Not Applicable

20. Bulk Mixing Plants

Not Applicable

21. Explosive Actuated Fastening Device

21.1. The Principal Contractor will appoint in writing an Issuer that will keep record of all cartridges that are issued and returned which will be placed in the Health and Safety file and made available upon request.

21.2. The Principal Contractor will in writing appoint a competent person as the Equipment User who has been trained in the inspection and use of such equipment and will complete a daily inspection register for such equipment which will be kept in the Health and Safety File and made available upon request.

21.3. The Principal Contractor will ensure that no cartridges new or used are left unattended on site or discarded of in any other way then returning to the appointed issuer.

21.4. All other requirements as stipulated in Construction Regulation 21 are to be complied with by each user of such equipment.

21.5. Area where such equipment is used to be clearly signposted to indicate device in use in the area.

22. Cranes and Lifting Equipment

22.1. Whenever making use of an external Contractor to do lifting work the Principal Contractor must ensure that the operator is competent and appointed in writing.

22.2. Before using any lifting machines or tackle the operator should inspect it and confirm is it suitable for use.

22.3. All lifting machines must have in place proof of LMI inspection by an accredited person/company at intervals not exceeding 12 months.

22.4. The Principal Contractor and their appointed contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing.

22.5. All lifting tackle should be recorded on a register.

22.6. All hooks shall be fitted with a safety latch/catch. Hooks may never be used until a damaged latch is replaced.

22.7. A lock out system should be implemented to ensure that only an approved operator/user who is competent can obtain access to lifting machines.

22.8. All lifting tackle should be conspicuously and clearly marked with identification particulars and the maximum mass load that it is designed for.

22.9. No person shall be moved or supported by means of a lifting machine unless such a machine is fitted with a cradle approved by an inspector.

22.10. A trained and certified banksman must be appointed in writing for any crane or similar operations required on site, and this person must be in constant communication with the operator, able to always track the load, and if using hand signals only, must be in full unobstructed view of the operator.

22.11. The Principal Contractor must ensure that where specialised rigging operations / intricate rigging is required, or where rigging of 5 tons or more must be done, a competent Rigger must be appointed in writing with the required qualifications.

22.12. The Principal Contractor must also ensure that a rigging study is compiled for any rigging to be done and must have a detail risk assessment available and conducted by a trained and certified risk assessor competent in rigging activities specific to the work at hand. This rigging study must include the communication protocols that will be used and followed by the banksman, rigger, and operator.

22.13. Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside where crane activities is affecting the area.

22.14. Any crane activities that may come in close contact to overhead power lines as defined in the Electrical Regulations and SABS Standards must have the required permits and wayleaves in place from the local authority before any such crane activities may commence on site, the safe work distances as specified in SANS 10280-1 must be complied with at all times.

22.15. No suspended loads may be lifted over personnel, buildings, processes, or electrical conductors.

22.16. When loads are being lifted on site, clear signalling and indicators must be used to warn the surrounding personnel that loads are being lifted.

22.17. No workers are allowed under a suspended load, and the signalling of suspended loads should be done by appointed banksmen by means of whistles or similar devices.

22.18. All loads shall have a tag line / guide rope attached for control, and controlling loads by hand is not permitted. The guide rope used must be of adequate length to ensure that it is long enough for safe control of the loads, the length of the guide rope should also be assessed not to be an excessive length that can cause a risk to the surrounding areas while being used.

22.19. Loads wider than 2.5metres must be fitted with two tag lines / guide ropes at opposite ends of the load to ensure safe and secured control of the load.

22.20. Rigging from the bucket or booms of mobile plant (such as excavators, front end loaders, TLB's etc.) to pick and / or carry loads is prohibited unless a properly installed, certified and tested lifting lug has been attached to the bucket or boom by the manufacturer of the plant for such a specific purpose.

22.21. No rigging from the bottom of the tines / forks of fork trucks is allowed under any circumstances.

22.22. The contractor is to ensure that when mobile elevated working platforms are used that the manufacturer's posted and certified capacity of the lift will not be exceeded by combination of personnel, tools, and material. A copy of the load test of the platform must be available at all times.

22.23. Mobile elevated working platforms fitted with outriggers must have the outriggers fully extended and set before the platform is raised.

22.24. Fall restraint equipment must always be used and must be tied-off at all times while making use of the mobile elevated working platform.

22.25. Where it may be required for a person to climb out of or onto the platform to or from an elevated work position when using a mobile elevated working platform such a person shall utilize additional fall protection equipment to ensure the person maintains 100% fall protection tie-off as soon as their feet leave the platform. The fall protection equipment must be secured and anchored to a structure exterior to the elevated working platform and must be of suitable strength and design to act as a fall arrest anchorage point.

22.26. No rigging or lifting from the mobile elevated working platform is permitted.

22.27. Mobile elevated working platforms may only be operated by formally SAQA trained and appointed personnel and must be inspected daily prior to use and must have all emergency preparedness equipment fitted and in working condition.

23. Construction Vehicle, Mobile Plant and Public Roads

23.1. The Principal Contractor must ensure that if any construction vehicle, which parks in the street, for delivering materials and / or lifting operations by mobile cranes and / or concrete pumping or any similar operations that effects the public roads get done in such a manner that the members of public are not exposed to any of the construction activities, and must further have cones with a flagman on both sides and warning signage displayed.

23.2. Sufficient firefighting equipment must be available inside each of the construction vehicle and mobile plant being used on site.

23.3. The Principal Contractor / sub-Contractors to comply with the National Road Traffic Act 93 of 1996 at all times when carrying out their disciplines on roads, intersections, cross overs etc.

23.4. The Principal Contractor must ensure that the construction vehicles get cleaned off on the sides, between double wheels and the back to prevent loose soil and stones falling from the truck into the public road while driving out of the site.

23.5. The Principal Contractor must despite the cleaning of the trucks ensure that there is at all times someone to clean the public road surface from the soil that might be brought onto the road by the wheels of the construction vehicles. Dump trucks should cover loads or loose dirt or gravel when exiting the site.

23.6. Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside.

23.7. Any road closure or lane restrictions that may be required must have the regulated wayleave in place before the work commences.

23.8. The temporary road signage and construction warning signage in line with the wayleave requirements must be installed as per the requirements of the wayleave and traffic management plan for the project.

23.9. There must be a detailed traffic management plan available for any lane restrictions or road closures that may be required throughout the project. This traffic management plan must be communicated to all contractors working on site.

23.10. Each construction area effecting the public roadway by means of construction vehicles turning into the public way must have designated flagmen positioned in line with the required vehicle turning signage to ensure safe and controlled construction vehicle integration onto the public roads.

23.11. Only trained and appointed operators may be allowed to operate construction vehicles and mobile plant on site. Each operator must be in position of a medical fitness certificate issued by an occupational practitioner in the form of Annexure 3 as per the Construction Regulations 23.

23.12. All construction vehicles and mobile plant must be fitted with a working acoustic warning device and automatic reverse warning device as per Construction Regulations 23.

23.13. Seatbelts must be used whenever the equipment and vehicles is in use and the use of cell phones or similar devices are prohibited while driving.

23.14. The operator of construction vehicles and mobile plant are not permitted to use earphones / headphones to listen to music while operating any construction vehicle of mobile plant. The operator must be able to hear instructions while in control of the vehicle or plant on site. The use of ear protection is the only permitted items allowed to be used where applicable.

23.15. All construction vehicles used on site must comply to the requirements of Construction Regulation 23, any vehicle not up to standard are not permitted on site.

23.16. The use of cell phones, tablets or similar devices are prohibited by operators and working near mobile plant and equipment in use.

23.17. Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. This must be done by means of barriers or similar equipment. Each crossover point must also be provided with a designated flagman to control the flow of traffic at each pedestrian crossing, flagmen should also be utilised where construction vehicles and mobile plat are operating in enclosed areas and high traffic routes on site.

23.18. Designated locations for planned maintenance and repairs must be provided on site for the mobile plant and equipment and these areas are to be controlled and only authorised personnel may enter the area.

23.19. Mobile plant and equipment must be fully locked out by the operator when the operator exits the cab, under no circumstances may any mobile plant or equipment be left with the engines running without the operator inside the cabin control of the equipment.

23.20. Mobile plant and equipment left unattended must be kept in a state to prohibit any unintended movement, all booms and buckets must be lowered, and wheels locked, and brakes set to prevent movement.

23.21. Speed limit signs must be posted on site at appropriate locations and the required speed limit must be determined in the site traffic control plan.

23.22. A detailed site traffic management plan must be drafted by the principal contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways.

23.23. No riding on equipment or the back of LDV's are permitted.

23.24. When the vehicles on site are not in use, they must be fully locked out with the parking brake set.

23.25. Dust control measures must be implemented on site, there should be a dust control schedule available to indicate the frequency of dust control taking place daily.

24. Electrical Installations

24.1. The Principal Contractor will ensure that all electrical installations on site will have a signed COC which will be made available upon request.

24.2. The Principal Contractor will ensure that all DB Board will be fitted with a cover plate, earth leakage and trip switch along with a lockout procedure, that must be specific for the type of work required to take place on the electrical components and must detail the measures that will be taken if such work will be required.

24.3. All switches on the DB Board will be labelled to identify the functions of such connection.

24.4. All Temporary Electrical connections will be inspected on a Weekly basis by the Competent person appointed in terms of Construction Regulation 24.

24.5. The Principal Contractor will ensure that no live electrical connection is exposed to the elements which can cause a risk to any person or the property of the client (e.g., rain, open flames, etc).

24.6. The electrical supply cables of all temporary electrical installations must be protected from the construction activities such as plant and machinery being operated near such cables.

24.7. Temporary lighting must be provided to working areas that does not have sufficient lighting available. Each contractor is required to plan their activities and ensure that sufficient lighting is available before the commencement of the planned work.

24.8. It is the responsibility of each contractor to ensure that their working area complies to the lighting requirements as stipulated under the Environmental Regulations for Workplaces – Illuminance Schedule

24.9. Workers are not allowed to work on any electrically energized components.

25. Hazardous Chemicals

25.1. The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site

25.2. The Principal Contractor must ensure that a Material Safety Data Sheet for all chemicals on site is kept in the file and communicated to all site employees.

25.3. Where applicable spill kits will be made available by the Principal Contractor and their appointed Sub-Contractors in case of a chemical spill in order to contain the area from causing any environmental damage.

25.4. The Principal Contractor will ensure all chemical containers on site to be labelled and identified.

25.5. The Principal Contractor will as far as reasonably possible ensure when chemicals are being transferred from on container to another a drip tray must be made available to ensure that spillage is controlled and does not seep into any soil.

25.6. The Principal Contractor will ensure that Hazardous chemicals stores are equipped with information signage on the chemicals being stored, identification of the hazardous linked to the stored chemicals, PPE required to handle such chemicals, sufficient firefighting equipment, solid foundation to ensure no seeping of chemicals into soil and a lock out procedure to ensure control of such stored chemicals.

25.7. The Principal Contractor will ensure chemical store will not be allowed to be used as a storage area for clothing, food or any other personal belongings.

25.8. The Principal Contractor will as far as reasonably possible ensure that no chemical store will be used for an eating or changing facility.

25.9. Where a Principal Contractor or his appointed Contractor intents to store any bulk hazardous chemical on site, an application for a permit/temporary registration must be sent to the local Emergency Services department in the prescribed form of an Annexure 1 along with the required plans as per applicable by-laws and approved prior to such activity taking place on site, proof of such registration/permit must be kept on site and made available upon request.

25.10. Such installation for the above-mentioned tank / installation as per 24.9 must comply with SANS 10131 and ensure that the temporary tank must be located on firm level ground and the ground, must be of adequate strength to support the mass of the tank and contents, provision is made for the run-off of any possible rainwater from the retaining walls or retaining embankments, the storage tank is not erected within 5 m of any erf or lot boundary, building, excavation, road and/or driveway, no source of ignition or potential ignition is brought within 5 m of the storage tank, symbolic signs prohibiting smoking and open flames, at least 300 mm x 300 mm in size, are affixed to all sides of the temporary installation, and a minimum of two 9 kg dry chemical fire extinguishers are installed within 10m of the temporary installation. The approved permit should be signposted at the storage area.

25.11. Such storage tank must be surrounded by a liquid-proof bund wall, volumetrically capable of containing the maximum proposed quantity of liquid, plus 10% of the volume of the tank.

25.12. Must ensure that the rated capacity temporary tank must provide sufficient ullage and spare capacity to permit expansion of the product contained therein by reason of the rise in temperature during storage.

26. Housekeeping and General Safeguarding

26.1. The Principal Contractor must install hoarding as deemed required by the building / construction activity (to isolate members of public from construction activity). The detail of which the hoarding will be constructed will be agreed as the Construction activities require from time to time but must be of solid material used to separate construction activities and should be of a minimum height of 1.8 metres.

26.2. The Principal Contractor must keep all construction activities / material / equipment within the barricaded/hoarded area. The hoarding must be maintained throughout the Project. The required No Entry signage and construction signage must also be displayed on the hoarding, and especially at the entrance gates. And all visitors to site must be required to sign in at the entrance gates, before entering the site.

26.3. The Principal Contractor must do site establishment as indicated by principal agent. These areas must be controlled at all times, no members of public allowed within laydown areas.

26.4. The Principal Contractor must not allow any informal traders in the construction area, no food stalls or similar operation may be allowed within the hoarded area of the construction site.

26.5. The Principal Contractor must appoint a Housekeeping Supervisor and ensure that all Contractors appoint their own Housekeeping Supervisors, to ensure that the Housekeeping on site is maintained on a daily basis.

26.6. The Principal Contractor along with his Sub-Contractors will ensure will conduct a weekly housekeeping inspection which will be recorded and kept on site.

26.7. The Principal Contractor and all the Contractors are not allowed to burn or deposit any waste on site it is to be discarded to an approved dump site or a recycling facility.

26.8. The principal contractor should ensure that all persons entering the site has undergone the site-specific induction and have received the required training and information regarding the site. There should be a classification done for each person entering the site to indicate visitor, permanent or short-term staff this should be done to address the hazards associated with the scope of each person entering and to proactively mitigate the site risk.

26.9. Contractors will furnish, erect, maintain and dismantle safety barricades required for their work, and co-ordinate all barricading belonging to any subcontractors.

26.10. It is required that rigid barricading is used on site and not only danger tape as danger tape is not sustainable.

26.11. Where rigid barricading is required, it must be capable to withstand a lateral force of 90.7kg or greater. It must be erected to have handrail, knee rail and where an access route is used below the area or where employees work below the area a toe board should also be fitted.

26.12. A site logistics plan is required from the principal contractor and must be displayed on site as well as communicated to each contractor working on site.

26.13. As per the Government Gazette - 6 March 2025: notice regarding amendment to General Safety Regulations, the appointed Principal Contractor must ensure that they take Regulation 13H. Housekeeping into consideration during the construction period.

26.14. The Principal Contractor must designate and clearly demarcate any plant and machinery that does not have a fixed location as a noise zone, where the noise level generated is at or above the noise-rating limit or the noise action level, and there is concurrent exposure to:
(i) ototoxic chemical agents; and/or
(ii) whole-body vibration that exceeds the action level specified in the Physical Agents Regulations.

26.15. The Principal Contractor must ensure that any workplace / construction site, or part of such a workplace / construction site, is designated and clearly marked as a noise zone where the noise level is at or above the noise-rating limit or the noise action level, and there is concurrent exposure to:
(i) ototoxic chemical agents; and/or
(ii) whole-body vibration that exceeds the action level specified in the Physical Agents Regulations.

27. Stacking and Storage on Construction Sites

27.1. The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing.

27.2. The Principal Contractor and their appointed Sub-Contractor will conduct a weekly stacking & storage inspection which will be recorded and kept on file this must be completed by the appointed person.

27.3. Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements.

28. Construction Employees' Facilities

28.1. The Principal Contractor must have, as a first activity, chemical toilets in the site establishment to ensure that all construction employees have the facility from the outset.

28.2. The Principal Contractor must have an Employee Facilities Inspector appointed in writing, and this person must be required to complete a weekly facilities Checklist which will be kept in the health and safety file and made available upon request.

28.3. Sheltered eating facilities shall be provided to employees in line with the Construction Employee Facilities Regulations – Construction Regulations 30.

28.4. Drinking water areas to be clearly indicated and sign posted on site and must be available from site start up.

28.5. The drinking water utilised on site should be tested on a regular basis if independent water tanks or systems will be utilised to ensure that the water is safe for human consumption.

28.6. Water taps not fit for human consumption must be clearly signposted to indicate unfit for use.

29. Health & Safety Committee and Representative

29.1. The Principal Contractor must ensure that at least 1 representative from each appointed Contractor attend at least one safety meeting per month chaired by the Principal Contractor. The Health and Safety Chairman from the Principal Contractor must be nominated and appointed in writing.

29.2. The Principal Contractor and their appointed Contractors must in writing appoint a Health & Safety representative, irrespective of whether the Contractor employ twenty or less employees for this Project.

29.3. Following any recordable injury or serious incident, the principal contractor shall hold a site-wide stand down on the same day – to communicate what happened ad reinforce the need for constant safety vigilance.

29.4. The principal contractors site manager / construction manager shall hold weekly supervisory safety meetings to show leadership for the health & safety program, and to discuss safety incidents, rule changes, educational material, and continuous improvements.

30. Ladders

30.1. The Principal Contractor and all appointed Contractors must appoint a Ladder Inspector, and this person must be required to complete a Ladder Checklist at least once a month.

30.2. All ladder on site must be numbered and identified as per General Safety Regulation 13.

30.3. The ladders must be inspected before each use and a copy of the inspection register must be kept in the health & safety file of the applicable contractor.

30.4. When planning work activities, the contractor is urged to plan the activities in such a manner to limit the use of ladders on site where able conduct the work from a safer alternative working platform.

30.5. All straight and extension ladders must be fitted with non-slip feet and when used be tied and secured at the top and bottom of the ladder or should be held when in use.

30.6. A frame ladders must be provided with non-slip feet and must be held and secured when in use.

30.7. Only one person can work from a single ladder at any given time.

30.8. Under no circumstances may any conductive ladders be used on site where work is done near electrical installations.

30.9. All ladders must be free from slippery substances and must be affect free, any ladders that does not comply must be removed from the premises immediately.

30.10. Where ladder work exposes a person to a fall of more than 1.8metres where the employee cannot be safeguarded from the fall risk, a safety harness must be worn and must be secured to a suitable anchorage point.

30.11. Where no secured anchorage is possible an alternative access method should be used such as scaffolding or mobile elevated working platform. This does not apply to the use of a straight or fixed ladder used for access to a different level. Unless there are other conditions that increase a fall exposure.

30.12. Step ladders must be fully extended and must be locked when in use, the ladder that serves a platform for transition must be extended at least 1metre past the landing/platform for safe access.

30.13. Workers are not allowed to carry tools, materials and or equipment in their hands while climbing a ladder. Tools should be secured to a tool belt or similar means of securing the tools.

31. Hand tools

31.1. All hand tools on site to be identified, numbered, and placed on register.

31.2. The principal contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above-mentioned register and kept on site.

31.3. Only qualified and trained workers are allowed to install, adjust and/or operate laser equipment.

31.4. Areas in which lasers are used shall be provided with the required warning signage to indicate the usage of the laser in the area and the required PPE must be provided to the employees working in the affected area.

31.5. The laser beam may not be directed at any employees.

32. Portable Electrical Equipment

32.1. All Portable electrical tools on site to be identified, numbered, and placed on register.

32.2. The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that Potable electrical tools are not damaged or altered in anyway e.g., loose electrical connections, exposed wiring, earth wire not connected, crack or damage to equipment, safeguard not removed or damaged, etc.

32.3. All cables, cords, leads, and hoses in a building shall be strung by nonconductive means at least 2.1metres overhead, kept to the perimeter of the building, or otherwise protected to prevent tripping hazards.

32.4. Where electrical work is required near wet surfaces or weather conditions, then the equipment used should be IP65 rated.

33. First Aid, Emergency Equipment and Procedures

33.1. The Principal Contractor must ensure that the appointed Contractors with 5 and more employees have a first aid box and that Contractors with 10 and more employees have a first aid box with at least one person on site with a first aid certificate.

33.2. Sufficient firefighting equipment must be available inside each of the construction vehicle and mobile plant being used on site.

33.3. Sufficient amount of firefighting equipment must also be positioned on site in case of an emergency and the employees on site must be trained in the procedure on how to use the equipment if needed.

33.4. Site Emergency Evacuation Procedures must be compiled by the Principal Contractor all employees and Contractors on site must be trained on the Emergency Procedures. This Procedure must be updated as and when needed.

33.5. There must also be an up-to-date emergency contact register displayed on a notice board / site office / access gate area and this list must be kept updated.

33.6. An emergency evacuation diagram of the site must also be complied clearly indicating the assembly points and areas of evacuation.

33.7. The Principal Contractor must also appoint in writing a competent Emergency Evacuation Coordinator.

33.8. Where applicable the existing facilities emergency evacuation procedure must also be incorporated into the site procedure to ensure that the existing facility is not negatively affected in case of an evacuation process obstructing their areas.

34. Incident Reporting and Investigations

34.1. In the event of a fatal incident, it will be required that the Principal Contractor and all the appointed Contractors who can have an influence on the incident, that they hand in their Health & Safety files with immediate effect to Cairnmead.

34.2. Site incidents are to be reported to Cairnmead timeously within the time of them having occurred on site, but not exceeding 30minutes after the incident has occurred.

34.3. Site incident reporting procedures must be compiled and communicated with all employees on site.

34.4. An incident flash report must be submitted to all applicable parties on the same day the incident occurred.

34.5. Full incident investigation reports for each incident must be completed within three days after the incident occurred on site and must be submitted to the client.

34.6. The incident report must clearly indicate the corrective actions that has been taken to prevent a reoccurrence of the incident. Such corrective actions are to be taken without any delay and must be implemented within no more than three days after the incident occurred.

34.7. The Principal Contractor must ensure that any incident that occurs on site that falls under a Section 24 incident must be reported to the provincial director in the form of WCL1 or WCL2 within 7days, and in consequence of such an incident a person dies, becomes unconscious, suffers the loss of a limb or part of a limb, or is injured or becomes ill to such an degree they the person is likely to die or suffer a permanent physical defect, such incident shall forthwith be reported to the provincial director by telephone and followed up with an email regarding the incident information.

34.8. The Principal Contractor must ensure that any Incident Investigation is reflected in a Report, and this Report should deal with the detail of the Incident under at least the four headings listed below:
34.8.1. History of the Incident - This will give a description of the project in general, the time and date, the injured persons' name, designation, ID number, description of the area, activities, and the extent of the injuries the person incurred.
34.8.2. Applicable legislation - The investigator must list here in his/her opinion which specific Sections of the Act and Regulations as well as incorporated safety standards are applicable/relevant to the incident.
34.8.3. Evidence - The investigator must list here all the evidence which was taken to consider in the investigation. For example: photos, statements, documentation out of the Health and Safety File and drawings/sketches. This is an example of the types of evidence, but there may be more.
34.8.4. Conclusions - The investigator should compare the evidence with the applicable legislation and highlight where there was no compliance.

35. Welding, Flame Cutting, Soldering and Similar Operations

35.1. The Principal Contractor will as far as reasonably possible ensure that all hot works are contained to one area.

35.2. Ensure that all equipment is inspected and recorded on a register placed in the Health and Safety file and available upon request.

35.3. Ensure that no Hot Works will be permitted to take place in any confined space unless deemed safe in them of the Regulations to do so.

35.4. That all Combustibles / Flammables liquids are removed from the area where hot works is taking place.

35.5. That the necessary firefighting equipment is available in the area where hot works is taking place along with an appointed competent person to use such equipment correctly.

35.6. Ensure that all sparks are contained by use of welding screens or similar.

35.7. If and where applicable hot work permits are to be obtained.

35.8. Compressed gas cylinders shall always be properly secured and brought into the building only as needed and removed as soon as wok is completed daily or as tanks are emptied.

35.9. Flame cutting and gas welding equipment must be fitted with flash back arrestors between both the torch and hose connection and regulator and hose connection ends.

35.10. Cylinders should have a three -part identification tag attached to all cylinders.

35.11. Oxygen and fuel gas cylinders, when not in use, must be stored 6.1metres apart or separated by a 1.5 metre fire resistant barrier.

35.12. Cylinders must be stored in an upright position and must be chained or secured in a similar manner to a cage or designated storage area.

35.13. Smoking and the use of smokeless tobacco, including the use of e-cigarettes, is not permitted inside and buildings, temporary offices, or near flammable liquid storage areas and is allowed only in designated area.

36. Blasting

Not Applicable

37. Asbestos

Not Applicable

38. Existing Services and Existing Site Conditions

38.1. All services like water, electricity and gas will be pointed to the Principal Contractor by the professional team appointed by the Client as far as reasonably possible. There must be a documented proof that the services for water, storm water, sewer, gas (if applicable) and electricity was terminated successfully. For the gas and electricity there must be a Certificate of Compliance to say it was terminated.

38.2. Where the Principal Contractor or their appointed Contractor intends to work near, under or above ground where Power lines are located, all such activities must be conducted in line with the legal requirements and adherence to the safe work distances must always be monitored by the Principal Contractor.

39. Ergonomics

39.1. The principal contractor must ensure that the required information, instruction, and training are provided to the employees / workforce on site relating to their work activity. The information must be in line with the ergonomic risk assessment requirements which should address the risk of exposures and mitigating or eliminating procedures to follow.

39.2. The required ergonomic risk assessment should address all aspects as stipulated in the Ergonomics Regulations. The risk assessment must be performed by a competent person and should not exceed intervals of two years.

39.3. Risk control measures should be implemented before employees are tasked to commence with their activities on site, all employees are also to be trained on the ergonomic risk assessment. The procedure of reporting, medical surveillance and all factors relating to the ergonomics risk assessment must be made clear to each employee to enable the employees to comply to the requirements.

40. Other Special Conditions

40.1. The Principal Contractor must inform Cairnmead, on the same day, when the Department of Labour issue any written notices for a non-compliance on the site, and a copy of such notice must be forwarded, as soon as possible on the same day, to Cairnmead. The Principal Contractor must not submit any reports to the Department of Labour unless verified by Cairnmead.

40.2. The working hour on site is as per the legislated hours in terms of SANS 10400. No person shall during any building, demolition or excavation work use any machine, machinery, engine, apparatus, which in the opinion of the local authority may unreasonably disturb or interfere with the amenity of the neighbourhood, on a public holiday or Sunday, before 06:00 or after 17:00 on any Saturday and before 06:00 or after 18:00 on any day other than those days contemplated above.

40.3. The prohibition of the above shall not apply in any circumstances in which the use of such machine, machinery, engine, apparatus, tool, or contrivance, is urgently necessary to preserve the life, safety, or health of any person, is urgently necessary to preserve property, has been authorized by the local authority.

The Principal Contractor must take note of the details below for the Local Department of Labour offices:

Contact person: Fezeka Ngalo
Telephone number: 021 441 8158
E-mail address: Fezeka.Ngalo@Labour.gov.za

Issued by Cairnmead on behalf of Nuvorm



CPJ Lourens

Date: 18 August 2025

CHSA/124/2022
For: Cairnmead

ANNEXURE 1 – Legal Compliance Audit Guideline

Administrative Requirements / Duties
Induction Training
Medical Fitness Certificates (Annexure 3)
Appointment Letters & Proof of Competency
Contract with Client / Principal Contractor
Copy of The OHS Act & Regulations
Health and Safety Plan
Health & Safety Policy
Letter of Good standing
Mandatary Agreement (Sec 37(2))
Principal Contractors Appointment / Contractors Appointment
Notification of Construction Work / Construction Work Permit
ID Copies and Next of Kin Information
Recording of Incidents (Annexure 1, WCL2 & Incident reporting procedure)
Risk assessments, safe work procedures, method statements and risk review and monitor plan
PPE Issue Register
Safety Meeting Minutes and attendance
Toolbox talks / DSTI's
Registers and Documentation (Where Applicable)
Bulk mixing plant
Construction Employee Facilities
Construction Vehicles & Mobile Plant
Demolition Work
Excavation Work
Explosive Actuated Devices
Explosives
Fall Arrest Equipment
Fall Protection Plan
Material Hoist

ANNEXURE 1 – Legal Compliance Audit Guideline

Mobile Crane
Rope Access
Scaffolding
Suspended Platforms
Temporary Works
Welding & Flame Cutting / Hotwork
Housekeeping
Stacking & Storage
Temporary Electrical Installations
Fire Precautions
First Aid
Hand tools
Health & Safety Representative
Ladders
Lifting Tackle
Storage of Hazardous Chemicals
Emergency Preparedness / Plan / Procedures
Vessels Under Pressure
Lifts & Escalators
Portable Electric Tools

ANNEXURE 2 – Monthly Projects Statistics Form

CAIRNMEAD	CAIRNMEAD MONTHLY PROJECTS STATISTICS FORM	CICPS	001
		REV	03
		REV DATE	28/09/2023
		PAGE	1 of 2
		REGISTER NUMBER	8539

MONTHLY PROJECTS STATISTICS FORM

PROJECT NAME:	PRINCIPAL CONTRACTOR:
Calcutta Cemetery & Memorial Park	Tender
PROJECT COMMENCEMENT DATE:	ESTIMATE PROJECT COMPLETION DATE:
_____	_____
REPORT COMPILED BY:	DESIGNATION PERSON COMPLETING REPORT:
1ouRo6irhSNNzIwTAS7xNAYvVR33	_____

REPORTING MONTH:	Tick month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

STATISTICS SUMMARY

(Statistics is combination of all Contractors working on project – Principal Contractor and subcontractors)

Total hours worked for the month:	Lost Time Incidents for the month:	Medical Treatment Cases for the month:
First Aids cases for the month:	Near Misses reported for the month:	Total hours worked from commencement of project to date: (THW)
Total No. of Lost Time Incidents from commencement of project to date: (LTI)	Total No. of Medical Treatment Cases from commencement of project to date: (MTC)	Total No. of First aid cases from commencement of project to date:
Total No. of Near Misses from commencement of project to date:	LTIR Rate - From commencement of project to date: (LTI +MTC) / THW) *200,000	

SHORT DESCRIPTION OF MONTHLY INCIDENT REPORTED

(First Aid Cases, Medical Treatment Cases, Lost Time Incidents and Near Misses)

FIRST AID CASES

CAIRNMEAD	CAIRNMEAD MONTHLY PROJECTS STATISTICS FORM	CICPS	001
		REV	02
		REV DATE	05/10/2022
		PAGE	2 of 2
		REGISTER NUMBER	8539

MEDICAL TREATMENT CASES

LOST TIME INCIDENTS

NEAR MISSES

PRINCIPAL CONTRACTOR CONSTRUCTION MANAGER CR8(1) NAME & SURNAME:	_____	**SIGNATURE:**
PRINCIPAL CONTRACTOR SAFETY OFFICER NAME & SURNAME:	_____	**SIGNATURE:**

CAIRNMEAD

PROJECT BASELINE RISK ASSESSMENT

Project: Calcutta Cemetery & Memorial Park

Our Offices

Building C1
Waterkloofrand Corporate Park

358 Buffelsdrift Street
Erasmusrand
Pretoria, 0165

Contact Us

012 346 5752
admin@cairnmead.co.za

CAIRNMEAD

Baseline Hazard Identification and Risk Assessment Register ©

1 Building Projects

2 Methodology

3 HIRA

4 Risk Assessment

Configuration Management

Prepared By	Cairnmead	**Register Number**	8539
Approved By	CPJ Lourens CHSA/124/2022	**Revision**	17/09/2024
Issue Date	18/08/2025	**Project:**	Calcutta Cemetery & Memorial Park

2. Methodology

Seriousness Rating	Description
1	No injury or illness
2	First-aid treatment case, medical treatment case and temporary discomfort case
3	Medical mitigation case; occupational disease with non-permanent effects
4	Lost Time Injury. Occupational disease with permanent consequences e.g., hearing loss
5	Fatality (as a result of incident or occupational disease e.g., asbestosis)
6	Multiple fatalities or multiple permanent occupational diseases

Plot consequence & likelihood in risk matrix to determine risk priority level

Seriousness	A	B	C	D	E
6	III	II	I	I	I
5	III	II	II	I	I
4	IV	III	II	I	I
3	IV	III	II	II	II
2	IV	IV	III	II	II
1	IV	IV	III	III	III

Likelihood

Determine the likelihood that the event will occur

Category	Criteria
E	· 99% probability, or · Impact is occurring now, or · Could occur within "days to weeks"
D	· >50% probability, or · Balance of probability it will occur, or · Could occur within "weeks to months"
C	· >20% probability, or · May occur shortly but a distinct probability it will not, or · Could occur within "months to years"
B	· >5% probability, or · May occur but not anticipated, or · Could occur within "years to decades"
A	· >5% probability, or · Occurrence requires exceptional circumstances, or · Only occurs as a "100-year event"

Evaluate the risk based on the level of risk determined, as well as the effectiveness of the current risk controls

Priority	Risk Ranking	Action Required	Escalation
I	Very High	Immediate action required	Report to CEO and Client Agent
II	High	Strong Mandatory action required	Report to Contractors Manager and Client Agent
III	Medium	Action required, possibly at administrative level	Report to Contracts Managers
IV	Low	Minor or no action required	No escalation required

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3. Hazard identification, risk assessment and determining controls

The organization shall establish, implement, and maintain a procedure(s) for the on-going hazard identification, risk assessment, and determination of necessary controls.

The procedure(s) for hazard identification and risk assessment shall consider:

a) routine and non-routine activities;
b) activities of all persons having access to the workplace (including contractors and visitors);
c) human behaviour, capabilities, and other human factors;
d) identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of the organization;
e) hazards created in the vicinity of the workplace by work-related activities under the control of the organization;
f) infrastructure, equipment, and materials at the workplace, whether provided by the organization or others;
g) changes or proposed changes in the organization, its activities, or materials;
h) modifications to the OH&S management system, including temporary changes, and their impacts on operations, processes, and activities;
I) any applicable legal obligations relating to risk assessment and implementation of necessary controls;
j) the design of work areas, processes, installations, machinery/equipment, operating procedures, and work organization.

The organization's methodology for hazard identification and risk assessment shall:

a) be defined with respect to its scope, nature, and timing to ensure it is proactive rather than reactive; and
b) provide for the identification, prioritization and documentation of risks, and the application of controls, as appropriate.

For the management of change, the organization shall identify the OH&S hazards and OH&S risks associated with changes in the organization, the OH&S management system, or its activities, prior to the introduction of such changes.

Cairnmead Industrial Consultants has developed a site auditing system to measure the compliance of sites and to categorize the specific activities.
under High-Risk Activities of which we have 16 different categories identified. This project baseline risk assessment will indicate under which of the 16 categories each item will fall, and it is the responsibility of the principal contractor and their appointed contractors to implement task specific risk assessments to eliminate, reduce or mitigate each of the risks identified. These categories are as follows and are indicated by the individual icons.


WORKING AT HEIGHTS


ELECTRICAL


ELECTRICAL ISOLATION


GROUND DISTURBANCE


LIFTING OPERATIONS


MOBILE PLANT AND EQUIPMENT


CONFINED SPACES


HOT WORKS


HAZARDOUS MATERIAL


HOUSEKEEPING


MATERIAL HANDLING


PERSONAL PROTECTIVE EQUIPMENT


ADMINISTRATION


INFECTIOUS DISEASES


NOISE


SITE OPERATIONS

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Hazard Identification, Risk Assessment and Controls

Before construction start, the Baseline Risk Assessment is a theoretical assessment before the construction start in order to highlight the foreseen hazards, but this is not intended to be seen as an absolute 100% of hazards that may occur.

The Principal Contractor or their appointed Contractor should take this and whatever hazards that may be presented, due to the unique process which get used to execute the specific construction activity.

This Baseline Risk Assessment provides recommendations regarding the control measures; it is however the Principal Contractor's duty to ensure that detailed control measures are addressed in the applicable unique Risk Assessment by the Principal Contractor or the contractor. The risk rating is deliberately rated high because there are no controls in this, and without the required controls, the possibility of the potential risk is very high, as indicated.

File Approval and Administrative Requirement

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 001	File Approval as per OHS Requirements and Client Specification	Work commencing prior to the file being available and approved.	**Cairnmead Recommendations:** No Contractor may commence with work until safety file have been audited and approved by Cairnmead representative. The Principal Contractor should submit their health and safety file to Cairnmead at least one week before the commencement of work, for a file approval audit to be conducted, this is to ensure that the file is compliant prior to work commencing on site to prevent any delays in the starting of the project.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No valid registration with COID.	**Cairnmead Recommendations:** Before any commencement of work, the Principal Contractor must submit proof that they are in Good Standing with the Compensation Fund, such documentation must be kept in their Health and Safety file and made available upon request. Before any commencement of work, the Principal Contractor must submit proof that they are in Good Standing with the Compensation Fund, such documentation must be kept in their Health and Safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Expired Documentation (e.g., competencies, equipment load test, medicals, work permits)	**Cairnmead Recommendations:** Contractor to ensure that all documents in the health and safety file is renewed before the expiry date.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Documentation not available or approved as per required Client Spec and OHS act.	**Cairnmead Recommendations:** Contractor to ensure all documents is available in the safety file as per the Annexure 1 (legal compliance audit guideline) in the Client Health and Safety specification.Contractor to submit safety file to Cairnmead Industrial Consultants for audit and approval.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No health and safety plan / no site-specific health and safety plan in the file. Health and Safety Plan not submitted to Cairnmead for approval.	**Cairnmead Recommendations:** The Contractor must compile a suitable, sufficiently documented and coherent site-specific health and safety plan (taking into consideration the Client health and safety specification) which must be submitted to Cairnmead for approval. The Contractors' health and safety plan must be signed off by all relevant parties and from senior management from the Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 002	Legal Appointments and Competency	Employees appointed not in possession of required or valid competencies as per Client Spec and OHS Act.	**Cairnmead Recommendations:** The Contractor to ensure that where the Client Health and Safety Specification requires a proof of competency, that it is included in the health and safety file.The Contractor to ensure that they only appoint persons who has the required qualification / competencies in line with legislative requirements.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Appointment not as per legal requirements	**Cairnmead Recommendations:** The Contractor to ensure that all relevant appointments are done as per the Occupational Health and Safety Act, Regulations (85 of 1993) and incorporated safety standards. The Contractor to ensure that where the Client Health and Safety specification specifies additional appointments, this should be done.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lack of experience for appointed position.	**Cairnmead Recommendations:** The Contractor to ensure that they only appoint persons who has the required qualification / competencies in line with legislative requirements and adequate experience to perform work on site in a safe manner.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 003	Required legal documentation as per OHS act	Documentation not site-specific.	**Cairnmead Recommendations:** Contractor to ensure that all documentation in the file is site specific. Contractor to ensure the documentation is in line with the requirements as listed in the Client Health and Safety Specification.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Policies and procedures not in place and approved.	**Cairnmead Recommendations:** The Contractor to ensure that all relevant policies and procedures are in place in the health and safety file. The Contractor to ensure that all relevant policies and procedures are approved / signed off by senior management. The Principal Contractor along with their appointed Contractors will ensure that a Health and Safety Policy which has been signed off and communicated is placed in their Health and Safety File and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees not trained on policies and procedures and legal requirements.	**Cairnmead Recommendations:** The Contractor to ensure that all employees are trained on policies, procedures and legal requirements. Proof of communication in the form of a signed attendance register to be available in the file. Training needs analysis to be conducted by Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 004	Risk Identification	Method of works not site specific.	**Cairnmead Recommendations:** The Principal Contractor and his appointed Contractor must ensure that all their activities are addressed in a site and task specific risk assessments and method statement and must be available in their Health and Safety File. Works should be outlined and detailed within a Method Statement for the works. Where work is identified as a single task, this must be detailed in a specific method statement and risk assessment. The method statement should include the information as a minimum specified in the Client Health and Safety Specification.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Risk identification not in place or conducted.	**Cairnmead Recommendations:** A pre-task analysis shall be completed for each task prior starting the task and prepared with the employees who will be involved in the task. The Principal Contractor and his appointed Contractor must ensure that all their activities are addressed in a site and task specific risk assessments and must be available in their Health and Safety File. The appointed Construction Manager must ensure that all employees under his or her control are informed, instructed, and trained by a competent person regarding any hazard and the related work procedures and or control measures before any work commences, and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Risk identification not site-specific.	**Cairnmead Recommendations:** CairnmeaThe Principal Contractor and his appointed Contractor must ensure that all their activities are addressed in a site and task specific risk assessments and must be available in their Health and Safety File.d Recommendations:	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Risk controls not sufficient.	**Cairnmead Recommendations:** The Principal Contractor and his appointed Contractor must have a Risk Assessment which is compiled based on their methodology and processes, for each of the items as listed in the Clients Baseline Risk Assessment, to reduce the high rating of the activity which will be placed in their Health and safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Risk Assessor not competent.	**Cairnmead Recommendations:** The Principal Contractor and his appointed Contractor must in writing appoint a Risk Assessor in terms of CR9(1) who has the necessary proof of competency.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Continues risk evaluation not conducted.	**Cairnmead Recommendations:** The Principal Contractor and their Contractors must ensure that the competent person continuously evaluates the risk on site, and update / revise the relevant risk assessment if required. The Risk Review and Monitor Plan must also be available in the Health and Safety File.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Method statements / risk assessments / safe work procedures not approved before work commences.	**Cairnmead Recommendations:** The Principal Contractor and his appointed Contractor must ensure that all method statements, risk assessments and safe work procedures and job hazard analysis are signed off by the risk assessor, Construction Manager and the Construction Supervisor and proof of this must be available in their Health and Safety File.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Method statement / risk assessment / safe work procedure not communicated with employees involved in the activity before work commences.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Contractor must ensure that all method statements, risk assessment and safe work procedures and job hazard analysis have been communicated to all employees and proof of such communication is placed in their Health and Safety file and made available upon request. The appointed Construction Manager must ensure that all employees under his or her control are informed, instructed, and trained by a competent person regarding any hazard and the related work procedures and or control measures before any work commences, and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 005	List of employees and Contractors	Number of employees on site not listed on employee lists.	**Cairnmead Recommendations:** Keep all employees working on site on an employee list.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Number of contractors on site not listed on contractor list.	**Cairnmead Recommendations:** Keep all contractors on site on an updated contractor list.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employee and contractor list not being updated as required.	**Cairnmead Recommendations:** Enter new employees and contractors on the list as soon as they received the site induction.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 006	Induction & Medical certificate of fitness	Employees entering site not being inducted.	**Cairnmead Recommendations:** The Principal Contractor must ensure that every employee undergoes / attend the site specific induction before being allowed access to site. Proof of the induction by means of signed attendance register shall be kept in the health and safety file as required in terms of Construction Regulation 7(7). The Contractor must ensure that all employees who has been inducted can be easily identified.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Visitors entering site not being inducted / signing visitors' induction form.	**Cairnmead Recommendations:** All personnel visiting or working on the project must complete a Project Site Induction. This will be completed by a Principal Contractor. Proof of the induction by means of signed attendance register shall be kept in the health and safety file as required in terms of Construction Regulation 7(7). As per Construction Regulation 7(5), it is required that all visitors and professional team also attend the induction before entering the site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Visitors not being provided with the necessary personal protective equipment.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the visitors have the necessary personal protective equipment before entering the construction site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Visitors walking around on site without reporting to the site office first, walking on site unaccompanied.	**Cairnmead Recommendations:** The Principal Contractor must ensure that proper access control is enforced on site, to ensure that all visitors report to the site office first, before entering the construction site. Visitors to the site must be accompanied by a representative from the Principal Contractor when walking around on the construction site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Professional team members entering site not being inducted /not signing the induction form.	**Cairnmead Recommendations:** The Principal Contractor may not allow or permit any employee or person to enter the site, unless the employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry. The Principal Contractor must ensure that all professional team members visiting the construction site undergo a health and safety induction pertaining to the hazards prevalent on the site and must ensure that the members have the necessary personal protective equipment.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Induction being conducted on employees without them being in possession of a valid medical certificate of fitness in the form of an Annexure 3. The medical must be conducted by a registered Occupational Health Practitioner.	**Cairnmead Recommendations:** Site induction can only be done with an employee if they require up to date medical is presented at the induction. Medical fitness certificates must be validated by the Principal Contractor to ensure adherence to the minimum requirements and validity of the document. As per Construction Regulation 7(8), the Contractor to ensure that a medical fitness certificate specific to the construction work being performed, in the form of an Annexure 3 issued by a registered Occupational Practitioner is available for every employee on site, the medical fitness certificates are to be always kept secure. The Contractor must also ensure as per Construction Regulation 23(1)(d)(ii) each operator must be in position of a medical fitness certificate to operate the construction vehicle and mobile plant issued by an occupational practitioner in the form of Annexure 3 as per the Construction Regulations 23. No employee may be allowed to commence work on site without a valid medical being available. If any employees' medical has expired, the Contractor must ensure that the employee is sent for a new medical immediately before allowing them to proceed with works on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction vehicles and mobile plant operators entering the site without being inducted.	**Cairnmead Recommendations:** The Principal Contractor may not allow or permit any employee or person to enter the site, unless the employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Driver of delivery vehicles not made aware of the specific site conditions.	**Cairnmead Recommendations:** The Principal Contractor may not allow or permit any employee or person to enter the site, unless the employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry. The Principal Contractor must ensure that a procedure is implemented at the access gate to site to inform drivers of delivery vehicles of the site-specific conditions / rules before allowing them onto the site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being inducted without valid work permits / certified ID Copies.	**Cairnmead Recommendations:** Each person's ID or valid work permit must be inspected before induction can be allowed on site for the individual. As part of the Incident Management Procedure the Principal Contractor must also include a written procedure to indicate how the certified ID copies and next of kin information of each individual will be made available during an incident on site where such information will be needed, the procedure must outline who can be contacted to access the information for each Contractor working on site, and where the information will be kept to secure the privacy of each individual.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 008	Notification of Construction	Contractor not submitting notification to the DOL as required by legal requirement.	**Cairnmead Recommendations:** Contractor to provide the DOL with the required Notification as legislated. Notification to contain the minimum required information and to be submitted as legislated to prevent work stoppages from DOL.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Notification not containing the correct information as required by the DOL.	**Cairnmead Recommendations:** The Notification of Construction Work must contain all correct info and must be in the prescribed format of Annexure 2.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Notification of construction not submitted in the prescribed timeframe.	**Cairnmead Recommendations:** The Contractor must ensure that the Notification of construction work is submitted to the Department of Labour 7 days prior to construction work commencing as per Construction Regulation 4(1)	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Notification of construction not available in the health and safety file on site.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the notification of construction work is placed on their Health and Safety File on site and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 009	Client and Designer Duties	Client not following requirements as stipulated in the regulations.	**Cairnmead Recommendations:** Client to follow legal requirements as stipulated in the regulations before and during the construction process.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Client not preparing a baseline risk assessment for the construction work project.	**Cairnmead Recommendations:** The Client must prepare a baseline risk assessment for the construction project. The Client must ensure that the baseline risk assessment is included in the tender documents.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Client not preparing a health and safety specification for the construction work project.	**Cairnmead Recommendations:** The Client must prepare, a suitable, sufficiently documented and coherent site-specific health and safety specification for the intended construction work- based on the baseline risk assessment. The Client must ensure that the health and safety specification is included in the tender documents.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Client not providing the designer with the health and safety specification.	**Cairnmead Recommendations:** The Client must provide a copy of the project health and safety specification to the designer and must ensure that the designer takes the prepared health and safety specification into consideration during design stage.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Principal Contractor not making adequate provision for the cost of health and safety measures on the project.	**Cairnmead Recommendations:** The Client must ensure that the Principal Contractor have made adequate provisions for the cost of health and safety measures.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Principal Contractor appointed to conduct construction work does not have the necessary competencies and resources to carry out the construction work safely.	**Cairnmead Recommendations:** The Client must ensure that the Principal Contractor appointed to conduct construction work have the necessary competencies and resources to carry out the construction work safely.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Contractor not appointed to perform construction work.	**Cairnmead Recommendations:** The Client must appoint every Principal Contractor in writing for the project or part thereof on the construction site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Principal Contractor's health and safety plan not site-specific / not approved / not in place.	**Cairnmead Recommendations:** The Client must discuss and negotiate with the Principal Contractor the contents of the Principal Contractor's health and safety plan and must approve the plan for implementation.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Health and Safety audits on site and documentation verification audits not being conducted.	**Cairnmead Recommendations:** The Client must ensure that periodic health and safety audits and documentation verification are conducted at intervals mutually agreed upon between the Principal Contractor and any Contractor, but at least once every 30 days. The Client must ensure that a copy of the health and safety audit report mentioned above is provided to the Principal Contractor within 7 days after the audit in order for the Contractor to address all concerns identified during the audit. The Client must ensure that the health and safety file of the Principal Contractor is kept and maintained by the Principal Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Contractor conducting unsafe activities on site / not in line with the Client Health and Safety specification / OHS Act and relevant regulations.	**Cairnmead Recommendations:** The Client must stop any Contractor from executing a construction activity which poses a threat to the health and safety of persons which is not in accordance with the Client's health and safety specifications and the Principal Contractor's health and safety plan for the site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Principal Contractor not informed when changes are brought to design or construction work.	**Cairnmead Recommendations:** The Client must where changes are brought about to the design or construction work, make sufficient health and safety information and appropriate resources available to the Principal Contractor to execute the work safely.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Designers not appointed in writing and not made aware of their duties.	**Cairnmead Recommendations:** Designers on the project to sign agreement in acknowledgement of their duties on the project.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Designers not following their legal duties throughout the project.	**Cairnmead Recommendations:** Designers to conduct the required inspections and review the required documentation as stipulated in the regulations.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Designer not taking into consideration the health and safety specification.	**Cairnmead Recommendations:** The Designer of the structure must take into consideration the health and safety specification submitted by the Client.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Designer not providing the Client the required information pertaining to the structure.	**Cairnmead Recommendations:** The Designer of the structure must make available in a report to the Client all relevant health and safety information about the design of the structure that may affect pricing of construction work, the geotechnical-science aspects (where appropriate) and the loading the structure is designed to withstand.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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File Approval and Administrative Requirement

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Failing to inform the Client of any anticipated dangers or hazards relating to the construction work.	**Cairnmead Recommendations:** The Designer of the structure must inform the Client in writing of any known or anticipated dangers or hazards relating to the construction work and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Establishment

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 010	Temporary hoarding to separate public and construction work.	Fence erected in the incorrect position.	**Cairnmead Recommendations:** Fence installation areas to be demarcated with netting when posts and fence is being installed. Fence / hoarding layout plan / drawing to be available indicating the position of the fence.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		When digging for fence poles, services can be damaged	**Cairnmead Recommendations:** Existing services to be clearly marked out by the Principal Contractor before fence installation commences and the position of the services to be communicated to the fencing installation Contractor to prevent any possible damages.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fence not adequate to prevent public access / unauthorized entry into the construction site.	**Cairnmead Recommendations:** The Principal Contractor must install hoarding as deemed required by the building / construction activity (to isolate members of public from construction activity). The detail of which the hoarding will be constructed will be agreed as the construction activities require from time to time but must be of solid material used to separate construction activities and should be of a minimum height of 1.8 metres. The Principal Contractor must ensure that construction sites built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Where movable hoarding is required, the hoarding not secured properly.	**Cairnmead Recommendations:** Movable hoarding must be secured with weights at the base of the hoarding to prevent displacement.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Movable hoarding footings protruding into public areas.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the type of hoarding used / placed up does not pose any risk to members of public. Footing must be positioned in such a manner that it does not pose a tripping hazard.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No mandatory warning signs displayed at the entrance of the construction area.	**Cairnmead Recommendations:** The required no entry signage and construction signage must also be displayed on the hoarding, and especially at the entrance gates.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 011	Existing boundary fences.	Existing fences not maintained / inspected on a regular basis.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the existing boundary fence is inspected at regular intervals to ensure that it is stable and that there is no damages to the fence.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 012	Security	No security in place at entrances to construction site.	**Cairnmead Recommendations:** The Principal Contractor must appoint full time security personnel to control access onto site at all times.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unauthorized entry to site.	**Cairnmead Recommendations:** Dedicated access control sign books to be available for visitor sign ins. The Principal Contractor is responsible for the access / security control to the construction site and only persons with a unique identification, which they have received during the induction for the site, must be allowed into the site and this include the Client representative and the Professional team. The Principal Contractor must ensure that every person on site can be identified by means of a tag / access card or the construction company name on their overalls to prevent any person from entering the site who cannot be identified.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Theft of materials and equipment.	**Cairnmead Recommendations:** The Principal Contractor must appoint full time security personnel to control access onto site at all times and to do checks at the gates to prevent theft of materials. The Principal Contractor must implement a gate pass system if required to control materials being removed from site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 013	Access control	To prevent unauthorized entry into the construction area, beyond the area, which was fenced off as per the Engineers drawing, from the gate which the contractor controls up to the furthest point of the hoarded area.	**Cairnmead Recommendations:** Only designated access gates may be kept unlocked pending that full-time security is placed at the gates. Only use access gates at approved by the client.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Access control measures not in place at access gates.	**Cairnmead Recommendations:** The Principal Contractor is responsible for the access / security control to the construction site and only persons with a unique identification, which they have received during the induction for the site, must be allowed into the site and this include the Client representative and the Professional team.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Accessing site from unsafe areas.	**Cairnmead Recommendations:** Only designated access gates may be kept unlocked pending that full-time security is placed at the gates.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unauthorized entry onto site due to lack of access control measures.	**Cairnmead Recommendations:** The Principal Contractor is responsible for the access / security control to the construction site and only persons with a unique identification, which they have received during the induction for the site, must be allowed into the site and this include the Client representative and the Professional team. The Principal Contractor must appoint full time security personnel to control access onto site at all times.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 014	Site Clearing	Use of unsafe mobile plant or machinery.	**Cairnmead Recommendations:** All construction vehicles on site must be inspected when delivered to site to ensure adherence to the legal requirements before any usage of the plant. All construction vehicles used on site must comply to the requirements of Construction Regulation 23, any vehicle not up to standard are not permitted on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator of mobile plant not competent / not medically fit.	**Cairnmead Recommendations:** Only trained and appointed operators maybe allowed to operate construction vehicles and mobile plant on site. Each operator must be in position of a medical fitness certificate issued by an occupational practitioner in the form of Annexure 3 as per the Construction Regulations 23.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damage of site fence due to site clearing operations.	**Cairnmead Recommendations:** Safe distance from site fence and services must be established by contractor and must be maintained and marked.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Several construction vehicles and mobile plant operating in confined space area and unsafe / uncontrolled interaction with employees on site.	**Cairnmead Recommendations:** Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. Each crossover point must also be provided with a designated flagman to control the flow of traffic at each pedestrian crossing, flagmen should also be utilised where construction vehicles and mobile plat are operating in enclosed areas and high traffic routes on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damage to existing services not marked or pointed out to the Principal Contractor.	**Cairnmead Recommendations:** All services on site must be pointed out by the Client to the Principal Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees being struck by moving plant working in the area.	**Cairnmead Recommendations:** Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. This must be done by means of barriers or similar equipment. Each crossover point must also be provided with a designated flagman to control the flow of traffic at each pedestrian crossing, flagmen should also be utilised where construction vehicles and mobile plat are operating in enclosed areas and high traffic routes on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No dust control measures in place.	**Cairnmead Recommendations:** Dust control measures must be implemented by the principal contractor as determined by the environmental requirements.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Removing tall trees unsafely.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a method statement ands risk assessment is conducted for this activity to ensure employee safety when removing tall trees. Exclusion zones must be demarcated around the area where trees are being removed to ensure that no employees are in close vicinity.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damage to neighboring properties.	**Cairnmead Recommendations:** The Principal Contractor must conduct a thorough inspection of all neighbouring properties to record all damages before construction work commences. The Principal Contractor must ensure measures necessary is implemented to prevent damages to neighbouring properties.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Unauthorized removal of indigenous & endangered fauna & flora.	**Cairnmead Recommendations:** In terms of section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister of Agriculture, Forestry and Fisheries. The Principal Contractor must inform the relevant authorities if indigenous and endangered fauna and flora needs to be removed.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unsafe stockpiles of soil or other materials on site.	**Cairnmead Recommendations:** Principal Contractor must ensure that any soil or other materials stockpiled on site is done in such a manner that it does not create a safety or environmental risk. EMP to be followed where applicable.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction vehicle and mobile plants reverse hooters not working.	**Cairnmead Recommendations:** All construction vehicles and mobile plant must be fitted with a working acoustic warning device and automatic reverse warning device as per Construction Regulations 23. All construction vehicles used on site must comply to the requirements of Construction Regulation 23, any vehicle not up to standard are not permitted on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 015	Temporary water supply	No proper water supplies available on site.	**Cairnmead Recommendations:** Only clean water may be used for human consumption and must be marked as safe for use. Contaminated water areas to be indicated as unsafe for use.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Improper water connection causing water spillages on site.	**Cairnmead Recommendations:** The Principal Contractor to ensure that a competent plumber connects water and any improper connections to be fixed to prevent / minimize water spillages on site.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No drinkable water available for employees on site until temporary water supply is available.	**Cairnmead Recommendations:** Drinking water areas to be clearly indicated and sign posted on site and must be available from site start up. The drinking water utilized on site should be tested on a regular basis if independent water tanks or systems will be utilized to ensure that the water is safe for human consumption. Water taps not fit for human consumption must be clearly signposted to indicate unfit for use.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 016	Temporary power supply	No COC available for the temporary electrical connection used on site.	**Cairnmead Recommendations:** The Principal Contractor will ensure that all electrical installations on site will have a signed COC which will be made available upon request. Electrical installations can only be utilized once COC is issued.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No weekly inspection done by competent person appointed in writing.	**Cairnmead Recommendations:** All Temporary Electrical connections will be inspected on a weekly basis by the competent person appointed in terms of Construction Regulation 24.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Temporary DB not installed in accordance with the legal requirements.	**Cairnmead Recommendations:** Electrical installations must only be done by appointed electrical contractor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Electrical supply cable of temporary electrical installation damaged due to activities on site.	**Cairnmead Recommendations:** The electrical supply cables of all temporary electrical installations must be protected from the construction activities such as plant and machinery being operated near such cables.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Exposed live electrical connections.	**Cairnmead Recommendations:** The Principal Contractor will ensure that no live electrical connection is exposed to the elements which can cause a risk to any person or the property of the client (e.g., rain, open flames, etc).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		DB Board on site not fitted with cover plate ☒ exposed electrical components / No earth leakage.	**Cairnmead Recommendations:** The Principal Contractor will ensure that all DB Board will be fitted with a cover plate, earth leakage and trip switch along with a lockout procedure, that must be specific for the type of work required to take place on the electrical components and must detail the measures that will be taken if such work will be required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical Isolation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 017	Site establishment. Transporting containers / temporary offices to site. Offloading containers / offices. Container / offices placement. Demobilisation. Cleaning	No toilets provided for employees as per requirements.	**Cairnmead Recommendations:** Toilet facilities must be installed and in working condition when employees start work on site. The Principal Contractor must have, as a first activity, chemical toilets in the site establishment to ensure that all construction employees have the facility from the outset.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect placement / position of containers / site offices / Lay down areas not off sufficient size.	**Cairnmead Recommendations:** The Principal Contractor must do site establishment as indicated by Principal Agent. These areas must be always controlled, no members of public allowed within laydown areas. A Site establishment drawing to be available.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Safety signs and notice boards not placed close to entrance of main gate.	**Cairnmead Recommendations:** Mandatary signage must be installed at the gates leading to site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		External company delivering / offloading of containers ☒ operator not trained / appointed.	**Cairnmead Recommendations:** Whenever making use of an external Contractor to do lifting work the Principal Contractor must ensure that the operator is competent and appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Lifting machine used to offload containers ☒ no proof of LMI inspection.	**Cairnmead Recommendations:** All lifting machines must have in place proof of LMI inspection by an accredited person/company at intervals not exceeding 12 months.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Use of damaged lifting tackle during offloading of container.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing. All lifting tackle should be recorded on a register. All hooks shall be fitted with a safety latch/catch. Hooks may never be used until a damaged latch is replaced. All lifting tackle should be conspicuously and clearly marked with identification particulars and the maximum mass load that it is designed for.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees in close proximity or underneath suspended load when containers are being offloaded.	**Cairnmead Recommendations:** No suspended loads may be lifted over personnel, buildings, processes, or electrical conductors. When loads are being lifted on site, clear signalling and indicators must be used to warn the surrounding personnel that loads are being lifted. No workers are allowed under a suspended load, and the signalling of suspended loads should be done by appointed banksmen by means of whistles or similar devices. All loads shall have a tag line / guide rope attached for control and controlling loads by hand is not permitted. The guide rope used must be of adequate length to ensure that it is long enough for safe control of the loads, the length of the guide rope should also be assessed not to be an excessive length that can cause a risk to the surrounding areas while being used. Loads wider than 2.5metres must be fitted with two tag lines / guide ropes at opposite ends of the load to ensure safe and secured control of the load.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damaged / loose wires exposed at site offices.	**Cairnmead Recommendations:** Installation of offices must be done under the supervision of a competent person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Material handling can cause crush injuries and falling objects.	**Cairnmead Recommendations:** Installation of offices must be done under the supervision of a competent person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 018	Employee facilities	Insufficient employee facilities on site, causing employees to pollute the site.	**Cairnmead Recommendations:** There must be toilet facilities provided in line with legal requirements for each sex working on site. Waste bins to be placed at strategic locations throughout site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Water taps of sources unfit for human consumption.	**Cairnmead Recommendations:** Water taps not fit for human consumption must be clearly signposted to indicate unfit for use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Drinking water not tested to ensure it is suitable for human consumption of water storage tanks or similar are used.	**Cairnmead Recommendations:** Drinking water areas to be clearly indicated and sign posted on site and must be available from site start up. The drinking water utilized on site should be tested on a regular basis if independent water tanks or systems will be utilized to ensure that the water is safe for human consumption. Water taps not fit for human consumption must be clearly signposted to indicate unfit for use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Facilities not being cleaned and maintained.	**Cairnmead Recommendations:** The Principal Contractor must have an Employee Facilities Inspector appointed in writing, and this person must be required to complete a weekly facilities checklist which will be kept in the health and safety file and made available upon request. The Principal Contractor must ensure that the employee facilities are cleaned on a regular basis.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No changing facilities available for employees on site.	**Cairnmead Recommendations:** Changing facilities to be provided to contractors / employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No dining / sheltered eating areas available for employees on site.	**Cairnmead Recommendations:** Sheltered eating facilities shall be provided to employees in line with the Construction Employee Facilities Regulations Construction Regulations 30.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Establishment

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No inspections conducted and no checklist completed as per the Cairnmead Specification.	**Cairnmead Recommendations:** The Principal Contractor must have an Employee Facilities Inspector appointed in writing, and this person must be required to complete a weekly facilities checklist which will be kept in the health and safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees sleeping on site / not provided with adequate accommodation where required.	**Cairnmead Recommendations:** The Principal Contractor must not allow employees to sleep on site. The Principal Contractor must provide reasonable and suitable living accommodation for the workers at the construction sites who are far removed from their homes and where adequate transportation between the site and their homers, or other suitable living accommodation, is not available.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 019	Inclement weather	Strong winds	**Cairnmead Recommendations:** Stop work in areas with risk of falling objects or fall of employees from heights. Remove all loose materials or alternatively secure all loose materials. Ensure that there is a safe shelter for employees during strong wind conditions. Ensure that a risk assessment is conducted for inclement weather conditions and that employees receive training on safety protocols and procedures to follow during adverse weather conditions. Suspend all lifting activities: Cranes are parked in free swing mode.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lightning	**Cairnmead Recommendations:** Contractor supervisor to assess conditions and stop outside work if there is a risk of lightning strike. Ensure that a risk assessment is conducted for inclement weather conditions and that employees receive training on safety protocols and procedures to follow during adverse weather conditions.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Extreme heat	**Cairnmead Recommendations:** Ensure that a risk assessment is conducted for inclement weather conditions and that employees receive training on safety protocols and procedures to follow during adverse weather conditions. Medical surveillance. Ensure adequate water breaks are taken by employees and adequate water is provided.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Heavy rain	**Cairnmead Recommendations:** Ensure that a risk assessment is conducted for inclement weather conditions and that employees receive training on safety protocols and procedures to follow during adverse weather conditions.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 020	Smoking on site	Smoking in non-designated area	**Cairnmead Recommendations:** The Contractor must restrict smoking to designated external areas only. Provide a fire extinguisher for use in the designated smoking area.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect position of smoking area on site.	**Cairnmead Recommendations:** Cairnmead RecommendThe Contractor must ensure that the smoking area is sited well away from other buildings, has adequate ventilation intakes or extracts, and has waste containers available for cigarette buds. Provide a fire extinguisher for use in the designated smoking area.ation:	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Waste containers for discarded smoking materials	**Cairnmead Recommendations:** The Contractor must ensure that suitable non-combustible receptacles are provided for the safe disposal of discarded smoking materials, with inspections carried out at the end of each shift/day to ensure that no smoking materials have been left smouldering. Provide a fire extinguisher for use in the designated smoking area.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Fire risk.	**Cairnmead Recommendations:** The Contractor must ensure that suitable non-combustible receptacles are provided for the safe disposal of discarded smoking materials, with inspections carried out at the end of each shift/day to ensure that no smoking materials have been left smouldering. Provide a fire extinguisher for use in the designated smoking area.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Smoking in fire hazard areas such as: areas containing combustible materials, flammable liquids or gas cylinders.	**Cairnmead Recommendations:** The Contractor must ensure that the smoking area is sited well away from other buildings or fire hazard areas, has adequate ventilation intakes or extracts, and has waste containers available for cigarette buds. The Contractor must restrict smoking to designated external areas only. Provide a fire extinguisher for use in the designated smoking area.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 021	Snakes	Snakebite from venomous snakes.	**Cairnmead Recommendations:** Contractor to ensure an emergency action plan is ready and in place should a snakebite occur, and emergency plan communicated to all employees on site. Contractor to ensure that they include the contact details of a snake catcher nearby the site who can be contacted in case of emergency to relocate the snake. For sites situated in areas where employees are exposed to snake encounters, it is imperative that staff are given correct training in snake awareness, and what to do in the case of snake encounters on-site. For remote sites, having a few trained snake handlers on each shift is suggested.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Long grass / Snake habitats such as ponds, piles of timber and sheets of galvanized iron.	**Cairnmead Recommendations:** Contractor to ensure long grass is cut back and remove snake habitats such as ponds, piles of timber and sheets of galvanized iron. Contractor to ensure an emergency action plan is ready and in place should a snakebite occur, and emergency plan communicated to all employees on site. Contractor to ensure that they include the contact details of a snake catcher nearby the site who can be contacted in case of emergency to relocate the snake. For sites situated in areas where employees are exposed to snake encounters, it is imperative that staff are given correct training in snake awareness, and what to do in the case of snake encounters on-site. For remote sites, having a few trained snake handlers on each shift is suggested.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 022	Exit / entry into the public roads	Injuries to pedestrians / members of public.	**Cairnmead Recommendations:** Each construction area effecting the public roadway by means of construction vehicles turning into the public way must have designated flagmen positioned in line with the required vehicle turning signage to ensure safe and controlled construction vehicle integration onto the public roads.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Collision with public vehicles.	**Cairnmead Recommendations:** Each construction area effecting the public roadway by means of construction vehicles turning into the public way must have designated flagmen positioned in line with the required vehicle turning signage to ensure safe and controlled construction vehicle integration onto the public roads.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No points men / flagmen positioned at access gates.	**Cairnmead Recommendations:** Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No warning signage displayed at the access gates to site for vehicles turning.	**Cairnmead Recommendations:** Construction vehicle turning areas must be fitted with the applicable signage. Each construction area effecting the public roadway by means of construction vehicles turning into the public way must have designated flagmen positioned in line with the required vehicle turning signage to ensure safe and controlled construction vehicle integration onto the public roads.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No stop and go process in place should it be applicable.	**Cairnmead Recommendations:** Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 023	Waste removal	Incorrect sorting of materials.	**Cairnmead Recommendations:** The Principal Contractor must ensure that materials on site are sorted correctly according to legislation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Incorrect placing of rubble chute.	**Cairnmead Recommendations:** The Principal Contractor must ensure that no rubble and debris is dispersed from a high place unless a chute that complies to the legal requirements are used. The Principal Contractor must ensure that when a rubble chute is used, it is adequately construction and rigidly fastened. The Principal Contractor must ensure that when a rubble chute is inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides. The Principal Contractor must ensure that when a rubble chute is of the open type, it is inclined at an angle of less than 45 degrees to the horizontal.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Area where waste discharges at the bottom of the chute not closed off / barricaded.	**Cairnmead Recommendations:** The Principal Contractor must ensure the chute discharges into a container, or an enclosed area surrounded by barriers.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Rubble freefalling in rubble chute.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the chute is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees burning waste on site.	**Cairnmead Recommendations:** The Principal Contractor and all the Contractors are not allowed to burn or deposit any waste on site it is to be discarded to an approved dump site or a recycling facility.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect PPE issued to workers.	**Cairnmead Recommendations:** Employees tasked with waste removal must be provided with sufficient PPE as per task risk assessment. The Principal Contractor must not permit or require any employee to work unless the employee uses the required safety equipment / PPE.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Hazardous waste being removed from site as normal waste.	**Cairnmead Recommendations:** Waste must only be discarded at approved dump sites and proof of this documentation must be available upon request. The Principal Contractor must ensure that they recycle hazardous waste. The Principal Contractor must ensure that all hazardous chemical agents waste is classified and disposed of as waste in terms of: The Waste Classification and Management Regulations, the National Norms and Standards for the Assessment of Waste for landfill Disposal.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Waste accumulating on site.	**Cairnmead Recommendations:** The Principal Contractor must ensure the removal of scrap, waste, and debris at appropriate intervals. The Principal Contractor must ensure that materials and waste which are no longer required for use, do not accumulate on site, and are removed from the site at appropriate intervals.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Insufficient bins allocated in designated, prominent areas on site for employees to make use of to throw their domestic waste in.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a sufficient number of bins is allocated in designated prominent areas on site for employees to make use of and throw their domestic waste in.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Bearers, stacks or pallets collapse / Falling load can strike employees.	**Cairnmead Recommendations:** Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements. The Principal Contractor must ensure that the storage / laydown areas are demarcated, and these areas are kept neat and under control. The Principal Contractor must ensure that the base of materials stacked is level and capable of sustaining the weight exerted on it by the stack. The Principal Contractor must ensure that pallets and containers used for stacking materials are in good condition. The Principal Contractor must ensure that stacks that are in danger of collapsing are dismantled immediately in a safe manner. The Principal Contractor must ensure that the stability of stacks is not endangered by vehicles or other machinery or persons moving past them. The Principal Contractor must ensure that stacks are stable and not overhanging.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 024	Parking of vehicle in public road	No temporary / moveable hoarding in place.	**Cairnmead Recommendations:** Construction vehicles may not be left unattended in the public areas. All construction plant and machinery to be kept on site within fenced off areas. The Principal Contractor must ensure that all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No trained flagman available at obstruction area.	**Cairnmead Recommendations:** Each construction area effecting the public roadway by means of construction vehicles turning into the public way must have designated flagmen positioned in line with the required vehicle turning signage to ensure safe and controlled construction vehicle integration onto the public roads. Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No wayleave in place should lane restrictions / road closures occur.	**Cairnmead Recommendations:** Any road closure or lane restrictions that may be required must have the regulated wayleave in place before the work commences. The temporary road signage and construction warning signage in line with the wayleave requirements must be installed as per the requirements of the wayleave and traffic management plan for the project. There must be a detailed traffic management plan available for any lane restrictions or road closures that may be required throughout the project. This traffic management plan must be communicated to all Contractors working on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No temporary road closure / lane restrictions warning signage displayed and installed.	**Cairnmead Recommendations:** The Principal Contractor must ensure that if any construction vehicle, which parks in the street, for delivering materials and / or lifting operations by mobile cranes and / or concrete pumping or any similar operations that effects the public roads get done in such a manner that the members of public are not exposed to any of the construction activities, and must further have cones with a flagman on both sides and warning signage displayed. Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside. Any road closure or lane restrictions that may be required must have the regulated wayleave in place before the work commences. The temporary road signage and construction warning signage in line with the wayleave requirements must be installed as per the requirements of the wayleave and traffic management plan for the project. There must be a detailed traffic management plan available for any lane restrictions or road closures that may be required throughout the project. This traffic management plan must be communicated to all Contractors working on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No warning lights available in evenings.	**Cairnmead Recommendations:** The Principal Contractor must ensure there required; adequate warning lights are available in the evenings. The Principal Contractor must ensure that all construction vehicles and mobile plant left unattended at night, adjacent top a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No stop and go process in place should it be applicable.	**Cairnmead Recommendations:** Any road closure or lane restrictions that may be required must have the regulated wayleave in place before the work commences. There must be a detailed traffic management plan available for any lane restrictions or road closures that may be required throughout the project. This traffic management plan must be communicated to all Contractors working on site. The Principal Contractor must ensure whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Roads not cleaned at regular intervals.	**Cairnmead Recommendations:** Roads and passageways past the site must be cleaned daily and must be maintained constantly. The Principal Contractor must ensure that the construction vehicles get cleaned off on the sides, between double wheels and the back to prevent loose soil and stones falling from the truck into the public road while driving out of the site. The Principal Contractor must despite the cleaning of the trucks ensure that there is always someone to clean the public road surface from the soil that might be brought onto the road by the wheels of the construction vehicles. Dump trucks should cover loads or loose dirt or gravel when exiting the site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 025	Surveying	Wrong readings.	**Cairnmead Recommendations:** Site surveying only to be done by appointed competent persons.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Surveyor required to work close to unprotected openings / edges.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the areas on site where the surveyor needs to access is safe to enter. The Principal Contractor should ensure that all persons entering the site has undergone the site-specific induction and have received the required training and information regarding the site. There should be a classification done for each person entering the site to indicate visitor, permanent or short-term staff this should be done to address the hazards associated with the scope of work of each person entering and to proactively mitigate the site risk.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Access for surveyor to site being obstructed by material / plants.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the site and walkways is safe for the surveyor to access.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Surveyor not complying with site personal protective equipment requirements.	**Cairnmead Recommendations:** Surveying employees to adhere to the site PPE requirements as determined by the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 027	Underground services and servitude	Underground services not clearly identified can lead to damages of services during construction activities.	**Cairnmead Recommendations:** The client / engineers to point out all existing serviced to the principal contractor. Existing services must be marked, and safe distances must be determined.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Services not pointed out to the contractor.	**Cairnmead Recommendations:** The Client / Engineers to point out all existing services to the Principal Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Termination of services not documented and certified.	**Cairnmead Recommendations:** Termination of services must have a termination certificate before work commencement is allowed. All services like water, electricity and gas will be pointed to the Principal Contractor by the Professional Team appointed by the Client as far as reasonably possible. There must be a documented proof that the services for water, storm water, sewer, gas (if applicable) and electricity was terminated successfully. For the gas and electricity there must be a Certificate of Compliance to say it was terminated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 028	Excavations: Digging of excavations using plant and manual labour. Working in and around excavations Trenches	Materials can fall onto employees due to dislodgement of earth or rock.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins. The Principal Contractor will have a daily inspection record of excavations showing the integrity of the soil and requirements are followed and checked as per all applicable regulations on site. The ground conditions of all excavations must be assessed and precautionary measures in terms of shoring, bracing or similar means must be implemented before employees can be allowed inside an excavation should the ground conditions require such measures.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees not able to enter or exit the excavation safely.	**Cairnmead Recommendations:** Safe and secure means of access must be provided to each excavation and may not exceed 6metres from the point where any person is working inside the excavation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Inappropriate placement of excavated materials, plant or other loads close to/on the edge of the excavation.	**Cairnmead Recommendations:** No spoil material may be permitted to be placed on the edge of the excavation withing at least 1meter from the excavation edge. The Principal Contractor must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers the safety of any person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being trapped inside excavation due to the collapse of the excavation.	**Cairnmead Recommendations:** The Contractor conducting excavation work must have a detailed rescue plan available in case of an emergency for assisting and rescuing any employees inside the excavation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being struck by moving plant working in and around the excavation.	**Cairnmead Recommendations:** The Principal Contractor must not allow employees to work in close proximity where construction plant is working inside an excavation a safe distance to be established at all times between plant and employees. Excavations will only be allowed to commence under the supervision of a competent person appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Unstable / loose material causes unsafe conditions.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins. The Principal Contractor will have a daily inspection record of excavations showing the integrity of the soil and requirements are followed and checked as per all applicable regulations on site. The ground conditions of all excavations must be assessed and precautionary measures in terms of shoring, bracing or similar means must be implemented before employees can be allowed inside an excavation should the ground conditions require such measures.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Inadequate warning signs of deep excavations for employees in close vicinity.	**Cairnmead Recommendations:** The Principal Contractor must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being exposed to hazardous atmosphere in an excavation including welding fumes, gases and arcs.	**Cairnmead Recommendations:** The Principal Contractor who performs excavation work must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Excavation work taking place underneath or close to overhead services (power lines) and ground mounted services.	**Cairnmead Recommendations:** The Principal Contractor must ascertain, as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Excavation positioned close or nearby existing structures.	**Cairnmead Recommendations:** The Principal Contractor must ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken to ensure the stability of such building, structure or road and the safety of persons.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		The sides of the excavation are not adequately supported by means of shoring / Shoring installed not of adequate design.	**Cairnmead Recommendations:** The Principal Contractor may not require or permit any person to work in an excavation which has not been adequately shored or braced, where shoring or bracing is required. Where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the Excavation supervisor and the professional engineer or technologist, as the case may be. The Principal Contractor must take steps to ensure that the shoring or bracing (if required) is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question. Excavation shoring / bracing must be designed by a competent Temporary Works Designer prior to work commencing inside excavations.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Excavations not being inspected daily by the competent appointed Excavation inspector.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins. The Principal Contractor will have a daily inspection record of excavations showing the integrity of the soil and requirements are followed and checked as per all applicable regulations on site. The Principal Contractor must ensure that every excavation, including all bracing and shoring, is inspected- (i) daily, prior to the commencement of each shift; (ii) after every blasting operation; (iii) after an unexpected fall of ground; (iv) after damage to supports; and (v) after rain, by the competent person appointed as Excavation Supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees falling into excavation due to inadequate barricading.	**Cairnmead Recommendations:** All excavations must be barricaded / fenced with a solid material (for example scaffold tubing, not just plastic barricading) with the minimum height of 1 meter. If scaffold tubing or similar method is being used, it must be installed that a knee and guard rail / handrail is installed at the open edges. The scaffold tubing or similar material must also be securely fixed to the posts being used.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		excavation work close to existing services.	**Cairnmead Recommendations:** The Principal Contractor is responsible for locating services and utilities prior to commencing with excavation work, these services or utilities must be clearly marked, and measures should be implemented to safeguard the employees from the services or utilities.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being exposed to vibration and high noise levels.	**Cairnmead Recommendations:** The Principal Contractor must ensure all employees make use of the correct PPE when working inside an excavation as identified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		The presence of or possible inrush of water (example: ground water) and the control thereof.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins. If required, the Principal Contractor must ensure that dewatering is done by a competent Contractor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Excavations in public areas not properly barricaded / visible.	**Cairnmead Recommendations:** The Principal Contractor must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be- (i) adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and (ii) provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Use of explosives inside excavations.	**Cairnmead Recommendations:** The Principal Contractor must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosives legislation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 029	Compaction of excavations.	Pre-use inspection of compacting equipment before commencing with work.	**Cairnmead Recommendations:** Operator to conduct a pre-use inspection on the equipment before use to ensure it is in good working condition. Findings of the inspection to be recorded on the relevant checklist.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Compaction of bases. Use of roller.	Injury especially to feet and hands from any moving parts.	**Cairnmead Recommendations:** Employees doing compaction must be trained and certified to use the plant and machinery. Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
	Use of compactor.	Spillages due to refuelling of machinery.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site. The Principal Contractor will as far as reasonably possibly ensure when chemicals are being transferred from one container to another a drip tray must be made available to ensure that spillage is controlled and does not seep into any soil. Where applicable spill kits will be made available by the Principal Contractor and their appointed sub contractors in case of a chemical spill in order to contain the area from causing any environmental damage.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Sides of excavation may collapse causing persons to fall or being struck by falling material / Worker may be buried in soil.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as per Regulation to supervise all excavation work on site who will evaluate as far as reasonably practical the stability of the ground before the excavation work begins. The Principal Contractor will have a daily inspection record of excavations showing the integrity of the soil and requirements are followed and checked as per all applicable regulations on site. The ground conditions of all excavations must be assessed and precautionary measures in terms of shoring, bracing or similar means must be implemented before employees can be allowed inside an excavation should the ground conditions require such measures. The Contractor conducting excavation work must have a detailed rescue plan available in case of an emergency for assisting and rescuing any employees inside the excavation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Dust caused by compacting activities.	**Cairnmead Recommendations:** Dust control measures must be implemented on site, there should be a dust control schedule available to indicate the frequency of dust control taking place daily. The Principal Contractor must ensure that the employees make use of the required PPE as identified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fire hazard.	**Cairnmead Recommendations:** Sufficient firefighting equipment must be available inside each of the construction vehicle and mobile plant being used on site. Sufficient amount of firefighting equipment must also be positioned on site in case of an emergency and the employees on site must be trained in the procedure on how to use the equipment if needed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employee and operators being exposed to high noise levels.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the employees make use of the required PPE as identified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Vibration of machines.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the employees make use of the required PPE as identified in the risk assessment. Regular breaks to be taken by employees as specified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 035	Working in or near live sewerage	Employees not wearing correct personal protective equipment when there is danger of being exposed to raw sewerage.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Possibility of employees being exposed to methane gas.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Detailed rescue procedure to be in place in case of emergency. Risk assessment to be conducted before work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Insufficient facilities available for employees to decontaminate after being exposed to sewerage.	**Cairnmead Recommendations:** The Principal Contractor must ensure that adequate facilities as per legislation is available for employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 036	Working in confined spaces	Poisonous gas, fume or vapour present in confined space.	**Cairnmead Recommendations:** Confined spaces to be inspected and tested before employees can be allowed to enter the area. Employees must be trained by accredited training provider for the work inside confined spaces. Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lack of oxygen for employees working in confined space area.	**Cairnmead Recommendations:** Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces. Testing to be conducted before an employee enters a confined space to ensure there is sufficient oxygen present.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		The presence of flammable gasses in confined space can lead to fire or explosion.	**Cairnmead Recommendations:** Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being exposed to high noise levels in confined space.	**Cairnmead Recommendations:** Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees being exposed to extreme temperatures / changes in temperature in confined space.	**Cairnmead Recommendations:** Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Insufficient safe access for employees in and out of work area.	**Cairnmead Recommendations:** Safe and secured access must be provided to confined space area at all times. Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Risk of exposure to hazards associated with lack of adequate ventilation for activities in confined spaces.	**Cairnmead Recommendations:** Detailed risk assessment must be conducted and communicated with employees before work commence on site. Confined space permit to be obtained before work may commence. The Contractor will comply with the requirements of General Safety Regulation 5 in the Occupational Health & Safety Act 85 of 1993 for work activities inside confined spaces.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Confined Spaces	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 038	Reinforcing work	Overloading of temporary work decks with rebar / point loading.	**Cairnmead Recommendations:** Must be done with close reference to the structural designs. Must be signed off by the project engineer prior to casting concrete. Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Unsafe methods used to remove rebar from truck / unsafe lifting tackle.	**Cairnmead Recommendations:** Rigging study / lifting plan to be in place for offloading of materials. Valid load test to be in place for crane truck. Certificate of test to be in place for lifting tackle. Competent rigger to be present to offload equipment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Weight too heavy, hands caught between materials.	**Cairnmead Recommendations:** Rigging study / lifting plan to be in place for lift. Competent rigger / banksman to offload materials. Correct PPE to be worn.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees could trip over material / No safe / lean walkway areas for employees.	**Cairnmead Recommendations:** Materials to be offloaded in a designated laydown area and to be properly barricaded. Walkway areas to be kept clear at all times of any possible tripping hazards.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Vehicles could be damaged when driving over material.	**Cairnmead Recommendations:** Materials to be stored / placed in a designated laydown area, barricaded off. No materials to be offloaded in driveways.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Material lying in mud could cause damage.	**Cairnmead Recommendations:** Principal Contractor must ensure that all materials is placed in a laydown area, that safeguards them from damage.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees may be injured when trying to pick up the material.	**Cairnmead Recommendations:** Risk Assessment to be conducted before work commences. Work to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees using unsafe hand tools.	**Cairnmead Recommendations:** All hand tools on site to be identified, numbered, and placed on register. The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above- mentioned register and kept on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees walking into exposed rebar that is protruding and not capped.	**Cairnmead Recommendations:** Rebar caps to be installed on all exposed rebar ends.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Off cuts pieces of bending wire not disposed of correctly / not contained / Off cuts pieces of rebar lying around is a slipping hazard.	**Cairnmead Recommendations:** Principal Contractor to ensure that housekeeping is conducted on a daily basis, but definitely before the end of shift.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unsafe lifting of rebar / mesh to work areas.	**Cairnmead Recommendations:** Task specific risk assessment to be conducted before work commences. Work to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Steel fixers allowed to work close to open edges / drop off areas.	**Cairnmead Recommendations:** All open edges must have solid edge barricading installed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Steel fixers allowed to work on unsafe platform, not signed off by designer.	**Cairnmead Recommendations:** All platforms to be signed off before steel fixers access the platform.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Reinforcing work not approved / signed off by Engineer.	**Cairnmead Recommendations:** Must be done with close reference to the structural designs. Must be signed off by the project engineer prior to casting concrete.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 041	Material levelling	Employee may be run over by machines.	**Cairnmead Recommendations:** No pedestrians allowed within the designated area. Construction vehicles and mobile plant to conform to the legal requirements when being operated on site. High reflective PPE to be worn by all employees on site. Designated walkways to be provided for employees on site. Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. This must be done by means of barriers or similar equipment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		If plant is not visible from distance or there is an indication that it is in operation, may cause persons to be unaware of the machine until it is too late.	**Cairnmead Recommendations:** All construction vehicles and mobile plant must be fitted with a working acoustic warning device and automatic reverse warning device as per Construction Regulations 23. The Contractor must ensure that whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Falling load can strike employees.	**Cairnmead Recommendations:** Offloading and loading of materials to be done under adequate supervision. Task specific risk assessment to be conducted before work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction vehicles uncontrolled / unmanned could cause injuries to people, equipment and structures.	**Cairnmead Recommendations:** The Contractor must ensure that all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant. Mobile plant and equipment must be fully locked out by the operator when the operator exits the cab, under no circumstances may any mobile plant or equipment be left with the engines running without the operator inside the cab, in control of the equipment. When the vehicles on site are not in use, they must be fully locked out with the parking brake set.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		If stop blocks are not used under wheels of parked construction vehicles and mobile plant, vehicles could move uncontrolled and cause injuries or damages.	**Cairnmead Recommendations:** When the vehicles on site are not in use, they must be fully locked out with the parking brake set. Stop blocks to be used at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 042	Building of retaining wall	Excavation / damaging of live electrical services or other services not identified prior to work starting.	**Cairnmead Recommendations:** Must only be done in line with the engineer design. There must be competent supervision available at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees struck by earthmoving plant while construction wall.	**Cairnmead Recommendations:** Safe distance must be maintained between plant and employees. Activity must be supervised by a competent supervisor. Task specific risk assessment to be conducted.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Collapse of retaining wall where each course is not backfilled and compacted.	**Cairnmead Recommendations:** Activity to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Collapse of wall where a batter / slope is not incorporated in the design.	**Cairnmead Recommendations:** Design to be in place done by a competent Designer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees building wall falling from elevated position.	**Cairnmead Recommendations:** Employees must be secured and not be allowed to work on open edge of retaining wall.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Building blocks falling onto employees.	**Cairnmead Recommendations:** Materials to be stacked in a designated laydown area.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Retaining wall not built according to Engineers' design.	**Cairnmead Recommendations:** Engineers design to be followed at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Ground Disturbance	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 043	Material & equipment handling Receiving and off-loading and loading of equipment and/or material	Delivery vehicle driver not familiar with the site.	**Cairnmead Recommendations:** Must be done under the supervision of an appointed stacking inspector as per specification. Must be loaded at designated areas only. Must be demarcated when loads are off loaded.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Driver not instructed on site rules.	**Cairnmead Recommendations:** All drivers to be inducted to be aware of the site rules.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Vehicle parking in unauthorized area.	**Cairnmead Recommendations:** Designated parking area to be available on site for vehicles to park in.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Loads incorrectly / unsafely off loaded from vehicle / Loads incorrectly loaded onto vehicle or stacked incorrectly.	**Cairnmead Recommendations:** Activity to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No wayleave in place when offloading materials in public road.	**Cairnmead Recommendations:** No offloading of materials in a public area may take place if the relevant wayleaves are not in place.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Materials have moved on / inside truck or delivery vehicle making it unstable.	**Cairnmead Recommendations:** Activity to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Overloading of vehicle.	**Cairnmead Recommendations:** Activity to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Materials falling onto employee.	**Cairnmead Recommendations:** Activity to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employee handling materials sustaining hand injuries.	**Cairnmead Recommendations:** All employees to make use of the correct PPE as specified in the task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Materials offloaded in the incorrect area / unsafe area.	**Cairnmead Recommendations:** Designated laydown / stacking areas to be available on site for materials. Activity to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 045	Lane restrictions/road closures	No warning signs displayed.	**Cairnmead Recommendations:** Every traffic route is indicated by suitable signs. A detailed site traffic management plan must be drafted by the Principal Contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways. Every traffic route is indicated by suitable signs. The relevant mandatory warning signs to be displayed on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No trained flagman positioned at affected area.	**Cairnmead Recommendations:** Must have flagmen positioned at all times. Each crossover point must also be provided with a designated flagman to control the flow of traffic at each pedestrian crossing, flagmen should also be utilised where construction vehicles and mobile plat are operating in enclosed areas and high traffic routes on site. The Principal Contractor must ensure that if any construction vehicle, which parks in the street, for delivering materials and / or lifting operations by mobile cranes and / or concrete pumping or any similar operations that effects the public roads get done in such a manner that the members of public are not exposed to any of the construction activities, and must further have cones with a flagman on both sides and warning signage displayed. Trained and appointed flagman must be positioned at each public area that will be affected by construction activities on the roadside.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Road closures not done in accordance to the legal requirements.	**Cairnmead Recommendations:** Must be in line with the council requirements for working in public area. Must have a wayleave in place where required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No wayleave in place for work to be done.	**Cairnmead Recommendations:** Must be in line with the council requirements for working in public area. Must have a wayleave in place where required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operators speeding on the construction site / road area.	**Cairnmead Recommendations:** Speed limit signs must be posted on site at appropriate locations - Speed limit of 10km/hr must not be exceeded.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not visible for operators / not wearing reflective vests / clothing.	**Cairnmead Recommendations:** All employees on site to wear a reflective vest.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Parking construction vehicles & mobile plant in dangerous / unauthorized area.	**Cairnmead Recommendations:** A designated parking area must be available for plant on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Not taking into account working in close proximity of overhead power lines or any other services.	**Cairnmead Recommendations:** A task specific risk assessment must be conducted before work commences. Work area to be inspected by a competent supervisor before work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No safe walkway created for pedestrians of required.	**Cairnmead Recommendations:** Safe pedestrian walkways must be accommodated and created. Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. This must be done by means of barriers or similar equipment. A detailed site traffic management plan must be drafted by the Principal Contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways. Every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No delineators / warning lights in place, for clear visibility in evenings.	**Cairnmead Recommendations:** The Contractor must ensure that all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No warning signs / no unauthorized entry signs place up to warn members of public of construction area.	**Cairnmead Recommendations:** Every traffic route is indicated by suitable signs. A detailed site traffic management plan must be drafted by the Principal Contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways. Every traffic route is indicated by suitable signs. The relevant mandatory warning signs to be displayed on site. The temporary road signage and construction warning signage in line with the wayleave requirements must be installed as per the requirements of the wayleave and traffic management plan for the project.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No / insufficient dust control.	**Cairnmead Recommendations:** Dust control measures must be implemented on site, there should be a dust control schedule available to indicate the frequency of dust control taking place daily.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No / insufficient cleaning of existing public road areas.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the construction vehicles get cleaned off on the sides, between double wheels and the back to prevent loose soil and stones falling from the truck into the public road while driving out of the site. The Principal Contractor must despite the cleaning of the trucks ensure that there is at all times someone to clean the public road surface from the soil that might be brought onto the road by the wheels of the construction vehicles. Dump trucks should cover loads or loose dirt or gravel when exiting the site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No traffic management plan available and communicated to all employees and contractors on site	**Cairnmead Recommendations:** A detailed site traffic management plan must be drafted by the Principal Contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Signage not installed according to the drawing.	**Cairnmead Recommendations:** Every traffic route is indicated by suitable signs. The temporary road signage and construction warning signage in line with the wayleave requirements must be installed as per the requirements of the wayleave and traffic management plan for the project.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 046	Interface with adjacent construction activities of other contractors.	- No communication with other contractors on premises in close vicinity of work area.	**Cairnmead Recommendations:** Must communicate daily regarding items that may affect 3rd party or site access.	As far as possible have a picture which can be of benefit for illiterate readers when detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 047	Neighbour interface	Insufficient protection of neighboring premises by not using safety screens/ hoarding and barricading.	**Cairnmead Recommendations:** CairnmeaCommunicate with neighbours regarding any items that may affect their trading or access. Keep the neighbour areas clean and free from any debris or material.d Recommendation:	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No communication with neighbors regarding noise levels, dust levels and working hours.	**Cairnmead Recommendations:** Ensure that all neighbours are informed about noise and dust work accordingly.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No wayleave in place for road closures / lane restrictions.	**Cairnmead Recommendations:** Any road closure or lane restrictions that may be required must have the regulated wayleave in place before the work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No / insufficient dust control.	**Cairnmead Recommendations:** Dust control measures must be implemented on site, there should be a dust control schedule available to indicate the frequency of dust control taking place daily.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Surrounding roads not cleaned at regular intervals.	**Cairnmead Recommendations:** The Principal Contractor must ensure that the construction vehicles get cleaned off on the sides, between double wheels and the back to prevent loose soil and stones falling from the truck into the public road while driving out of the site. The Principal Contractor must despite the cleaning of the trucks ensure that there is at all times someone to clean the public road surface from the soil that might be brought onto the road by the wheels of the construction vehicles. Dump trucks should cover loads or loose dirt or gravel when exiting the site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 049	Night work / After-hours work	No supervision / inadequate supervision on site during after-hours work.	**Cairnmead Recommendations:** May only commence after client and council approval is obtained. Must in line with the working hour requirements as legislated. Must be done under strict site management and supervision. Emergency structure must accommodate night work.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Inadequate illumination.	**Cairnmead Recommendations:** The Principal Contractor must ensure that there is sufficient lighting available in all work areas during night works.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Rise in increasing shift length.	**Cairnmead Recommendations:** Must in line with the working hour requirements as legislated. Must be done under strict site management and supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Insufficient breaks.	**Cairnmead Recommendations:** Must be done under strict site management and supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Exposed to extreme temperatures (cold)	**Cairnmead Recommendations:** Must be done under strict site management and supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Use of drugs on site.	**Cairnmead Recommendations:** Substance abuse policy to be communicated with all employees. Random testing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 050	Power float activities Offloading of power float. Moving power float to work area.	Operator of power float not conducting pre-inspection on power float before operating.	**Cairnmead Recommendations:** Plant to be inspected prior to use on site. Plant to be operated under constant supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	General work operations.	Operator not competent to operate power float.	**Cairnmead Recommendations:** Only trained operators are allowed to work with the plant.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Blades of the power float exposed.	**Cairnmead Recommendations:** Plant to be inspected prior to use on site. Cover to be in place on exposed blades.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employee body parts coming in contact with moving parts of power float.	**Cairnmead Recommendations:** Plant to be inspected prior to use on site. Cover to be in place on exposed blades.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator leaving the machine unattended with engine running.	**Cairnmead Recommendations:** Plant to be inspected prior to use on site. Plant to be operated under constant supervision. Operator to be trained on the task specific risk assessment. Lockout procedure to be in place and to be followed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator and rest of power floating team being exposed to extreme temperatures during late hours / afterhours power floating.	**Cairnmead Recommendations:** Adequate supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator and other team members allowed onto site without being inducted X not aware of site rules.	**Cairnmead Recommendations:** Project inductions must be carried out prior to any persons commencing works on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Machine not cleaned after use.	**Cairnmead Recommendations:** Operators to be trained on the cleaning procedure of machine. Adequate supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Power float machine coming into contact / striking with reinforcing steel, walls and edges causing damages to machine or injuries to operator.	**Cairnmead Recommendations:** Trained operators to operate the machine.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator falling over the edge of the slab.	**Cairnmead Recommendations:** All exposed edges, to have solid edge barricading.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No solid edge barricading in place around work area.	**Cairnmead Recommendations:** Solid edge barricading to be in place along all open edges.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 051	Concrete work Pumping operations Small mixing plants Pouring with ready mix trucks	Truck parking or moving into wrong position, falling into excavation.	**Cairnmead Recommendations:** To commence under competent supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Again, moving into incorrect position and concrete chute not correctly positioned.	**Cairnmead Recommendations:** To commence under competent supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Slipping and falling trying to control vibrator.	**Cairnmead Recommendations:** Employees must be trained on the pouring procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
	Placement of concrete	Danger offloading (concrete) falling or bucket hitting people.	**Cairnmead Recommendations:** To commence under competent supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Cement bags (storage & usage)	Operator of concrete pump not appointed and not competent.	**Cairnmead Recommendations:** Only competent, appointed operator to operate pump.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Pouring concrete using banana bucket.	Concrete pump positioned on even floor surface.	**Cairnmead Recommendations:** Adequate supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator not conducting pre-inspection on pump before operating.	**Cairnmead Recommendations:** Material used for pouring must be inspected before and during use to ensure the safety of personnel. Operator to conduct a pre-start inspection on pump before work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Exposure to silica while handling cement bags.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Excessive noise and vibration particularly with vibrating pokers, power floats and mechanical screed boards.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Manual handling particularly movement of material by spade / shovel.	**Cairnmead Recommendations:** Adequate supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Gross spillage of concrete.	**Cairnmead Recommendations:** Environmental management plan to be followed. All spillages to be cleaned.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Overloading of temporary works on a specific point / point load with concrete.	**Cairnmead Recommendations:** Activity to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Concrete splashing into eyes of employees during casting of concrete activities.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Concrete burns to hands and feet of employees.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Falls or injury to hands, arms, ankles, legs etc. from falling on mesh / steel reinforcing on deck.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		High pressure concrete and aggregate going into eyes, face or any exposed skin due to standing or working in front of end hose or opening up pipe joints when pumping.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No safe access for employees to area where concrete needs to be poured.	**Cairnmead Recommendations:** Safe access to be provided to all work areas at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary works shutters moving out of position while casting concrete.	**Cairnmead Recommendations:** Temporary works to be inspected by appointed Temporary works inspector prior to concrete being casted.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		All tools and equipment not cleaned thoroughly after concrete has been cast.	**Cairnmead Recommendations:** All tools and equipment to be cleaned after use, before end of shift.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		If casting concrete with banana bucket, employees moving underneath suspended load.	**Cairnmead Recommendations:** No workers are allowed under a suspended load, and the signalling of suspended loads should be done by appointed banksmen by means of whistles or similar devices.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Basket not fitted to end of pipe when cleaning with sponge ball.	**Cairnmead Recommendations:** Supervisor to ensure basket is fitted on the end of the pipe before cleaning commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Concrete pipe not assembled correctly.	**Cairnmead Recommendations:** Activity to be performed by competent personnel. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 052	Concrete breaking	Incorrect position and concrete chute not correctly positioned.	**Cairnmead Recommendations:** To commence under competent supervision. Employees must be trained on the equipment procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Noise	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Slipping and falling of breakers due to incorrect handling.	**Cairnmead Recommendations:** Employees must be trained on the equipment procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Noise	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Danger offload (concrete) falling or rubble bucket hitting people.	**Cairnmead Recommendations:** To commence under competent supervision. Employees must be trained on the equipment procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Noise	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Overloading of surface with building rubble accumulating.	**Cairnmead Recommendations:** The Principal Contractor and the Demolitions Supervisor must also ensure that all rubble on site is removed from the area at regular intervals, and not accumulated and stacked in an unsafe manner, to prevent any part of the structure from being overloaded with debris and rubble.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Noise	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 053	Jack hammer / breaker operations	Employees not wearing the correct personal protective equipment while using jack hammer.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
	Use of electrical jack hammer Use of compressor jack hammer	Hand and arm vibrations can cause white finger syndrome.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. To commence under competent supervision. Regular breaks to be taken.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Injury to back and joints from manual handling.	**Cairnmead Recommendations:** To commence under competent supervision. Employees must be trained on the equipment procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damage to hearing from constant noise.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Electrocution from faulty equipment or from operating in wet areas.	**Cairnmead Recommendations:** All equipment to be inspected by the operator before use, any unsafe equipment to be removed from the work area. No work to take place in wet areas.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator losing control over the tool.	**Cairnmead Recommendations:** To commence under competent supervision. Employees must be trained on the equipment procedures to follow.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Foreign objects entering employees' eyes.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damage to existing services.	**Cairnmead Recommendations:** All existing services to be clearly marked out on site. All employees involved in the activity to be made aware of the existing services in the area.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 054	Use of lifting tackle	Use of unsafe lifting tackle.	**Cairnmead Recommendations:** To be certified safe for use when delivered to site. Must be inspected by a competency person before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No test certificate available for lifting tackle.	**Cairnmead Recommendations:** As per Driven Machinery Regulations 18(10)(e), The Principal Contractor and their appointed Contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing. All lifting tackle should be recorded on a register.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lifting tackle not inspected by competent LMI at required intervals.	**Cairnmead Recommendations:** As per Driven Machinery Regulations 18(10)(e), The Principal Contractor and their appointed Contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing. All lifting tackle should be recorded on a register.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lifting tackle not conspicuously and clearly marked.	**Cairnmead Recommendations:** As per Driven Machinery Regulations 18(10)(b), all lifting tackle should be conspicuously and clearly marked with identification particulars and the maximum mass load that it is designed for.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Defective lifting tackle being used on site.	**Cairnmead Recommendations:** As per Driven Machinery Regulations 18(10)(e), The Principal Contractor and their appointed Contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing. All lifting tackle should be recorded on a register.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Lifting tackle exposed to extreme weather conditions.	**Cairnmead Recommendations:** Must be stored in line with the manufacture's requirements. Must be removed from site if found damaged.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Lifting tackle not stored correctly.	**Cairnmead Recommendations:** Must be stored in line with the manufacture's requirements. Must be removed from site if found damaged.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 056	Rigging & banksman activities	Rigging study not available / done for intricate lifting activities.	**Cairnmead Recommendations:** Work may only commence under the supervision of a competent rigger. Banksmen to be available every time a load is secured, to ensure that only the banksmen secured the loads. Must be done in strict adherence to the rigging plan and risk assessment requirements.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Competent / certified rigger not appointed for rigging activities of 5 tons and more.	**Cairnmead Recommendations:** The Principal Contractor must ensure that where specialised rigging operations / intricate rigging is required, or where rigging of 5 tons or more must be done, a competent Rigger must be appointed in writing with the required qualifications.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Competent / certified banksman not appointed for lifting operations.	**Cairnmead Recommendations:** A trained and certified banksman must be appointed in writing for any crane or similar operations required on site, and this person must be in constant communication with the operator, able to always track the load, and if using hand signals only, must be in full unobstructed view of the operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Not sufficient number of competent banksmen appointed for lifting activities.	**Cairnmead Recommendations:** A trained and certified banksman must be appointed in writing for any crane or similar operations required on site, and this person must be in constant communication with the operator, able to always track the load, and if using hand signals only, must be in full unobstructed view of the operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 057	Crane handling on site Mobile crane.	The loading of the crane including the outriggers can do damage to underground services.	**Cairnmead Recommendations:** All underground services to be clearly pointed out on site and operators to be aware of location. Activity to be supervised by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Crane truck.	Unsafe lifting methods.	**Cairnmead Recommendations:** Where mechanical lifting operations are required e.g., use of a mobile crane, tower crane, truck mounted crane etc., a specific Lift Plan must be completed. The Principal Contractor must also ensure that a rigging study is compiled for any rigging to be done and must have a detail risk assessment available and conducted by a trained and certified Risk Assessor competent in rigging activities specific to the work at hand. This rigging study must include the communication protocols that will be used and followed by the banksman, rigger, and operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No competent banks man / rigger appointed and present during lifting processes.	**Cairnmead Recommendations:** A trained and certified banksman must be appointed in writing for any crane or similar operations required on site, and this person must be in constant communication with the operator, able to always track the load, and if using hand signals only, must be in full unobstructed view of the operator. The Principal Contractor must ensure that where specialised rigging operations / intricate rigging is required, or where rigging of 5 tons or more must be done, a competent Rigger must be appointed in writing with the required qualifications.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator of crane not appointed and not competent.	**Cairnmead Recommendations:** Must be operated by appointed trained and medically fit operators. Operators to be appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator not conducting pre-start check on crane before operating.	**Cairnmead Recommendations:** Must be inspected daily before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Load being lifted is too heavy.	**Cairnmead Recommendations:** Must have a working load indicated and alarm.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees walking underneath a suspended load.	**Cairnmead Recommendations:** When loads are being lifted on site, clear signalling and indicators must be used to warn the surrounding personnel that loads are being lifted. No workers are allowed under a suspended load, and the signalling of suspended loads should be done by appointed banksmen by means of whistles or similar devices.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operators' visibility restricted during the lifting process.	**Cairnmead Recommendations:** A trained and certified banksman must be appointed in writing for any crane or similar operations required on site, and this person must be in constant communication with the operator, able to always track the load, and if using hand signals only, must be in full unobstructed view of the operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Incorrect lifting tackle used to lift materials.	**Cairnmead Recommendations:** Trained banksman / rigger to attached correct lifting tackle to load that requires lifting.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Load swinging / load out of control ☒ employees being struck by load.	**Cairnmead Recommendations:** All loads shall have a tag line / guide rope attached for control, and controlling loads by hand is not permitted. The guide rope used must be of adequate length to ensure that it is long enough for safe control of the loads, the length of the guide rope should also be assessed not to be an excessive length that can cause a risk to the surrounding areas while being used.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Toppling over / falling over of crane due to overloading.	**Cairnmead Recommendations:** Must have a working load indicated and alarm.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Mobile crane / crane truck positioned on uneven surface / close to excavation edge.	**Cairnmead Recommendations:** May not work near excavation edges.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No spreader plates / sole plates placed underneath the outriggers of the mobile crane / crane truck if required.	**Cairnmead Recommendations:** Must have the outriggers standing on the required outrigger pads every time in use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Lifting Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 061	Operating of construction vehicles and mobile plant. Transport of employees & materials to site.	One construction vehicle can bump into another.	**Cairnmead Recommendations:** Only suitably trained and competent persons that have been authorised in writing by the Contractor are permitted to operate the plant and machinery.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Operating plant on site.	A construction vehicle can bump/drive over pedestrians.	**Cairnmead Recommendations:** Exclusion zones from the mobile plant and equipment are to be established and clearly demarcated to ensure that there is always safe separation between mobile plant and pedestrians on the entire site. This must be done by means of barriers or similar equipment. Each crossover point must also be provided with a designated flagman to control the flow of traffic at each pedestrian crossing, flagmen should also be utilised where construction vehicles and mobile plat are operating in enclosed areas and high traffic routes on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unauthorized use of construction vehicle and mobile plant.	**Cairnmead Recommendations:** Only suitably trained and competent persons that have been authorised in writing by the Contractor are permitted to operate the plant and machinery. Only trained and appointed operators may be allowed to operate construction vehicles and mobile plant on site as per Construction Regulation 23(1)(D)(i).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator of construction vehicle not appointed and not competent.	**Cairnmead Recommendations:** Only suitably trained and competent persons that have been authorised in writing by the Contractor are permitted to operate the plant and machinery. Only trained and appointed operators may be allowed to operate construction vehicles and mobile plant on site as per Construction Regulation 23(1)(D)(i).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No reverse hooter installed / not in working condition.	**Cairnmead Recommendations:** All construction vehicles and mobile plant must be fitted with a working acoustic warning device and automatic reverse warning device as per Construction Regulations 23.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator not conducting pre-start inspection on machine before operating.	**Cairnmead Recommendations:** Daily pre-use checks shall be performed and documented before each plant item is used for the first time in each shift by the appointed operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator leaving the vehicle / plant unattended whilst the engine is still running or with the key still in the ignition.	**Cairnmead Recommendations:** Mobile plant and equipment must be fully locked out by the operator when the operator exits the cab, under no circumstances may any mobile plant or equipment be left with the engines running without the operator inside the cab, in control of the equipment. When the vehicles on site are not in use, they must be fully locked out with the parking brake set.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator speeding on site.	**Cairnmead Recommendations:** Speed limit signs must be posted on site at appropriate locations - Speed limit of 10km/hr must not be exceeded.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction vehicle / mobile plant parked at an incline without stop blocks being put in place behind the wheels.	**Cairnmead Recommendations:** Mobile plant and equipment must be fully locked out by the operator when the operator exits the cab, under no circumstances may any mobile plant or equipment be left with the engines running without the operator inside the cab, in control of the equipment. When the vehicles on site are not in use, they must be fully locked out with the parking brake set. Mobile plant and equipment left unattended must be kept in a state to prohibit any unintended movement, all booms and buckets must be lowered, and wheels locked, and brakes set to prevent movement. Never leave Mobile Equipment engine running while the cab is unoccupied.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction vehicle or mobile plant overturning.	**Cairnmead Recommendations:** Only suitably trained and competent persons that have been authorised in writing by the Contractor are permitted to operate the plant and machinery. Only trained and appointed operators may be allowed to operate construction vehicles and mobile plant on site as per Construction Regulation 23(1)(D)(i).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Construction vehicles and mobile plant operating in close vicinity or next to power lines.	**Cairnmead Recommendations:** Work area to be inspected by supervisor. Operators to be informed of any overhead power lines. Wayleave requirements to be followed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Inclement weather.	**Cairnmead Recommendations:** Activity to be supervised by competent supervisor and if the weather conditions create a risk, work must be stopped.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unauthorized / unsafe transportation of employees.	**Cairnmead Recommendations:** No person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose. No riding on equipment or the back of LDV's are permitted. The Contractor must ensure that vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Integration between pedestrians and construction vehicles not planned and controlled.	**Cairnmead Recommendations:** A detailed site traffic management plan must be drafted by the Principal Contractor and all contractors on site must comply to the site traffic management plan. This plan must always also include the separation of vehicles and pedestrians and must indicate how this will be achieved on site for example temporary barriers in designated pedestrian walkways. Every traffic route is indicated by suitable signs. Every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 062	Refuelling of plant	Fire or explosion	**Cairnmead Recommendations:** Contractor to ensure a risk assessment is conducted for refuelling of plant and communicated to all employees involved in this activity. Operator to ensure engine and ignition is turned off prior to refuelling. No smoking near vicinity of refuelling area. Fire extinguishers fitted next to refuelling stations	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Skin/eye irritant	**Cairnmead Recommendations:** Contractor to ensure that appropriate PPE is used for task (gloves/eye protection) as identified in Contractor's risk assessment. Contractor to ensure a risk assessment is conducted for refuelling of plant and communicated to all employees involved in this activity. Wash off immediately if fuel is in contact with skin.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Slips, Trips & Falls/ spillages	**Cairnmead Recommendations:** Contractor to ensure a risk assessment is conducted for refuelling of plant and communicated to all employees involved in this activity. Do not leave unattended whilst refuelling is in progress Clean up spillages immediately. Check soles of boots following fuelling to ensure they are not contaminated. A good standard of illumination is provided and maintained.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Spill of hazardous substances	**Cairnmead Recommendations:** Spill kits are available with adequate materials for dealing with a spill and disposing of the contaminated waste correctly. Fuelling and servicing operations to be carried out in specified areas away from watercourses. Where practical a bund is to be put into place around the diesel bowser. Operatives are aware of the safety data sheets (SDS) and where to obtain them in the event of a spill.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 064	Use of compressors	Dirty hoses being used, cannot see damages to hose.	**Cairnmead Recommendations:** Must be operated by appointed trained operators. Must be inspected daily before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Hose fittings not secured properly.	**Cairnmead Recommendations:** Must have safety devices fitted when in use on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Hoses lying across the floor or walkway, being a tripping hazard for employees in the vicinity.	**Cairnmead Recommendations:** Housekeeping to be conducted daily. All walkway areas to be kept clear on any tripping hazards.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Hose ends not secured can cause whipping and serious injuries to employees.	**Cairnmead Recommendations:** Must have safety devices fitted when in use on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees working with the compressor or in close vicinity not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Pressure test of pressure tank not conducted every 36 months.	**Cairnmead Recommendations:** Pressure test for compressor to be available.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No fire extinguisher available in close vicinity.	**Cairnmead Recommendations:** Adequate fire fighting equipment to be available.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator not conducting a pre-use inspection on compressor before use.	**Cairnmead Recommendations:** Must be inspected daily before use	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Air hoses not secured with safety chains to prevent whipping.	**Cairnmead Recommendations:** Must have safety devices fitted when in use on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Pressure regulators not in working condition.	**Cairnmead Recommendations:** Must be inspected daily before use	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Mobile Plant and Equipment	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 065	Demolition work	Overloading of a floor, roof or other part of the structure with debris or material from the demolition activity.	**Cairnmead Recommendations:** The Principal Contractor and the Demolitions Supervisor must also ensure that all rubble on site is removed from the building at regular intervals, and not accumulated and stacked in an unsafe manner, to prevent any part of the structure from being overloaded with debris and rubble.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No daily inspections conducted on the area being demolished by the appointed, competent person.	**Cairnmead Recommendations:** The Principal Contractor will ensure that during demolition work the appointed Demolition Supervisor will inspect the structural integrity of the building as often as stipulated in the method statement provided by the Structural Engineer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No competent person appointed to supervise and control demolition work on site.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a Demolition Supervisor in line with the Construction Regulation 14(1) whom will supervise all demolition work on site and ensure that it is carried out as per applicable regulations. The appointment and competency of the appointed person must be available in the safety file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No engineering survey and method statement done before demolition work of structure started.	**Cairnmead Recommendations:** As per Construction Regulation 14(2), the Contractor must ensure that prior to any demolition work being carried out and in order also to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No proof available that all services have been disconnected.	**Cairnmead Recommendations:** Written confirmation must be available from relevant parties that existing services have been completely disconnected before any demolition works commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No safe access provided for employees to their work area.	**Cairnmead Recommendations:** As per Construction Regulation 14(4)(g), the Contractor must ensure that convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No demolition permits available when required.	**Cairnmead Recommendations:** All demolition permits and documentation from the local authority must be in place for the demolition work that is required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 066	Housekeeping	Housekeeping not being maintained daily.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Housekeeping Supervisor and ensure that all Contractors appoint their own Housekeeping Supervisors, to ensure that the Housekeeping on site is maintained on a daily basis. The Principal Contractor along with his Sub-Contractors will ensure that they conduct a weekly housekeeping inspection which will be recorded and kept on site. - Housekeeping to be done daily.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Scrap, waste and debris not removed from site at appropriate intervals.	**Cairnmead Recommendations:** As per Construction Regulation 27, the Contractor must ensure that the following is implemented on sites with regards to housekeeping: a) the proper storage of materials and equipment in a designated laydown area on site; b) the removal of scrap, waste and debris at appropriate intervals, c) ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways; d) ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Construction areas near build up areas not sufficiently hoarded.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a solid fence / hoarding is in place along the enter boundary of the site along with controlled access points.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Housekeeping conditions not managed by the site management team.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Housekeeping Supervisor and ensure that all Contractors appoint their own Housekeeping Supervisors, to ensure that the Housekeeping on site is maintained on a daily basis.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Housekeeping	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 069	Working at heights / elevated positions	Falling objects	**Cairnmead Recommendations:** Tools to be secured while working at heights to prevent falling objects. Work area below to be barricaded off.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Not hooking safety harness catch to anchor point.	**Cairnmead Recommendations:** Anchorage points must be certified by a competent person before being used.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Anchor point not secure or strong enough.	**Cairnmead Recommendations:** Anchorage points must be certified by a competent person before being used.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Not keeping all debris, rocks, scraps and rubble away from the work area edges.	**Cairnmead Recommendations:** All loose materials to be kept away from the edges of the slabs at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees working at heights not certified to work at heights in accordance with the SAQA requirements for working at heights training.	**Cairnmead Recommendations:** All employees to have accredited working at heights training. Employees required to work at heights must be formally trained for the task at hand.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No rescue plan in place for employees working at heights.	**Cairnmead Recommendations:** The Contractor must ensure that a Fall Protection and Rescue Plan is compiled by a competent person (Fall Protection Plan Developer) who must be appointed in writing before the commencement of any working at height activity on site as per Construction Regulation 10(1)(a).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees allowed to work at heights who is not medical fit and not in possession of a valid medical certificate of fitness.	**Cairnmead Recommendations:** As per Construction Regulation 7(8), the Contractor to ensure that a medical fitness certificate specific to the construction work being performed, in the form of an Annexure 3 issued by a registered Occupational Practitioner is available for every employee on site, the medical fitness certificates are to be kept secure at all times. No employee may be allowed to commence with work on site without a valid medical being available.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Deliberately dropping materials or equipment.	**Cairnmead Recommendations:** Task specific risk assessment to be followed for lowering materials from heights and employees to be trained on this procedure.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 070	Fall protection	No site and task specific fall protection plan available for the work at hand.	**Cairnmead Recommendations:** Competent fall protection planner to be appointed and must compile and sign off the fall protection plan. Fall protection plan to address all site-specific conditions.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not trained on the fall protection plan.	**Cairnmead Recommendations:** The Contractor must ensure that the fall protection plan is communicated to all employees who will be working in a fall risk position and must take steps to ensure continued adherence to the fall protection plan.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Fall protection plan not compiled and approved by a competent and approved fall protection planner.	**Cairnmead Recommendations:** The Contractor must ensure that a Fall Protection and Rescue Plan is compiled by a competent person (Fall Protection Plan Developer) who must be appointed in writing before the commencement of any working at height activity on site as per Construction Regulation 10(1)(a). The appointment and competency certificate of the appointed person (Fall Protection Plan Developer) must be available in the safety file on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fall protection plan not implemented and maintained throughout project.	**Cairnmead Recommendations:** As per Construction Regulation 10(1)(b), the Contractor must ensure that the fall protection plan is implemented, amended where and when necessary and maintained as required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 071	Structures	No structure inspections being done to prevent any part of the structure from being overloaded or becoming unstable.	**Cairnmead Recommendations:** Strict adherence to allowable loads must be maintained.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		The structure information not being made available on site to ensure the designs are being complied with.	**Cairnmead Recommendations:** Structure designs to be available on site if any uncertainty arises or information is required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Structure records and maintenance not done by the owner.	**Cairnmead Recommendations:** Structure maintenance records to be kept.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Structure not inspected as legislated in the regulations.	**Cairnmead Recommendations:** The client to ensure that structure inspections are conducted as legislated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 072	Temporary Works	Temporary works not designed by appointed Engineer.	**Cairnmead Recommendations:** The Principal Contractor or their appointed Sub Contractor must appoint in writing a Temporary Works Designer in line with Construction Regulation 6 and Construction Regulation 12 with the required technical qualifications. The Temporary Work Designer to design and sign off on all temporary works intended for the project, all designs must meet the requirements as stipulated in Construction Regulation 6 and Construction Regulation 12 and record must be kept of calculations made to ensure the load being carried will be supported fully.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
	Offloading & storage of temporary works material.	Temporary works not being signed off by appointed Engineer prior to using temporary works.	**Cairnmead Recommendations:** The Principal Contractor or their appointed Sub Contractor must appoint in writing a Temporary Works Designer in line with Construction Regulation 6 and Construction Regulation 12 with the required technical qualifications. The Temporary Work Designer to design and sign off on all temporary works intended for the project, all designs must meet the requirements as stipulated in Construction Regulation 6 and Construction Regulation 12 and record must be kept of calculations made to ensure the load being carried will be supported fully.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Erection & dismantling of temporary works.General working operations on temporary works.	Temporary works not being inspected on a daily basis by competent, appointed person.	**Cairnmead Recommendations:** The Principal Contractor or their appointed Contractor will in writing appoint a Temporary Works Inspector who will be responsible for performing daily inspection of the temporary works structure in line with the temporary works design as well as the OHS Act 85 of 1993 and any applicable regulations, by-laws and Standards which will be recorded on a register that will be kept on site and ensure that it is available upon request. All temporary work must be inspected daily and must be recorded in a register which will be placed in the safety file and made available upon request, until the temporary work and support work has been removed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary works erected by incompetent employees / erectors.	**Cairnmead Recommendations:** The Temporary Works Erectors must be trained on the specific temporary works system used on site. As per Construction Regulation 12(3)(d), the Contractor must ensure that all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Temporary work erectors not trained on the specific system being used on site.	**Cairnmead Recommendations:** The Temporary Works Erectors must be trained on the specific temporary works system used on site. As per Construction Regulation 12(3)(d), the Contractor must ensure that all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary work drawings not signed off by appointed, competent Engineer.	**Cairnmead Recommendations:** All Temporary works drawing to be signed off by Engineer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Contractor not working from latest revision drawing.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(b), the Contractor must ensure that all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary works not adequately erected, supported, braced and maintained by competent person.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(a), the Contractor must ensure that all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Temporary work structure not erected according to the design.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(b), the Contractor must ensure that all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees slipping on temporary work decks due to application of release agents.	**Cairnmead Recommendations:** Protection should be provided on rebar where there are hazards associated with laceration and related injuries in addition to impalement.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary work structure stripped before concrete acquired sufficient strength.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(k), the Contractor must ensure that upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load and is not removed until authorization in writing has been given by the competent person (Temporary Works Designer).	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary work structure erected on uneven floor surface.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(l), the Contractor must ensure that the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No safe access for employees onto temporary work structure.	**Cairnmead Recommendations:** As per Construction Regulation 12(3)(m), the Contractor must ensure that provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No solid edge barricading installed around temporary work decks.	**Cairnmead Recommendations:** Solid edge barricading to be in place along all edges of the temporary works deck.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees other than the erectors allowed onto temporary work deck while there are openings in deck.	**Cairnmead Recommendations:** No concrete work or other intended work may commence on such structure unless it has been signed off as safe by the appointed competent person and such record kept on site and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 074	Edge barricading Erecting & dismantling of edge barricading.	No solid edge barricading installed on all open edges of buildings / excavations where there is a fall risk to employees.	**Cairnmead Recommendations:** Must comply to the specification requirements. Must be of solid material.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Edge barricading not secured into position. Only installing guard rails and no knee rails in scaffolding tubing or similar system.	**Cairnmead Recommendations:** Edge barricading to comply with specification requirements.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Edge barricading not inspected daily.	**Cairnmead Recommendations:** Must be inspected daily to ensure compliance.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unauthorized removal of edge barricading.	**Cairnmead Recommendations:** Edge barricading to be inspected daily to ensure all is order.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 075	Scaffolding Erecting & dismantling Access scaffold towers Working operations on scaffolding Specialized scaffolding	Screens / aprons not installed on scaffolding adjacent to public areas.	**Cairnmead Recommendations:** Must be designed and inspected by a competent appointed person as per the specification requirements. Must be inspected daily. Must have detailed designs available upon request. The Principal Contractor is to ensure that where other forms of screening / aprons or fans are used on the scaffolding structure for the protection and prevention of falling material that such screens / aprons or fans are designed by a competent person appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Scaffolding not being erected in accordance to SANS 10085 standards.	**Cairnmead Recommendations:** All scaffolding on site to be erected in accordance with SANS 10085/1:2024.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Trained and appointed scaffolding team not available on site.	**Cairnmead Recommendations:** All scaffolding erected on site may only be erected by trained and appointed Scaffolding Erectors and must be supervised and signed off by trained and appointed Scaffolding Inspector and Supervisor. A Scaffolding team leader must be appointed in writing (if there are more than one scaffolding team on site). A Scaffolding Supervisor must be appointed in writing as per Construction Regulation 16(1) along with his competency certificate and this person must supervise all scaffolding erecting, alterations and dismantling activities conducted by his scaffolding team on site. The appointment and competency certificate must be available in the safety file on site. A Scaffolding Inspector must be appointed in writing. The appointment and competency certificate must be available in the safety file. Scaffolding Erectors must be appointed in writing along with their competency certificate. The appointments and competency certificates must be available in the safety file on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees working at heights not certified to work at heights in accordance with the SAQA requirements for working at heights training.	**Cairnmead Recommendations:** All employees working at heights must have accredited training in line with the relevant SAQA Unit standard.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees allowed to work at heights who is not medical fit and not in possession of a valid medical certificate of fitness.	**Cairnmead Recommendations:** As per Construction Regulation 7(8), the Contractor to ensure that a medical fitness certificate specific to the construction work being performed, in the form of an Annexure 3 issued by a registered Occupational Practitioner is available for every employee on site, the medical fitness certificates are to be kept secure at all times.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No rescue plan in place for employees working at heights.	**Cairnmead Recommendations:** Where a Contractors works identifies through the risk assessment, the possibility of a rescue being required, then the Contractor must provide a copy of a rescue plan e.g., leading edge works where a worker could become suspended in a harness. As per Construction Regulation 10(2), the Contractor must ensure that the fall protection plan includes as a minimum the following: a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Scaffolding erected on uneven ground level.	**Cairnmead Recommendations:** Scaffolding to be erected on level ground surface by competent erectors.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No sole boards installed underneath scaffold base jacks when erected on soil surface.	**Cairnmead Recommendations:** Sole boards to be in place underneath scaffolding base jacks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Scaffolding not inspected daily by competent, appointed Scaffold inspector.	**Cairnmead Recommendations:** All scaffolding on site to be erected in accordance with SANS 10085/1:2024 and inspected daily prior to use and after inclement weather irrespective of the height of the scaffolding. Scaffolding is part of temporary works and requires a scaffolding design, the person designing scaffolding must be a competent Temporary Works Designer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No design available for basic or special scaffolding.	**Cairnmead Recommendations:** All scaffolding on site to be erected in accordance with SANS 10085/1:2024 and inspected daily prior to use and after inclement weather irrespective of the height of the scaffolding. Scaffolding is part of temporary works and requires a scaffolding design, the person designing scaffolding must be a competent Temporary Works Designer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No sign on scaffolding indicating safe / unsafe for use.	**Cairnmead Recommendations:** All scaffolding to be tagged with a sign indicating safe / unsafe for use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Area below scaffolding not barricaded off when being dismantled.	**Cairnmead Recommendations:** All areas where overhead works are taking place to be sufficiently barricaded off.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Materials not being lowered to ground level correctly while scaffolding are being dismantled.	**Cairnmead Recommendations:** Materials to be lowered in line with the task specific risk assessment and method statement.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Scaffolding not sufficiently tied into existing building / structure when required.	**Cairnmead Recommendations:** Scaffolding to be sufficiently tied back to the existing building where required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 078	Explosive actuated fastening device	Employee operating the device not used with / not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator not trained to operate device and not trained in the maintenance.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as the Equipment User / operator who has been trained in the inspection and use of such equipment and will complete a daily inspection register for such equipment which will be kept in the Health and Safety File and made available upon request. The appointment and proof of competency for the appointed person must be available in the safety file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator not appointed.	**Cairnmead Recommendations:** The Principal Contractor will in writing appoint a competent person as the Equipment User / operator who has been trained in the inspection and use of such equipment and will complete a daily inspection register for such equipment which will be kept in the Health and Safety File and made available upon request. The appointment and proof of competency for the appointed person must be available in the safety file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Device not provided with protective guard around the muzzle end.	**Cairnmead Recommendations:** As per Construction Regulation 21(1), the Contractor may not use or permit any person to use and explosive actuated fastening device unless: c) the explosive actuated fastening device is provided with a protective guard around the muzzle end, which effectively confines any flying fragments or particles.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Wrong cartridges used for the scope of work.	**Cairnmead Recommendations:** As per Construction Regulation 21(2), the Contractor must ensure that - a) only cartridges suited for the relevant explosive actuated fastening device, and the work to be performed, are used.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Device not cleaned and inspected by competent, appointed person before use.	**Cairnmead Recommendations:** As per Construction Regulation 21(2), the Contractor must ensure that - b) an explosive actuated fastening device is cleaned and examined daily before use and as often as may be necessary for its safe operation by a competent person who has been appointed for that purpose.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Safety device on explosive actuated fastening device not in working condition.	**Cairnmead Recommendations:** As per Construction Regulation 21(2), the Contractor must ensure that - c) the safety devices of an explosive actuated fastening device are in good working order prior to use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Device stored unsafely / incorrectly.	**Cairnmead Recommendations:** When not in use, an explosive actuated fastening device and its cartridges are locked up in a safe place, which is inaccessible to unauthorized persons. an explosive actuated fastening device is not stored in a loaded condition.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Warning signs not displayed in close vicinity where device is being used.	**Cairnmead Recommendations:** Area where such equipment is used to be clearly signposted to indicate device in use in the area.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Issuing and collection of cartridges not done in controlled manner or by competent appointed person.	**Cairnmead Recommendations:** The Principal Contractor will appoint in writing an Issuer that will keep record of all cartridges that are issued and returned which will be placed in the Health and Safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Issuing and receiving of cartridges not recorded on a register.	**Cairnmead Recommendations:** The Principal Contractor will appoint in writing an Issuer that will keep record of all cartridges that are issued and returned which will be placed in the Health and Safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Empty cartridges not returned to store area.	**Cairnmead Recommendations:** The Principal Contractor will ensure that no cartridges new or used are left unattended on site or discarded of in any other way then returning to the appointed issuer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 080	Wet trades Brick work	Not stacking bricks safely at workplace.	**Cairnmead Recommendations:** Must be done under constant supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Plastering	Stacking bricks of 2 pallets or more on top of each other.	**Cairnmead Recommendations:** Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements in terms of Construction Regulations 28.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Faulty hand tools used.	**Cairnmead Recommendations:** All Hand tools to be inspected by a competent hand tools inspector before use to ensure that it is safe.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Poor standard of scaffolding / trestles used.	**Cairnmead Recommendations:** Scaffolding to be erected according to SANS 10085 standard. No trestles will be allowed on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Frames and lintels falling.	**Cairnmead Recommendations:** Work to be conducted in line with task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incompetent employees using angle grinder / brick cutting machine.	**Cairnmead Recommendations:** All employees to be trained on the task specific risk assessment and safe work procedure.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not using the correct personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Working at height over open spaces.	**Cairnmead Recommendations:** All overhead work activities to be barricaded below.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Bricks falling onto other employees working below.	**Cairnmead Recommendations:** All overhead work activities to be barricaded below.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 082	Ladders	Damaged ladder being used on site.	**Cairnmead Recommendations:** Must be inspected before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Ladder not inspected before use.	**Cairnmead Recommendations:** Must be inspected before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Ladder not positioned on level ground surface.	**Cairnmead Recommendations:** Employee to ensure that ladder is positioned on level ground surface.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect ladder being used for activity being performed.	**Cairnmead Recommendations:** Correct ladder to be used as per task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Materials (tools & equipment) falling from ladder.	**Cairnmead Recommendations:** All tools to be secured.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Ladder not clearly marked / identified by means of a number and not inspected by the appointed Ladder inspector.	**Cairnmead Recommendations:** All ladders to be clearly marked and identifiable by means of a serial number. All ladders to be inspected by the Ladder inspector before use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Ladder not recorded on the ladder register.	**Cairnmead Recommendations:** All ladder inspections to be recorded on a register.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Ladders not stored correctly.	**Cairnmead Recommendations:** All ladders to be stored correctly and safely when not in use.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 083	Electrical Tools	Incorrect wiring.	**Cairnmead Recommendations:** Must be inspected before use by a competent person appointed in writing to ensure that it is safe.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect use of the equipment.	**Cairnmead Recommendations:** Employees must be trained on the risk assessment, safe work procedure and correct use of the equipment. Only competent employees to make use of equipment. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Persons not properly trained.	**Cairnmead Recommendations:** Employees must be trained on the risk assessment, safe work procedure and correct use of the equipment. Only competent employees to make use of equipment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Tools not inspected prior to use or issue.	**Cairnmead Recommendations:** Must be inspected before use by a competent, appointed person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Electrical tools being used in inclement weather.	**Cairnmead Recommendations:** No electrical tools to be used in inclement weather conditions or in wet areas. Task specific risk assessment to be followed. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Operator of electrical being electrocuted.	**Cairnmead Recommendations:** Employees must be trained on the risk assessment, safe work procedure and correct use of the equipment. Only competent employees to make use of equipment. Correct PPE to be used for the specific activity. Tool to be inspected by a competent, appointed person before use to ensure that it is safe and in good condition.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Operator of electrical tool being exposed to high noise levels.	**Cairnmead Recommendations:** Correct PPE to be worn by the operator as per the task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Contact with rotating or moving parts.	**Cairnmead Recommendations:** All moving parts / exposed rotating parts to be properly covered or guarded - guards to be in place. No loose clothing or jewellery to be worn by operator. PPE required as per task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Electrical fires.	**Cairnmead Recommendations:** Tool to be inspected by a competent, appointed person before use to ensure that it is safe and in good condition. Adequate firefighting equipment that can be used on electrical fires to be available on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Moving parts - entanglement.	**Cairnmead Recommendations:** All moving parts / exposed rotating parts to be properly covered or guarded - guards to be in place. No loose clothing or jewellery to be worn by operator. PPE required as per task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Vibration.	**Cairnmead Recommendations:** Correct PPE to be worn by the operator as per the task specific risk assessment. Adequate breaks to be taken by operator.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Dust inhalation.	**Cairnmead Recommendations:** Correct PPE to be worn by the operator as per the task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 084	Hand tools	Tools not inspected prior to use or issue.	**Cairnmead Recommendations:** The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above- mentioned register and kept on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Strike injuries to hand.	**Cairnmead Recommendations:** All employees to wear the appropriate hand protection as specified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		"Home X made" hand tools being used.	**Cairnmead Recommendations:** All hand tools on site to be identified, numbered, and placed on register. The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above- mentioned register and kept on site. No home-made hand tools must be allowed on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Cuts from sharp blades.	**Cairnmead Recommendations:** All employees to wear the appropriate hand protection as specified in the risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 085	Stacking and storage	Brick pallets double stacked and not secured by being tied or wrapped.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Brick pallets double stacked next to public areas.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No Stacking & storage supervisor appointed.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Laydown areas not inspected weekly by appointed person.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractor will conduct a weekly stacking & storage inspection which will be recorded and kept on site this must be completed by the appointed person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Use of an unsuitable pallet for the loading or storage methods of bricks and other materials.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements in terms of Construction Regulations 28.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Continued use of damaged pallets.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. The appointed person must ensure that all damaged pallets is separated from pallets in good condition and must be removed from site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Insufficient storage areas provided.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. Sufficient number of laydown and storage areas to be provided and must be of adequate size.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Storage areas not demarcated and clearly identified.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. All storage areas to be clearly demarcated and signs placed up in order for it to be visible.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Storage areas not kept neat and under control.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. Weekly inspections to be conducted on all storage areas.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees removing materials from the bottom of the stack and not from the top.	**Cairnmead Recommendations:** The Principal Contractor and their appointed Sub-Contractors must appoint a Stacking & Storage Supervisor in writing. Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements in terms of Construction Regulations 28. As per General Safety Regulations 8(2), a Contractor shall not permit (a) articles to be removed from a stack except from the topmost tier or part of that tier; and (b) anybody to climb onto or from a stack, except if the stack is stable and the climbing is done with the aid of a ladder or other safe facility or means.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Material Handling	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 086	Storage and use of flammable liquids	Flammable liquids solids, and gasses not stored correctly.	**Cairnmead Recommendations:** Must be done under appointed supervision. Must be done as per site requirements at designated areas clearly marked and demarcated. Employees must be provided with the PPE as determined in the task risk assessment	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Required notices and signs not clearly displayed in the area where flammable liquids, solids or gasses is stored / located.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site. The Principal Contractor will ensure that hazardous chemicals stores are equipped with information signage on the chemicals being stored, identification of the hazardous linked to the stored chemicals, PPE required to handle such chemicals, sufficient firefighting equipment, solid foundation to ensure no seeping of chemicals into soil and a lock out procedure to ensure control of such stored chemicals.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No fire extinguishers / insufficient fire extinguishers available in close proximity.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site. The Principal Contractor must ensure that adequate fire fighting equipment is available in close proximity to where the chemicals are being stored.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Material safety data sheets not available & not communicated with employees.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site. The Principal Contractor must ensure that a Material Safety Data Sheet for all chemicals on site is kept in the file and communicated to all site employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 087	Flame cutting and welding / Hotworks	Effect the structural integrity of the structure if welding is not done correctly.	**Cairnmead Recommendations:** May only be used by trained and appointed employees. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		CO2 welding not being protected from weather conditions when doing CO2 welding on site in order to prevent wind from blowing the CO2 away from the welding point.	**Cairnmead Recommendations:** May only be used by trained and appointed employees. Must be stored in line with the manufacturer's specifications. Employees must be provided with the PPE as determined in the task risk assessment. Supervisor to ensure weather conditions is correct for the activity to be performed. Work to be conducted in line with the task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No flash back arrestors installed on gas welding equipment.	**Cairnmead Recommendations:** Flash back arrestors to be in place on all equipment as required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Gas welding & cutting:o Fire caused by heat, sparks, molten metal or direct contact with the flame. o Explosion when cutting up or repairing tanks or drums which contain or may have contained flammable materials. o Fire / explosion caused by gas leaks, backfires and flashbacks. o Fumes created during flame cutting. o Fire / burns resulting from misuse of oxygen. o Burns from contact with the flame or hot metal. o Crushing or impact injuries when handling and transporting cylinders.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Work to be conducted in line with the task specific risk assessment. Adequate fire-fighting equipment to be available in close proximity to where the work is being performed. Work area to be inspected before work commences.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees not wearing the correct personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fire extinguisher not available in nearby vicinity.	**Cairnmead Recommendations:** Adequate fire-fighting equipment to be available in close proximity to where the work is being performed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 088	Plumbing installations.	Core drilling through post - tension slabs / rebar.	**Cairnmead Recommendations:** Must be done under constant supervision. Must have engineers approval before any core drilling may take place.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Flooding of services / electrical installations.	**Cairnmead Recommendations:** Adequate supervision to be present when performing work. Work to be done as per the method statement and risk assessment that has been approved.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Collapsing of subsoil drainage.	**Cairnmead Recommendations:** Work to be done under the supervision of a competent supervisor. Work to be done as per the method statement and risk assessment that has been approved.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees required to work in service shafts not provided with fall arrest equipment.	**Cairnmead Recommendations:** All employees to wear the required PPE as per the task specific risk assessment. All employees to be trained and to follow the fall protection plan. Work to be done under the supervision of a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Pipes not stacked and stored correctly.	**Cairnmead Recommendations:** Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements in terms of Construction Regulations 28.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Unsafe lifting tackle used to lift pipes into position.	**Cairnmead Recommendations:** As per Driven Machinery Regulations 18(10)(e), The Principal Contractor and their appointed Contractor must ensure that all lifting equipment is inspected at intervals not exceeding 3 months by a competent person with a valid training certificate in line with the required SAQA unit standard and appointed in writing. All lifting tackle should be recorded on a register. All hooks shall be fitted with a safety latch/catch. Hooks may never be used until a damaged latch is replaced	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 089	Electrical installations	Unfamiliarity with the site and/or uncertainty about the job.	**Cairnmead Recommendations:** Must be done in line with engineer requirements. Must be done in line with task risk assessment to ensure the safety of employees. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Faulty electrical installations or equipment may result in electrocution, burns or other injuries to employees.	**Cairnmead Recommendations:** Must be done in line with engineer requirements. Adequate supervision required. Work to be done by competent personnel. Competent electrician to be present.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees doing the electrical installations not competent.	**Cairnmead Recommendations:** All employees conducting the work to be competent. Competent electrician to be present. Adequate supervision to be present.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Electrical shock causing injury or death of employee.	**Cairnmead Recommendations:** All work to be performed by a competent person. Lock out procedures to be implemented when required and permits to be in place.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fire resulting from an electrical fault.	**Cairnmead Recommendations:** Fire-fighting equipment that can be used on electrical fires to be in close proximity.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Changes to wiring / installation not being reflected in drawings.	**Cairnmead Recommendations:** Contractor to work according to the latest revision drawings. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Inadequate lock out procedures / lock out procedures not implemented correctly.	**Cairnmead Recommendations:** Lock - out procedure and permit to be in place before any work proceeds. Competent electrician to be conducting work.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Cramped working conditions, including cable trenches and cable pits.	**Cairnmead Recommendations:** All work must be conducted as per the task specific risk assessment and method statement that has been approved.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No COC issued for permanent / temporary electrical installations.	**Cairnmead Recommendations:** Certificate of compliance for all electrical installations to be issued.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Temporary electrical installations not inspected weekly by competent, appointed person.	**Cairnmead Recommendations:** All temporary electrical installations must be inspected on a weekly basis by a competent, appointed electrician.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Contractor conducting electrical installation work not registered with the Department of Labour as an electrician.	**Cairnmead Recommendations:** Any Contractor who does electrical work must be registered with the Department of Labour and proof to be available in the file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Cable trays should not be used by any person as a "scaffold" support.	**Cairnmead Recommendations:** Fall Protection plan to be complied with when working at heights. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Electrical	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 095	Air-conditioning installation	Overhead ducting to collapse due to incorrect fixing.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with engineer requirements. Must be done in line with task risk assessment to ensure the safety of employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.	Site Operation	Site Operation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Hot works on site causing fires.	**Cairnmead Recommendations:** Adequate firefighting equipment to be available at the work area.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.	Site Operation	Site Operation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Ducting too heavy for employees to handle.	**Cairnmead Recommendations:** Task specific risk assessment and method statement to be followed. Adequate supervision required. When materials is too heavy to lift, alternative work procedure to be looked at for example lifting tackle / mechanical means.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.	Site Operation	Site Operation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees required to work in service shafts not provided with fall arrest equipment.	**Cairnmead Recommendations:** Fall Protection plan to be complied with when working at heights. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.	Site Operation	Site Operation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees using ducting to support themselves.	**Cairnmead Recommendations:** Fall Protection plan to be complied with when working at heights. Adequate supervision required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.	Site Operation	Site Operation	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 099	Finishing Painting	Hand tools used incorrectly.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Employees to be trained on the risk assessment and safe work procedures for this activity.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Exposure to solvent vapours may result in a number of health effects, e.g. the central nervous system, irritation of eye, skin and respiratory system.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Employees must be trained on the risk assessment and safe work procedure. Employees to be trained on the MSDS.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Reactive products (e.g. epoxy and isocyanate-containing paints) may cause asthma by breathing in paint mist. They can also cause dermatitis by skin contact.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Must be done under constant supervision.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No safe access & work platforms provided for employees to work from.	**Cairnmead Recommendations:** All employees to be provided with safe access to all work areas. Fall Protection plan to be complied with when working at heights.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees being exposed to fumes being emitted from paint.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Must be done under constant supervision. Adequate ventilation to be provided in all work areas.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unsafe working at heights.	**Cairnmead Recommendations:** All employees to be provided with safe access to all work areas. Fall Protection plan to be complied with when working at heights.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Paint not being stored correctly / well-ventilated area and possible fire risk.	**Cairnmead Recommendations:** Paint to be stored in a ventilated area and must be in line with legislative requirements.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Empty paint containers & other hazardous waste not being disposed of in the correct manner.	**Cairnmead Recommendations:** All waste to be disposed of in the correct manner, and if it is classified as hazardous waste, it must be disposed of as hazardous waste. Disposal slips required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 101	Roof structure installations	Falling down.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Employees must be medically fit to work at heights and must be trained at fall risk work. Must be done in close reference to fall protection plan.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Roof structure not secured properly and if sufficient temporary bracing is not in place, structure could fall.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Contractor to ensure that roof structure is installed correctly according to a approved method statement compiled by a competent person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Tools falling down top areas below.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Tool lanyards to be used to prevent tools falling from elevated positions. Work area below to be properly demarcated	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect levels and alignment.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees erecting structure falling from height.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Employees must be medically fit to work at heights and must be trained in fall risk work. Must be done in close reference to fall protection plan.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 102	Roof coverings / Sheeting / Tiling etc.	If not secured properly, the covering could fall.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Contractor to ensure that all coverings are secured properly.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Site Activities

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Tools could fall down.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Tool lanyards to be used to prevent tools falling from elevated positions. Work area below to be properly demarcated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Overloading of structure with covering.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Contractor must ensure that obtain the relevant info in terms of the weight the roof structure can take, to prevent any possible overloading.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Falling objects.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Tool lanyards to be used to prevent tools falling from elevated positions. Work area below to be properly demarcated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Not hooking safety belt catch to anchor point.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Employees must be medically fit to work at heights and must be trained in fall risk work. Must be done in close reference to fall protection plan.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Anchor point not secure or strong enough.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Must be done in close reference to fall protection plan. Contractor must ensure that anchor points are inspected and signed off before use by a competent person.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Deliberately dropping materials or equipment.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. Work area below to be properly demarcated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Working At Heights	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 110	Waterproofing	Waterproofing not done by competent employees.	**Cairnmead Recommendations:** Only competent employees to conduct this activity. All employees must be trained on the method statement, risk assessment and safe work procedure. Work to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Unsafe equipment used to apply waterproofing products.	**Cairnmead Recommendations:** Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees. All equipment to be inspected before use to ensure that it is safe.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No firefighting equipment available at immediately area.	**Cairnmead Recommendations:** Adequate supervision required. Adequate fire-fighting equipment to be available at the immediate work area.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Hot Works	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 112	Landscaping	Employees not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the required PPE as determined in the task specific risk assessment. Supervisor to ensure the use of PPE on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees making use of unsafe hand tools.	**Cairnmead Recommendations:** The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above- mentioned register and kept on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Warning signs not in place should work take place adjacent to public roadways.	**Cairnmead Recommendations:** Adequate signage to be in place. Work to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Damaging of existing services not pointed out to contractor.	**Cairnmead Recommendations:** All existing services to be pointed out to the Contractor and must be indicated on a drawing. Existing services must be pointed out to employees conducting the work on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Working on a slope / close to a drop off edge.	**Cairnmead Recommendations:** Fall Protection Plan to be complied with when working in fall risk positions.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Unsafe handling of chemicals.	**Cairnmead Recommendations:** The Principal Contractor must appoint a Hazardous Chemical Substance Controller in writing, to control and manage the hazardous chemicals on site. The Principal Contractor must ensure that a Material Safety Data Sheet for all chemicals on site is kept in the file and communicated to all site employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees exposed to pesticides and / or weed killers.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a Material Safety Data Sheet for all chemicals on site is kept in the file and communicated to all site employees. Employees to wear the required PPE as per the task specific	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 114	Paving & Kerbs	1) Employees inhaling dust from cutting of paving.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment. Must be done under constant supervision. Must be done in line with task risk assessment to ensure the safety of employees.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		2) Employees not wearing the required personal protective equipment.	**Cairnmead Recommendations:** Employees must be provided with the PPE as determined in the task risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		3) Unsafe handling of materials.	**Cairnmead Recommendations:** Activity to be overseen by a competent supervisor. All materials to be handled in a safe manner as specified in the task specific risk assessment and safe work procedure.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		4) Unsafe stacking of materials on site.	**Cairnmead Recommendations:** Stacking and storage areas should be kept up to standard and all materials stacked and stored must be done in accordance with the legal requirements in terms of Construction Regulations 28. Work to be overseen by a competent supervisor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		5) Employees using unsafe hand tools.	**Cairnmead Recommendations:** The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that hand tools are not damaged or altered in anyway e.g. mushroom heads, loose handles, appropriate grip handles, etc. which will be recorded on the above- mentioned register and kept on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		6) Employees being exposed to vibration from using compacting tools.	**Cairnmead Recommendations:** As per General Safety Regulations 2(5), an employer shall instruct his employees in the proper use, maintenance and limitations of the safety equipment and facilities provided. The Contractor must ensure that all employees are trained on the correct use of PPE issued to them. Proof of this must be available in the safety file on site. Correct PPE to be worn as per task specific risk assessment. Breaks to be taken at regular intervals.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		7) Employees can sustain hand injuries if their hands become trapped in between paving blocks as they are being positioned.	**Cairnmead Recommendations:** Activity to be overseen by a competent supervisor. All materials to be handled in a safe manner as specified in the task specific risk assessment and safe work procedure.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		8) Employees being exposed to noise from using the compacting tools.	**Cairnmead Recommendations:** As per General Safety Regulations 2(5), an employer shall instruct his employees in the proper use, maintenance and limitations of the safety equipment and facilities provided. The Contractor must ensure that all employees are trained on the correct use of PPE issued to them. Proof of this must be available in the safety file on site. Correct PPE to be worn as per task specific risk assessment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		9) Paving blocks not laid level ☒ possible tripping hazard.	**Cairnmead Recommendations:** Work to be overseen by a competent supervisor, quality checks to be done at regular intervals.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		10) Unsafe electrical tools being used on site.	**Cairnmead Recommendations:** The Principal Contractor along with his Sub-Contractors will appoint in writing a competent person to conduct monthly inspections to ensure that portable electrical tools are not damaged or altered in anyway e.g., loose electrical connections, exposed wiring, earth wire not connected, crack or damage to equipment, safeguard not removed or damaged, etc.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Site Operations	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Ergonomics

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 119	Information, instruction and training.	Potential sources of exposure not identified.	**Cairnmead Recommendations:** Conduct an ergonomics risk assessment to identify potential exposures to ergonomic risks. As per Ergonomics Regulations 3(1), an employer must, after consultation with the health and safety committee established in respect of a workplace under such employer's control or the health and safety representatives designated for that workplace or for different sections thereof, establish for all employees and mandatories or persons other than employees who may be affected or potentially exposed to ergonomic risks a training programme that incorporates the following: b) the potential sources of exposure to ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Potential health risks relating to ergonomics not identified.	**Cairnmead Recommendations:** As per Ergonomics Regulations 3(1), an employer must, after consultation with the health and safety committee established in respect of a workplace under such employer's control or the health and safety representatives designated for that workplace or for different sections thereof, establish for all employees and mandatories or persons other than employees who may be affected or potentially exposed to ergonomic risks a training programme that incorporates the following: d) the potential risk to health associated with ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No control measures implemented to prevent ergonomic risks.	**Cairnmead Recommendations:** As per Ergonomics Regulations 3(1), an employer must, after consultation with the health and safety committee established in respect of a workplace under such employer's control or the health and safety representatives designated for that workplace or for different sections thereof, establish for all employees and mandatories or persons other than employees who may be affected or potentially exposed to ergonomic risks a training programme that incorporates the following: e) the control measures that are in place to prevent exposure to ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No reporting procedure in place for reporting ergonomic risks.	**Cairnmead Recommendations:** Provide employees with the means and procedures to be able to report ergonomic risks. As per Ergonomics Regulations 3(1), an employer must, after consultation with the health and safety committee established in respect of a workplace under such employer's control or the health and safety representatives designated for that workplace or for different sections thereof, establish for all employees and mandatories or persons other than employees who may be affected or potentially exposed to ergonomic risks a training programme that incorporates the following: f) the procedure for reporting ergonomic risks to the health and safety representative or employer.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No medical surveillance of employees relating to ergonomic risks.	**Cairnmead Recommendations:** Ensure that medical surveillance of employees relating to ergonomic risks are conducted and kept up to date. As per Ergonomics Regulations 3(1), an employer must, after consultation with the health and safety committee established in respect of a workplace under such employer's control or the health and safety representatives designated for that workplace or for different sections thereof, establish for all employees and mandatories or persons other than employees who may be affected or potentially exposed to ergonomic risks a training programme that incorporates the following: h) the assessment of exposure, the necessity for medical surveillance and the long-term benefits of undergoing such surveillance.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not being trained and informed about workplace ergonomic risks for their specific work to be performed.	**Cairnmead Recommendations:** Train employees on the procedures to flow to prevent exposure to ergonomic risks. Provide refresher training at regular intervals to employees regarding ergonomic risks and preventative measures.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 120	Duties of persons effected by ergonomic risks.	Employees not co-operating and adhering to the control measures implemented to reduce and prevent ergonomic risks.	**Cairnmead Recommendations:** Employees to be encourage and motivated to participate in the control measures and programmes relating to ergonomic risk prevention.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not reporting potential ergonomic risks.	**Cairnmead Recommendations:** Employees to be positively motivated to report ergonomic risks which they may be exposed to.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not co-operating with the medical surveillance staff.	**Cairnmead Recommendations:** Employees to actively participate in the medical surveillance programmers.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 121	Ergonomic risk assessments / control measures	Ergonomic risk assessments not conducted before commencement of work by a competent person.	**Cairnmead Recommendations:** Ergonomic risk assessment to be conducted by a competent person. As per Ergonomics Regulations 6(1)(a), an employer must, before the commencement of any work that may expose employees to ergonomic risks, have an ergonomic risk assessment performed by a competent person. As per Ergonomics Regulations 6(1)(b), the ergonomic risk assessment must be performed after consultation with the health and safety committee established in respect of a workplace under the employer's control or the health and safety representatives designated for that workplace or for different sections thereof.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Ergonomic risk assessment not reviewed and updated in line with statutory requirements.	**Cairnmead Recommendations:** Risk assessment to be reviewed as mandated by the legislation and control measures to be implemented to ensure risk assessment review is followed. As per Ergonomics Regulations 6(2), the ergonomic risk assessment must- (a) be conducted at intervals not exceeding two years. As per Ergonomics Regulations 6(3), an employer must review the relevant ergonomic risk assessment if - such assessment is no longer valid; control measures are no longer effective; technological or scientific advances allow for more effective control methods; there has been a change in - the work methods; the type of work carried out; or the type of equipment used to control the exposure; and an incident occurs or medical surveillance reveals an adverse health effect, where ergonomic risks are identified as a contributing factor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Risk assessment does not include and addresses the hazards identified.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(2), the ergonomic risk assessment must - (a) be conducted at intervals not exceeding two years; and (b) include - a complete hazard identification; the identification of all persons who may be affected by the ergonomic risks both physical and cognitive; how employees may be affected by the ergonomic risks; the analysis and evaluation of the ergonomic risks; and the prioritisation of ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		The risk assessment does not identify the persons who may be affected by ergonomic risks.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(2), the ergonomic risk assessment must be conducted at intervals not exceeding two years; and include a complete hazard identification; the identification of all persons who may be affected by the ergonomic risks both physical and cognitive; how employees may be affected by the ergonomic risks; the analysis and evaluation of the ergonomic risks; and the prioritisation of ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		The risk assessment does not identify how employees may be exposed and priorities the risks.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(2), the ergonomic risk assessment must - be conducted at intervals not exceeding two years; and include - a complete hazard identification; the identification of all persons who may be affected by the ergonomic risks both physical and cognitive; how employees may be affected by the ergonomic risks; the analysis and evaluation of the ergonomic risks; and the prioritisation of ergonomic risks.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Ergonomic risk assessment not updated when there is a change in work method or scope and equipment used.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(3), an employer must review the relevant ergonomic risk assessment if - such assessment is no longer valid; control measures are no longer effective; technological or scientific advances allow for more effective control methods; there has been a change in - the work methods; the type of work carried out; or the type of equipment used to control the exposure; and an incident occurs or medical surveillance reveals an adverse health effect, where ergonomic risks are identified as a contributing factor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Ergonomic risk assessment not updated after medical surveillance revealed an adverse health effect.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(3), an employer must review the relevant ergonomic risk assessment if - such assessment is no longer valid; control measures are no longer effective; technological or scientific advances allow for more effective control methods; there has been a change in - the work methods; the type of work carried out; or the type of equipment used to control the exposure; and an incident occurs or medical surveillance reveals an adverse health effect, where ergonomic risks are identified as a contributing factor.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Exposure to ergonomic risk where not avoidable not being adequately controlled.	**Cairnmead Recommendations:** As per Ergonomics Regulations 6(3), an employer must review the relevant ergonomic risk assessment if - such assessment is no longer valid; control measures are no longer effective; technological or scientific advances allow for more effective control methods.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Emergency Preparedness and Procedures

No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
BLD 122	Emergency plan and procedures. Emergency contact numbers. Emergency drill.	Principal Contractors' emergency plan and procedures not issued to subcontractors on site and not communicated with all employees.	**Cairnmead Recommendations:** The Contractor must appoint in writing a competent Emergency Evacuation Coordinator who can assist in case of an emergency evacuation on site. This appointment must be available in the safety file on site. The Contractor must ensure that they compile a site-specific Emergency Evacuation Procedure and all employees and Contractors on site must be trained on the Emergency Procedures. This Procedure must be updated as and when needed. Part of the emergency evacuation procedure must be an emergency evacuation diagram / plan of the site clearly indicating the assembly points and areas of evacuation, location of all fire-fighting equipment, location of spill kits and rescue kits.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
	Emergency drill.	Emergency plan not being revised as deemed necessary by changes in construction site.	**Cairnmead Recommendations:** Part of the emergency evacuation procedure must be an emergency evacuation diagram / plan of the site clearly indicating the assembly points and areas of evacuation, location of all fire-fighting equipment, location of spill kits and rescue kits. Emergency plan and procedures to be revised on a regular basis as required.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Emergency contact numbers not made available and displayed in prominent areas on site.	**Cairnmead Recommendations:** There must also be an updated emergency contact number list and emergency evacuation diagram / plan displayed on all notice boards / site office / access gate area and this list must be kept updated.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Emergency evacuation drill not conducted at least once every 6 months.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a emergency evacuation drill is conducted at least once every 6 months. Records of this to be available in the safety file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Principal Contractor not appointing competent Emergency evacuation controller as per Cairnmead specification.	**Cairnmead Recommendations:** The Contractor must appoint in writing a competent Emergency Evacuation Coordinator who can assist in case of an emergency evacuation on site. This appointment must be available in the safety file on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 123	Incident Reporting procedures First Aid First aid dressing register Incident investigations Reporting of incidents to Department of Labour	Incidents not reported as per the Client Health and Safety specification.	**Cairnmead Recommendations:** It is imperative that all accidents / incidents and near misses are reported immediately to the Client and the Project Manager.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Incidents not being reported to the supervisor immediately or before end of shift.	**Cairnmead Recommendations:** CairnmeadIt is imperative that all accidents / incidents and near misses are reported immediately. The accident / incident / near miss reporting protocol is attached as Appendix H and it must be followed. All employees are obligated to immediately report all safety incidents (as per Section 14(e) of the Occupational Health and Safety Act 85 of 1993) to their supervision team and to seek medical and other assistance as necessary in order to mitigate the potential severity of the incident. Employees to be informed on the importance of reporting incidents immediately during the induction process. Recommendation:	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incident report not comprehensive in terms of the requirements as per the Client Health and Safety specification.	**Cairnmead Recommendations:** The Contractor shall investigate all injuries with a report being forwarded to Cairnmead. The Contractor must report all injuries to Cairnmead within 30 minutes of the incident taking place by means of telephone call. A flash report must be submitted before the end of shift. A full incident investigation report must follow and must be submitted within 2 days of the incident occurring. As per General Administrative Regulations 9(1), an Annexure 1 forms must be completed for all incidents which is required to be reported in terms of Section 24 of the Occupational Health and Safety Act 85 of 1993 and also of any other incident which resulted in the person concerned having had to receive medical treatment other than first aid. The Contractor must ensure that any major and serious incident/accident occurring will be fully investigated to find out the root cause and preventive measures developed to prevent its reoccurrence.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Preventative measures not communicated to employees on site.	**Cairnmead Recommendations:** All incidents occurring on site to be communicated to the workforce and this must include any preventative measures. Proof of this to be available in the health and safety file.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incident not investigated by competent appointed person.	**Cairnmead Recommendations:** The Contractor must appoint a competent accident/incident investigator in writing with a competency certificate. The appointment and competency certificate must be available in the safety file on site. All incidents to be investigated by a competent Incident Investigator who has been appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Employees not being trained on Incident reporting procedures.	**Cairnmead Recommendations:** The Principal Contractor must ensure that all employees are trained on the incident reporting procedure.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		No trained First aider appointed.	**Cairnmead Recommendations:** As per General Safety Regulations 3(4), the Contractor must ensure that where more than 10 employees are employed on site, the employer of such employees shall take steps to ensure that for every group of up to 50 employees, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid, issued by the SA Red Cross Society; the St. John Ambulance; the SA First Aid League; or a person or organisation approved by the chief inspector for this purpose. The Contractor must ensure that the First Aider is appointed in writing. The appointment and competency certificate of the appointed person to be kept in the safety file on site.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No first aid kit readily available on site.	**Cairnmead Recommendations:** The Contractor must ensure that every work location has a first aid kit with the minimum content as specified by the regulation and a written emergency plan for handling all injuries. The Contractor must affix a prominent notice or sign in a conspicuous place on site, indicating where the first aid box or boxes are kept as well as the name and contact number of the person in charge of such first aid box or boxes.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 124	Fire Fighting	No competent fire equipment inspector appointed.	**Cairnmead Recommendations:** The Principal Contractor must ensure that a competent Frie Equipment inspector is appointed in writing.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
	Fire prevention Fire extinguisher Extinguishing of fire.	Not sufficient employees trained in firefighting.	**Cairnmead Recommendations:** The Principal Contractor must ensure that an adequate number of employees are trained in terms of firefighting. All employees on site must be trained on the correct use of firefighting equipment.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No suitable and sufficient fire-extinguisher equipment available.	**Cairnmead Recommendations:** Sufficient firefighting equipment must be available inside each of the construction vehicle and mobile plant being used on site. The Principal Contractor will ensure that hazardous chemicals stores are equipped with sufficient firefighting equipment. Each Mobile elevated working platform must be fitted with a suitable and applicable fire extinguisher for the work required to be done. Sufficient amount of firefighting equipment must also be positioned on site in case of an emergency and the employees on site must be trained in the procedure on how to use the equipment if needed.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Fire extinguishers not clearly identified in terms of a number and not inspected monthly by a competent person.	**Cairnmead Recommendations:** A competent Fire Equipment inspector to be appointed in writing to inspect all firefighting equipment on a monthly interval. All firefighting equipment must be identifiable by means of a number.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Fire extinguisher not serviced at required intervals.	**Cairnmead Recommendations:** All firefighting equipment to be serviced as per legislation requires.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Incorrect type of fire extinguisher available.	**Cairnmead Recommendations:** Correct firefighting equipment to be placed at the work areas.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 125	First Aid	Contractor not providing sufficient first aid equipment to site.	**Cairnmead Recommendations:** The Contractor must ensure that every work location has a first aid kit with the minimum content as specified by the regulation and a written emergency plan for handling all injuries.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		No trained first aider available where applicable.	**Cairnmead Recommendations:** The Contractor must ensure that the First Aider is appointed in writing. The appointment and competency certificate of the appointed person to be kept in the safety file on site. As per General Safety Regulations 3(4), the Contractor must ensure that where more than 10 employees are employed on site, the employer of such employees shall take steps to ensure that for every group of up to 50 employees, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		First aid equipment not being inspected and kept up to date.	**Cairnmead Recommendations:** All first aid boxes to be inspected on a regular basis, at least monthly.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		First aid locations not identified on site.	**Cairnmead Recommendations:** The Contractor must affix a prominent notice or sign in a conspicuous place on site, indicating where the first aid box or boxes are kept as well as the name and contact number of the person in charge of such first aid box or boxes.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
BLD 126	Hygiene and Health	Site ablutions not cleaned and maintained resulting in health effects on employees.	**Cairnmead Recommendations:** The Principal Contractor must have an Employee Facilities Inspector appointed in writing, and this person must be required to complete a weekly facilities Checklist which will be kept in the health and safety file and made available upon request.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.
		Cleaning of hands and working areas not being encouraged daily.	**Cairnmead Recommendations:** A hand wash area must be made available for employees and must either be inside or close walking distance to the eating area and inside the ablution facilities. Employees must be encouraged during toolbox talks and inductions to wash their hands regularly.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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No.	Potential Hazard	Potential Risk (Source)	Controls (OHS)	Pictorial	High Risk Activities	High Risk Activity ID	R	L	Rating	Legal Reference
		Employees not being encouraged to report any health-related matters to their site management as soon as possible.	**Cairnmead Recommendations:** Employees to be encouraged during toolbox talks and inductions to report any health-related matters to the supervisor immediately.	As far as possible have a picture which can be of benefit for illiterate readers when the detailed risk assessment is done.		Administration	6	E	6E	Occupational Health & Safety Act, Regulations (85 of 1993) and incorporated safety standards.

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Risk Assessment Approval

Project Details:

Project: Calcutta Cemetery & Memorial Park
Register Number: 8539
Issue Date: 18/08/2025

Authorized Approval

Signature:	Initials & Surname:	Register Number:
	CPJ Lourens	CHSA/124/2022

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34. ENVIRONMENTAL MANAGEMENT PLAN

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

EnviroAfrica
Environmental Management and Impact Assessment
Omgewingsbestuur en Impakbeoordeling

ENVIRONMENTAL MANAGEMENT PLAN

FOR THE

MANAGEMENT OF ACTIVITIES RELATING TO THE PROTECTION OF THE NATURAL ENVIRONMENT DURING THE CONSTRUCTION AND OPERATIONAL PHASES OF

CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK DEVELOPMENT

FARM 29, CALCUTTA, STELLENBOSCH MUNICIPALITY

This EMPr is a DEA&DP Requirement,
and is to be presented to contractors at the On Site Start-Up Meeting

Compiled by

EnviroAfrica CC

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P. O. Box 5367
Helderberg, 7135
Tel: (021) 851 1616
Fax: (086) 512 0154
email: admin@enviroafrica.co.za
Unit 7 Pastorie Park, Cnr. Lourens and Reitz Streets
Somerset West
7130
CK 97 46008/23

ENVIRONMENTAL ASSESSMENT PRACTITIONER INDEPENDENCE, CONDITIONS AND DETAILS

EnviroAfrica CC is an independent environmental consulting firm that has no interest in the proposed activity other than fair remuneration for services rendered. Remuneration for services is not linked to approval by decision making authorities and EnviroAfrica has no vested interest in secondary or subserquent development which may result from this project. There are no circumstances that compromise the objectivity of this EMPr.

The findings, results, observations and recommendations given here are based on the best scientific and professional knowledge available from information provided and verified, where required, by site visits.

EnviroAfrica reserves the right to modify aspects of this report, including the recommendations, if new information becomes available which may have a significant impact on the findings of this report.

This EMPr was compiled by Vivienne Thomson in conjunction with Bernard De Witt.

Expertise and *Curriculum Vitae* of Vivienne Thomson and Bernard De Witt:

1. VIVIENNE THOMSON

Nationality	South African
Profession	Environmental Consultant
Specialisation	Environmental Management Systems Environmental Impact Assessments Environmental Licence Applications Environmental Training
Position in Firm	Consultant
Language	Proficient in English and Afrikaans
Years Experience	Since 1999

KEY QUALIFICATIONS

- Establishing and implementing tailored ISO 14001 compliant environmental management systems
- Environmental impact assessments (EIRs and BAs)
- Development of environmental management plans/programmes
- Liaising with regulatory authorities on behalf of clients
- Establishing and implementing tailored ISO 14001 compliant environmental management systems
- Environmental contract management
- Evaluating and facilitating site legal compliance and due diligence
- Specific environmental licence applications related to emissions, water use, waste discharge and waste sites
- On-site training and awareness interventions

EDUCATION AND MEMBERSHIPS

- BSc in Zoology, University of Cape Town (1995)
- Reading towards an MSc (Environmental Science)
- Various environmental related short courses
- Member: National Association for Clean Air
  Coal and Ash Association of South Africa

EMPLOYMENT RECORD

September 2004 to date	Environmental Consultant, various - Gauteng, Mpumalanga, Limpopo and Western Cape
September 2000 – August 2004	Lethabo Power Station, Gauteng
June 1999 – August 2000	Duvha Power Station, Mpumalanga
February 1997 – May 1999	Tavistock Collieries Ltd., Mpumalanga

2. BERNARD DE WITT

Nationality	South African
Profession	Environmental Assessment Practitioner
Experience	Environmental Impact Assessments Environmental Management Environmental Planning
Position in Firm	Director
Language	Afrikaans (home); English (fluent)
Years Experience:	Since 1983

KEY QUALIFICATIONS

- Environmental Impact Assessment and Review
- Coordination, conducting and review of Integrated Environmental Management process
- Environmental Planning, Policy formulation and Management
- Environmental Advisory Services
- Facilitation of Public Participation Processes
- Environmental Auditing
- Environmental Management throughout the Project Cycle
- Environmental Management Plans/Programmes & Environmental Control or Site Officer during construction phase

EDUCATION AND MEMBERSHIPS

- BSc in Forestry (Nature Conservation) 1984
- Hons.B (Public management), Stellenbosch University, 1989
- National Diploma in Parks and Recreation Management, Cape Town Technicon
- Member: International Association for Impact Assessment

EMPLOYMENT RECORD

October 1997 till present	EnviroAfrica, Western Cape
July 1989 – July 1997	Cape Nature Conservation
January 1985 – June 1989	Cape Town Municipality (Nature Reserves)
December 1983 – January 1985	Department of Environmental Affairs, Indigenous Forest Section, Knysna

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EMPr FOR ACTIVITIES RELATED TO THE PROTECTION OF THE NATURAL ENVIRONMENT DURING THE CONSTRUCTION AND OPERATIONAL PHASE OF THE

CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK DEVELOPMENT, FARM 29, CALCUTTA, STELLENBOSCH MUNICIPALITY

(This EMPr is a condition as set out in the Environmental Authorisation)

1. INTRODUCTION

This Environmental Management Plan/Programme report (EMPr) forms part of the conditions as set out in the Environmental Authorisation (EA) and recommendations as detailed in the Basic Assessment Report (dated November 2018)

This EMPr binds all contractors, sub-contractors and other persons working on the site to adhere to the terms and conditions of the EMPr throughout the construction of the Calcutta public cemetery and memorial park development and associated infrastructure.

Any other Site Specific additional activities decided and agreed upon at the "On Site Start-Up Meeting" must be included to form part of the EMPr.

1.1 EMPr Circulation List

Full copies of this EMPr will be made for the ECO, Site Engineer and/or Contractor. Appendices will also be made and circulated where relevant.

An Environmental Management Plan or Programme (EMPr) aims to identify actual and potential environmental impacts of the proposed activity and provide a tool to manage these impacts by:

i. preventing avoidable damage and/or minimising or mitigating unavoidable environmental damage associated with any construction, operation, maintenance, or decommissioning work, where there is a risk of environmental damage and

ii. enhancing positive impacts associated with the proposed project or activity.

The overall aim of the EMPr is to prevent avoidable damage and/or minimise or mitigate unavoidable environmental damage associated with the construction, and to a lesser degree the operational, phases of the proposed project.

The EMPr is partly prescriptive (identifying specific people or organisations to undertake specific tasks, in order to ensure that impacts on the environment are minimised) but it is also a dynamic, evolving document, in that information gained during the various activities and/or monitoring of procedures on site, could lead to changes in the EMPr.

1.2 Terms of Reference

EnviroAfrica CC was appointed by the project applicant, Stellenbosch Municipality, to provide an EMPr for the management of activities relating to the protection of the natural environment during the construction, operation, maintenance and demolition/decommissioning phases of the proposed Calcutta public cemetery and memorial park.

In October 2017, representatives from EnviroAfrica and Stellenbosch Municipality, held a pre-application meeting with the DEA&DP to clarify the way forward with regards to the EA process.

Four public participation processes (PPP) have already taken place:

- the first PPP was conducted mainly to gauge public sentiment and register interested and affected parties (I&APs). It ran from 9 February 2018 and ended on 14 April 2018,
- the second process ran from 15 Novemeber 2018 to 14 December 2018 and contained a pre-application draft BAR (BAR) and appendices.
- the next PPP ran from 1 February 2019 to 5 March 2019 and further refined and corrected BAR documents, as well as attempted to address I&APs concerns and comments.
- The fourth PPP was for the (post-application) BAR and ran from 18 April 2019 to 26 May 2019. The post-application BAR contains all updated specialist reports, impact ratings, comment and reponse trails from the three preceding rounds of public participation, as well as the updated EMPr.

Comments and queries received from the post-application BAR public participation process will be captured and addressed in the final BAR to be submitted to the competent authority (i.e. DEA&DP) for EA decision.

1.3 Purpose of the EMPr

The purpose of this Environmental Management Plan/Programme (EMPr) is to direct and guide all responsible parties, binding all contractors, sub-contractors and all other persons working on the site to adhere to the terms and conditions of the EMPr during the construction, operation, maintenance and anticipated demolition/decomissioning phases of the project. Any additional site specific conditions decided and agreed upon during the "On Site Start-Up Meeting" (OSSM), or any instruction given subsequent to commencement of the works by the regulating authority, must be included to become a part of the EMPr.

This EMPr forms part of the contractual obligations to which all persons including but not limited to, contractors/sub-contractors or employees involved in construction, operation, maintenance or decommissioning work, must be committed. It serves as a baseline information document for the project applicant and any entity working on behalf of the applicant during the various phases of the proposed activity.

It aims to comply with Section 24N of the National Environmental Management Act No. 107 of 1998, as amended (NEMA), as well as any additional specific information requested by any government department, including the regulating authority for this specific project, the DEA&DP.

This EMPr:

- identifies project activities that could cause actual environmental damage (or potential environmental risks) and provides a summary of actions required;
- identifies persons responsible for ensuring compliance with the EMPr;
- provides standard procedures to avoid and/or minimise the identified negative environmental impacts and to enhance the positive impact of the project on the environment;
- provides site and project specific rules and actions required, including a site plan/s showing:
    - areas where construction, maintenance, or demolition work may be carried out;
    - areas where any material or waste may be stored;
    - allowed access routes, parking and turning areas for construction or construction related vehicles;
- forms a written record of procedures, responsibilities, requirements and rules for contractor/s, their staff and any other person who must comply with the EMPr;
- provides a monitoring and auditing programme to track and record compliance and identify and respond to any potential or actual negative environmental impacts; and
- provides a monitoring programme to record any mitigation measures that are implemented

1.4 Scope

The scope which is covered by this EMPr, includes the construction, operation and maintenance and eventual demolition/decommissioning (where required), phases of this development and all environmental activities associated with this project.

Compliance to the EMPr must be monitored by an independent Environmental Control or Site Officer (ECO or ESO) who will visit the site on a regular basis during the various phases of the activity (at least once monthly).
The Client, or the Construction Engineer or Project Manager on behalf of the Client, will be responsible to ensure adherence to and implementation of, the requirements of this EMPr by all involved/associated parties.

1.5 Definitions

Applicant: the person or responsible person from an organization who applied for the proposed activity described in the EA (or previously called RoD).

Audit: environmental evaluation (audit) of compliance of the specific project phase to the conditions of the EA and EMPr (and to be reported to the Competent Authority at the intervals specified by the Authority and/or legislated requirements).

Bund: enclosure under / around a storage facility to contain spillage.

Batch plant: a concrete or plaster mixing facility and associated equipment and materials.

Construction: means the construction period of the project, during which the actual works are carried out and includes site establishment, site preparation, the works, maintenance period and decommissioning and is defined as from commencement of site establishment until site handover (practical completion).

Construction site: means the area influenced and affected by the construction activities or under the control of the Contractor often referred to as “the Site”.

Construction Supervisor: the person responsible (appointed by the owner) to ensure that the construction is carried out to completion on time, within budget and that the Contractor fulfils his obligations in terms of the EMPr.

Contaminated water: means water contaminated by the Contractor's activities, *e.g.* concrete water and runoff from plant/ personnel wash areas.

Contractor: the principal persons / company and all other sub-contractors involved in the construction of the project.

Contractor’s camp: means the designated and suitably demarcated areas on the Site within which all site offices and staff facilities are situated and within which equipment will be stored, for instance, borrow areas, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

Declaration of understanding: Form that is signed by all contractors involved in the construction works of their understanding and acceptance of the EMPr and site-specific additions to the EMPr.

Development site: boundary and extent of development works and infrastructure.

Environment: means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being

Environmental Aspect: Any element of any construction activity, product or services that can interact with the environment.

Environmental Audit Report: report done by the ECO and submitted by the Applicant to the satisfaction of the Competent Authority (Environmental Affairs), within six months after construction has commenced and been completed and also after the site has been rehabilitated.

Environmental Control Officer: The ECO must be independent and suitably qualified (a diploma or degree in environmental management with at least 5 or more years of environmental site management experience) and must have a sound knowledge of the environment in which the activity will take place.

Environmental Completion Statement: A report by the ECO to the relevant authorities stating completion of the project and compliance with the EMPr and its conditions.

Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from any construction activity, product or services.

Environmental Site Officer: The ESO must be an independent, suitably qualified and skilled person with a sound knowledge of the environment in which the activity will take place, as well as the requirements of the EA and EMPr. The ESO may be appointed by the ECO to conduct routine site inspections (more than once per month) and provide assurance that the conditions of the EA and EMPr are adhered to.

Method statement: A statement by the Contractor, describing the construction works step-by-step, in order for the ECO/ESO and Construction Supervisor to understand and comment on, the Contractors' intentions, so that they could assist with devising mitigating measures should it be necessary to avoid environmental impact.

No-Go Area/s: An area of such (environmental/aesthetical) importance that no person or activity are allowed within a designated boundary surrounding this area.

Owner: The owner, or dedicated person, responsible for the management of the property on which the proposed activity (in terms of the EA) will be performed.

Stop Works Order: An order which can be issued either by the ECO, ESO or Construction Supervisor to the Contractor (or any sub-contractor) if serious environmental damage is about to happen or is happening as a result of construction activities. On receiving such an order the Contractor must immediately stop all activities (or planned activities) relevant to the specific issue until an environmentally friendly resolution has been approved by the party issuing the stop works order.

Site meetings: Periodic (weekly or monthly) meetings between the ECO and/or , Construction Supervisor and Contractor to discuss construction activities that relate to the environment or any other environmental issues that might arise.

Works: The works to be executed in accordance with a contract.

On site start-up meeting: a start-up meeting held on site, before any construction has begun to discuss EMPr and determine site specific additions that will be included as the basis for the EMPr.

Potentially hazardous substance: is a substance which, by virtue of it's chemical constituents, physical properties or in the reasonable opinion of the Engineer, can have a deleterious (detrimental) effect on the environment.

Precautionary principle: means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to then undertake actions that will have minimum risk.

Reasonable: means unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the client, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the NEMA.

Solid waste: means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

1.6 Abbreviations

CARA	Conservation of Agricultural Resources Act, No. 43 of 1983
CN	Cape Nature
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning Conservation
DWS	Department of Water and Sanitation
EA	Environmental Authorisation (previously called a Record of Decision) issued by the relevant competent authority for the authorisation to commence construction under certain environmental compliance conditions
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, No. 73 of 1989
ECO	Environmental Control Officer - must be a suitably qualified independent environmental consultant appointed to ensure compliance to the EMPr
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan or Programme
ER	Engineers representative or main contractors representative
ESO	Environmental Site Officer - must be a person with adequate environmental knowledge to understand and implement the EMPr by conducting onsite inspections determined by the ECO and the client.
FRMMP	Freshwater Rehabilitation, Maintenance and Management Plan
HCS/s	Hazardous Chemicsl Substance/s
HWC	Heritage Western Cape
MSDS/s	Material Safety Data Sheet/s
NEMA	National Environmental Management Act, No. 107 of 1998.
NEM:AQA	National Environmental Management: Air Quality Act, No. 39 of 2004.
NEM:BA	National Environmental Management: Biodiversity Act, No. 10 of 2004.
NEM:PAA	National Environmental Management: Protected Areas Act, No. 57 of 2003
NEM:WA	National Environmental Management: Waste Act, No. 59 of 2008.
NFA	National Forest Act, No. 84 of 1998.
NHRA	National Heritage Resources Act, No. 25 of 1999.
NVFFA	National Veld and Forest Fire Act, No. 101 of 1998.
NWA	National Water Act, No. 36 of 1998
OSSM	On-site Start-up Meeting
SAHRA	South African Heritage Resources Agency
SALGA	South African Local Government Association
WCDA	Western Cape Department of Agriculture
WUL	Water Use Licence

2. COMMENCEMENT OF WORKS

The site project contractors must timeously receive a copy of the site EMPr and any other further additional information that pertains to site conditions/amendments or deviations from original site plan. This EMPr must form part of the Contractors Contract.

A copy of the EMPr must be on site at all times and available for presentation to any authority requesting to see such document.

No work on site may take place until:

- The Environmental Contract is signed between the relevant parties
- One week's written notice given to the Department before commencement of any construction activity (as per the EA)
- EMPr has been approved by the relevant authorities
- On-Site Start-Up Meeting has been held
- Site and No-Go areas has been demarcated
- Contractors are in possession of the EMPr and other relevant documentation
- Contractors signed the Declaration Of Understanding
- All mandatory site equipment is in place
- On Site Environmental Education & Awareness training session has taken place with all relevant construction personnel present.
- Search and Rescue of important vegetation on site takes place.

NB: Work also refers to camp establishment, earthmoving activities and <u>any</u> preliminary construction activities.

3. PROJECT OVERVIEW

3.1 Site Description:

The proposed Calcutta public cemetery and memorial park aims to promote a novel concept to that of traditional public cemeteries: The memorial park concept is well suited to Stellenbosch Municipality's desire to keep the region 'green' and promote garden/conservation areas.

The Calcutta site is also strategically positioned to meet the community need for a public cemetery and memorial park since it services the **northern** region of the Municipal area and will be relatively convenient for local communities to use.

Currently, the Calcutta site is degraded and heavily infested with alien *Eucalyptus* species and some *Acacia saligna*. Clearance of the property for development will facilitate the reintroduction of indigenous vegetation in landscaped areas. Besides allocating areas for traditional burial methods and a remembrance wall or columbarium, a garden of remembrance will be established where the ashes of a loved one may be buried at the foot of a tree or shrub indigenous to the area, the a means of adding the ashes ofother family member. The Garden of remembrance will follow a landscaped plan and patrons may purchase a tree and plaque to serve as a living memory of their deceased loved one. This also serves as greener approach to the establishment of burial grounds, while promoting an alternate, less land demanding options for burial and/or remembrance.

The seasonal stream that runs through the western portion of the proposed development site will be rehabilitated and besides the initial restoration and rehabilitation, access road and wooden pedestrian access bridge and a grass block 'drift'/low water crossing across the watercourse, no other development will take place within the 32m setback required for watercourse conservation.

To the west of the stream, it is proposed that burial free areas which will form of the 'public park' area of the memorial park be established. Conservation and awareness regarding the heritage resources of the site *viz.* 'outspans' will be undertaken in this region, with information pedestals/boards.

Several walkways and seating benches within the public cemetery and memorial park will be made available particularly, along the south-western section of the property where educational information pedestals/boards regarding the unique 'outspan' heritage of the region will be highlighted to help preserve this part of the region's history – a modern analogy of the resting places the historic 'outspans' provided.

It is proposed that the memorial park be an area where areas of biodiversity and heritage are rehabilitated and preserved, as much as possible as a part of the 'park' aspect of the cemetery/memorial park. In additional, indigenous vegetation reintroduction will be promoted through the landscaping and memorial park/garden of remembrance areas within the proposed public cemetery and memorial park.

Community or social utilisation of the memorial park other than for burial/remembrance purposes is advocated through the rehabilitation and preservation of the 'outspan' heritage significance of particularly the south-western section of the proposed development site, as well as the rehabilitation of the seasonal stream and re-introduction of indigenous riparian habitat within the set back of the currently degraded seasonal stream that runs through the western/south western portion of the property.

3.2 Project Description:

The Applicant, Stellenbosch Municipality, is the owner of the land proposed for this development. The land, remainder of Calcutta Farm No. 29 is currently zoned for Agricultural 1.

The property is approximately 39.64 ha and a maximum of 30 ha is proposed for the development of the public cemetery and memorial park (which includes any buffer/setback areas).

An ephemeral stream runs almost parallel through most of the western boundary portion of the site. The stream is very degraded and will be rehabilitated and restored as part of the development. Associated setbacks and wetland areas will be accommodated as part of the 'park' aspect of the development.

Vehicle access to the development will be made possible with a main access road to the north, possibly crossing the stream. A grass block 'drift' or low river crossing to the south, will also facilitate perimeter fencinging inspections and will defintitly cross the seasonal stream.

It is proposed that one or two wooden pedestrian walkways/bridges will also cross the stream providing the public with access to the park and heritage areas..

The site co-ordinates are **33º 51' 13.55"S, 18° 48' 35.96"E**.

Please refer to the BAR **Appendix A** (Locality Maps) as well as **Appendix B** (Site Layout Plans) and **Appendix C** for photographs of the site.

Civil Services

Storm water will be transported from hardened surfaces (roofs of buildings and roads) to a storm water attenuation system or retention pond where storm water can be polished and used for irrigation of gardens/trees/park areas.

Storm water from outside the actual developed cemetery footprint within the proposed site i.e. purely from park areas, will be incorporated into the storm water reticulation system leading to the attenuation facility.

The option of providing permeable paving will be investigated in order to transport storm water from the development. It is envisaged that any overflow (however unlikely) from the attenuation facility could be taken to the ephemeral stream on the western boundary.

The provision of a cut off trench facility on the north and eastern boundaries will be investigated during the design phase.

Surface storm water from the areas earmarked for graves and informal areas will be taken via swales or rock lines channels to the storm water reticulation system in order to feed into the attenuation facility.

Subsurface drainage will be provided to minimise the potential negative effects of a possible high-water table in winter months. Soil tests and profiling of the terrain have been performed to establish the exact condition of the in-situ material and water table. The design of pavement structures and other amenities will take cognizance of the prevailing geotechnical conditions.

Electrical Services

It is further proposed that while electricity may be provided by Eskom, wherever possible, electricity supply should be supplied through off-grid electricity resources (e.g. solar panels). The terrain for the development is within the Eskom Provision Area and the option of connecting to Eskom power will be investigated. It is however envisaged that a solar and/or wind turbine system be provided in order to supply electricity to the development.

During winter months sunlight might necessitate the introduction of a wind turbine to provide electricity. The cost of this installation will be compared to the rates from Eskom as a supplier and installation costs. The position of the closest Eskom connecting point will contribute to additional costs, if connecting electrical lines need to be established. During the design phase of the electrical distribution network, both options will be investigated.

Water

There is a Municipal potable water pipeline that runs along the R304 adjacent to the proposed site. A single point tie in will be made to this line for potable water only. Refer to Appendix E5 of BAR (Communication from Stellenbosch Municipality).

Non-potable water for toilets and irrigation will be obtained from the on-site water treatment package plant and reed-bed polishing system i.e. will be recycled. It is proposed that a borehole/s be provided to supply additional (non-potable) water to the development. Initial investigations indicated poor quality of water and the yield of 1 l/s could necessitate more than one borehole. Further study is required to determine the position/s of the borehole/s. During this phase of the project, the detail of water provision will be finalised.

From the boreholes, water will be pumped to the offices and toilets via an underground pipe system. It is foreseen that a network of Ø 110 / Ø 160 mm main feed lines will be provide for the development. Analysis during the design stage, will however verify the required sizes of the water lines.

Sewage

Sewage during construction will be managed via a portable toilet contract with regular servicing.

Sewage during operation will be managed via an on-site sewage/effluent treatment plant.

There is currently no existing sewer network services on the terrain or any municipal reticulation system close to the proposed site for development. It is therefore prosed that a package plant be constructed on site which can treat the effluent from the offices/toilets. It is furthermore proposed that the sewer treatment occurs upstream of the attenuation facility/retention pond which can then contribute to the capacity to irrigate the green areas.

A reticulation underground system will be provided, leading from wet areas to the treatment plan, via sewer pipes and manholes. It is foreseen that a network of 160 mm piping will be adequate with smaller 110mm individual connections to different buildings.

Waste Management

Any solid waste from the activity during construction and operation will be removed to the nearest registered Municipal landfill site, or appropriately registered waste disposal site.

Access

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at ±km50.58 will be required. The Final Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"

It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualling of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: ±12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Access control to the proposed development will most likely be facilitated via fencing/palisade fencing and a lockable gate with a security guard on duty. This also provides a local employment opportunity.

Based on the specialist reports in Appendix G of the BAR, the proposed Calcutta Public Cemetery and Memorial Park will provide a much-needed service to the regional community whilst also facilitating the rehabilitation and protection of the property in terms of biodiversity and existing water courses.

In addition, the cultural/heritage aspects of the property which have been somewhat neglected and lost, will be rehabilitated and preserved through the proposed development.

The aesthetic impact of the proposed public cemetery and memorial park will improve since the current property is infested with alien plants and is often used as a dumping ground.

The following specialist assessment further highlights the environmental benefits of the proposed development, as indicated below:

i. **Biodiversity** – the site currently has a low biodiversity significance but can be rehabilitated provided the requirements as detailed in the botanical statement/scan reports (attached as Appendix 12.4 of this EMPr) are taken into account.

ii. **Freshwate**r – the proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, as long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated and the freshwater rehabilitation, maintenance and management plan (to be attached as Appendix 12.3 of the EMPr, are adhered to.

iii. **Geohydrology** – the majority of the site is classified as having a 'low/medium' groundwater vulnerability rating. The southern portion of the site has been classified as 'medium', grading into a 'very high' venerability classification.

iv. **Geotechnical** – provided the cemetery is sited as recommended in the geotechnical report, the site is considered satisfactory for development of a cemetery.

v. **Heritage** – The potential impact of the proposed cemetery site on the old outspan is significant in that it is a wholesale change of land use from woodlot to cemetery. However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone. Were the outspan site and surrounds carefully conserved and landscaped, this would retain a memory of its core purpose and allow for local associations to be retained of the site's outspan purpose and character thus mitigating associative impact and retaining landmark value.

a. Archaeology – Archaeological visibility is extremely low due to dense vegetation cover, but indications are that the receiving environment is not a sensitive archaeological landscape.

b. Palaeontological – No fossil remains were recorded on Farm Calcutta RE/29 during the short palaeontological site visit. It is concluded that the palaeontological sensitivity of the Memorial Park study area is very low.

c. Visual – The proposed development will have a moderate impact on the landscape causing some change to the visual environment. The development's visual impact has site-related to local extent, long term duration, medium intensity, definite probability, and medium significance on the landscape.

vi. **Socio-economic** – socio-economic costs and benefits were listed in section five of the report. Eleven potentially positive impacts (job and skill levels increase; the creation of a social space; continuation of social networks; equality and exclusivity; employment equity of vulnerable groups; use of social amenities; positive change in the sense of place; preservation of social history; access to leisure opportunities; access to natural resources; sales and GGP) versus three (crime/neglect; individual and family changes; dust and noise levels) potentially negative impacts were listed related to the proposed development.

3.3 Environmental Sensitivities of the preferred site:

Refer to Appendix D in the BAR for Biodiversity sensitivity maps.

A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to BAR, Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.

The proposed development will positively impact and improve the ESA, CBA condition, as well as eliminate the dense infestation of alien trees on the property.

In addition to preserving and promoting the introduction of indigenous vegetation in the area, the proposed public cemetery and memorial park will preserve the cultural heritage of the region's 'outspan' site and possibly provide employment for local individuals, while meeting the need for the essential service of a contextualised public cemetery and memorial park.

3.4 General Legislated Environmental Requirements:

Constitution of the Republic of South Africa (1996): of special relevance in terms of environment is section 24

Conservation of Agricultural Resources Act 43 of 1983 (CARA): supports conservation of natural agricultural resources (soil, water, plant biodiversity) by maintaining the production potential of the land and combating/preventing erosion; for example, by controlling or eradicating declared weeds and invader plants.

Hazardous Substances Act 15 of 1973: to control substances that may cause injury, ill-health, or death through their toxic, corrosive, irritant, strongly sensitizing or flammable nature, or by the generation of pressure

National Environmental Management Act 107 of 1998 (as amended): replaces the Environmental Conservation Act (ECA) and establishes principles for decision-making on matters affecting the environment, and for matters connected therewith.

- **Environmental Impact Assessment Regulations**: identifying activities (listed activities) for which environmental authorisation must be obtained.

National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA): replaces the Atmospheric Pollution Prevention Act (No. 45 of 1965).

National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA): supports conservation of plant and animal biodiversity, including the soil and water upon which it depends.

- **National list of ecosystems that are threatened and in need of protection** (GN 1002 of 9 December 2011).

National Environmental Management: Protected Areas Act 57 of 2003 (as amended Act 31 of 2004) (NEMPAA): To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.

National Environmental Management: Waste Act 59 of 2008 (NEMWA): To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

- **List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment**: Identifies activities in respect of which a waste management license is required.

National Forests Act 84 of 1998 (as amended): supports sustainable forest management and the restructuring of the forestry sector.

- **List of protected tree species** (GN 716 of 7 September 2012)

National Heritage Resources Act 25 of 1999: supports an integrated and interactive system for the management of national heritage resources, including supports soil, water and animal and plant biodiversity.

National Veld and Forest Fire Act 101 of 1998 (NVFFA): protects soil, water and plant life through the prevention and combating of veld, forest, and mountain fires

National Water Act 36 of 1998 (NWA): promotes the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner.

- **Section 21 Listed Activities**: identifying activities for which a water use licence application must be made to the DWS environmental authorisation must be obtained.

3.5 Specific Legislated Environmental Requirements

The National Environmental Management Act No. 107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority, based on the findings of an Environmental Impact Assessment.

The NEMA is a national act, which is enforced by the national Department of Environmental Affairs (DEA). In the Western Cape, these national powers have been delegated to the Western Cape Department of Environmental Affairs & Development Planning (DEA&DP).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities:

Government Notice R327 (Listing Notice 1):

Activity No. 12: *"**Development** within a watercourse/32m from a watercourse."*

Activity No. 19: "The **infilling** or **depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from** a **watercourse**;
(a) will occur behind a development setback;
(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies."

Activity No. 23: *"The **development** of **cemeteries** of 2500 square metres or more in size."*

Activity No. 24: *"The **development** of;*
(i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or
(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;
but excluding;
(a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or
(b) roads where the entire road falls within an urban area."

Government Notice R324 (Listing Notice 3):

Activity No. 4: *"The **development** of a **road** wider than 4 metres with a reserve less than 13.5 metres."*

(Possibly) Activity No. 12: *"The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan."*

*To be confirmed after a Spring (August/September) botanical scan is undertaken on the site **after** alien tree/current plantation removal.*

3.6 Site Specific Environmental Requirements:

The purpose of this section of the EMPr is to discuss possible significant environmental impacts that may be encountered. In other words, this section aims to give site specific guidance for impact minimisation in the context of the proposed development.

i. **Biodiversity** – The site and its immediate surroundings are considered transformed with no natural veld remaining. Only a few hardy indigenous species remains. However implementing the following recommendations can ensure a potential positive environmental impact:

- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
- All alien plants and all waste must be removed from the site and its immediate surroundings.
- The small seasonal stream must be demarcated with a suitable buffer zone
- The buffer zone (ecological support area) should be replanted with suitable indigenous vegetation (riparian vegetation).
- The seasonal stream and its buffer zone should be incorporated as a feature within the lay-out of the memorial park.
- Only indigenous plants should be used for any landscaping within the memorial park.
- All areas impacted as a result of construction must be rehabilitated on completion of the project.
- Once alien plantation on the proposed sie is removed, a Spring (August/September) botanical scan must be undertaken to confirm that there are no indigenous flora which may need to be search out and rescued (to be relocated into the development's indigenous garden areas).

ii. **Freshwate**r – It is proposed that it be made a condition of any approval granted based on the findings of the freshwater assessment attached as Appendix G-3 of the BAR, that the site be revisited for verification of the wetland delineation during the wet season (Jul/August) after site clearing is completed, so that reports can be updated and plans adjusted to accommodate post clearing wetland boundaries.

The proposed layout must avoid infilling of wetlands A and D as indicated in the Freshwater Assessment (Appendix G-3 of the BAR), along with a 15m buffer for each, then the project would represent a significant net positive impact over present conditions.

The Freshwater Rehabilitation, Maintenance and Management Plan, attached as Appendix 13.3 of this EMPr (Appendix G-5 of the BAR), must be implemented as specified to ensure successful rehabilitation of the watercourses/wetlands on site.

iii. **Geohydrology** – The majority of the site is classified as having a "low/medium" groundwater vulnerability rating. The southern portion of the site has been classified as "medium" grading into a "very high" vulnerability classification.

The likelihood of groundwater contamination is low in the area and is based on the following:

- the nine test pits, the deepest being 3.40m below ground level (bgl), did not intersect groundwater;

- permeability evaluations indicate that majority of the site had semi- to impervious layers with the exception of TP7 which had a porous layer at 0.2m (not a real concern for groundwater);
- the closest neighbours' borehole is located approximately 140m north of the northern boundary. However, the water bearing fractures were reported to be located a depths of 120m to 125m bgl. With a thick clay layer above the granite bedrock it can be assumed that the aquifer is semi-confined in nature. The likelihood of migration to the lower fractured aquifer is low due the clay layer.

However, since the site is in close proximity to a number of groundwater users that depend on groundwater as a source, it is recommended that three to four monitoring boreholes (110 OD/100 ID mm) be drilled to a depth of at least 12m. If the water table is intersected before 12m, then drilling must continue for 1m past the water table intersect - this should account for season fluctuations.

iv. **Geotechnical** – Sidewall collapse was not observed in any of the trial pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible. Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

Allowance must always be made for the subsidence of the grave backfill and subsequent relevelling before any memorial structure of tombstone is constructed over the grave.

v. **Heritage:**

a. Archaeology – With regard to the proposed Calcutta Municipal Cemetery on Farm No. 29 near Stellenbosch, the following recommendations are made:

- No mitigation is required prior to construction activities commencing.
- As a precaution, the site should be scanned for artefactual remains dating from the time of the Calcutta Bos Outspan, once vegetation has been cleared and removed from the site.

b. Palaeontological – It is recommended that, pending the exposure of significant new fossils (*e.g.* mammalian bones and teeth) during construction, exemption from further specialist palaeontological studies and mitigation be granted for this development.

If fossil material is discovered during construction, this should be safeguarded, preferably *in situ*, and the ECO should alert Heritage Western Cape (Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) can be taken by a professional palaeontologist. The tabulated 'Chance Fossil Finds Protocol' and associated recommendations, appended to the Heritage Impact Assessment report (Appendix G8 of the BAR) must be implemented.

c. Visual – Implementation of a sound visual management and monitoring plan, as per Section 6 of the Visual Impact Assessment (VIA) report attached as Appendix G8 of the BAR, is required.

A summary of the type and frequency of monitoring is further summarised in terms of inspection, observation and review, in Figure 5 (Visual Monitoring Plan, under section 6.3.3. of the VIA.

3.7 Recommendations on Impact Minimisation

- The construction and operational phase of the project must be done in accordance with this EMPr, the aim of which is to minimise environmental impact during the construction and operational phases.

- A suitable qualified ECO must be appointed to oversee the construction phase.

- The following are site specific recommendations, as per the various specialist assessments of the project. Please note that if there is any contradication between the following specialists recommendations and/or the conditions of the Environmental Authorisation, and the other EMPr recommendations below, the Environmental Authorisation and specialist recommendations take precident.

i. **Biodiversity** – The site and its immediate surroundings are considered transformed with no natural veld remaining. Only a few hardy indigenous species remains. However implementing the following recommendations can ensure a potential positive environmental impact:

- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
- All alien plants and all waste must be removed from the site and its immediate surroundings.
- The small seasonal stream must be demarcated with a suitable buffer zone
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The proposed layout must avoid infilling of wetlands A and D as indicated in the Freshwater Assessment (Appendix G3 of the BAR), along with a 15m buffer for each, then the project would represent a significant net positive impact over present conditions.

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The likelihood of groundwater contamination is low in the area and is based on the following:

- the nine test pits, the deepest being 3.40m below ground level (bgl), did not intersect groundwater;
- permeability evaluations indicate that majority of the site had semi- to impervious layers with the exception of TP7 which had a porous layer at 0.2m (not a real concern for groundwater);
- the closest neighbours' borehole is located approximately 140m north of the northern boundary. However, the water bearing fractures were reported to be located a depths of 120m to 125m bgl. With a thick clay layer above the granite bedrock it can be assumed that the aquifer is semi-confined in nature. The likelihood of migration to the lower fractured aquifer is low due the clay layer.

However, since the site is in close proximity to a number of groundwater users that depend on groundwater as a source, it is recommended that three to four monitoring boreholes (110 OD/100 ID mm) be drilled to a depth of at least 12m. If the water table is intersected before 12m, then drilling must continue for 1m past the water table intersect - this should account for season fluctuations.

iv. **Geotechnical** – Sidewall collapse was not observed in any of the trial pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible. Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

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v. **Heritage:**

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If fossil material is discovered during construction, this should be safeguarded, preferably *in situ*, and the ECO should alert Heritage Western Cape (Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) can be taken by a professional palaeontologist. The tabulated 'Chance Fossil Finds Protocol' and

associated recommendations, appended to the Heritage Impact Assessment report (Appendix G8 of the BAR) must be implemented.

c. Visual – Implementation of a sound visual management and monitoring plan, as per Section 6 of the Visual Impact Assessment (VIA) report attached as Appendix G8 of the BAR, is required.

   A summary of the type and frequency of monitoring is further summarised in terms of inspection, observation and review, in Figure 5 (Visual Monitoring Plan, under section 6.3.3. of the VIA.

Heritage (additional):

In the event that indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone, ceramics or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, SAHRA must be contacted at the SAHRA head office.
- The South African Police Services should be notified by a SAHRA staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial heritage impact assessment.
- We recommend the appointment of a Stone Age Specialist if any large finds of stone tools are discovered during construction.

3.8 Note on Approved Authorisations:

It must be noted that should approval to the development be granted by the respective competent authority, **a copy of any approved environmentally related authorisation (and approved authroisation amendment/s) must kept as an appendix to this EMPr on site at all times**.

This includes but is not limited to, the EA (approved by the DEA&DP); the FRMMP (approved by the DWS) and the WUL (approved by DWS) confirm their approval of this project in writing and that a copy of the EA is on site during construction.

4. PRE-DETERMINED ISSUES OF CONCERN

Issues of concern that were identified in the EIA process and/or public participation process include but are not restricted to the following:

- Access route
- Demarcation of working footprint and removal and storage of topsoil material
- Waste management
- Mandatory site equipment
- Establishment of construction site compound and fuel stores
- Ablution & toilet facilities
- Refuse management
- Concrete works & batching proposals
- Soil erosion control
- Fire fighting equipment & emergency fire reaction plan
- Alien plant removal/Spring botanical scan after historic plantation clearance
- New access road construction (if required)
- Construction of a walled (not fenced) barrier on the northern boundary of the property

The pre-determined environmental issues and respective activities must be addressed during the “On Site Start-Up Meeting” (OSSM) and reflected in the On-Site Start-Up Report.

Site Specific recommendations as mentioned above and as per conditions of the Environmental Authorisation must also be included and reflected in the On-Site Start-Up Report.

5. ON-SITE START-UP MEETING

The mandatory **on-site start-up** meeting that is conducted preferably **14 days but not less than 5 working days** prior to commencement of any site/camp establishment, earthworks and/or construction activities and will relate to additional discussed information that must be complied with during the entire construction phase.

The ON-SITE START-UP MEETING REPORT to be attached as Appendix 1 to the EMPr. The Start-Up Meeting Report to include all site-specific issues and arrangements as discussed and agreed on at the site start-up meeting.

The On-Site Start-Up Meeting additional information pertains to specific site construction agreements that was discussed on site by all the relevant parties and agreed on and must be included in the On Site Start-Up Meeting Report. **(The arrangements and agreements must fall within the conditions as set out in the EA)**

At the on-site start-up meeting (OSSM), the following issues must be addressed:

- The EMPr & other relevant site documents
- Project to be discussed and all uncertainties are cleared
- Method statement/s to be discussed
- Road (if required) and construction area to be demarcated
- Materials stockpile and lay down areas to be demarcated
- Method of stockpiling to be discussed
- Fire fighting procedures
- Mandatory fire fighting equipment & fire preventative measures
- Solid waste removal intentions
- Placement, type and service of toilets to be agreed on
- Placement and type of rubbish bins and removal of rubbish to be agreed on
- Labour overnight camp to be demarcated and services agreed on (if required)
- Environmental education and awareness training session for all contractors & onsite staff/labour

The following people must attend the on-site Start-Up Meeting:

- A representative from Calcutta, Stellenbosch Municipality (Applicant)
- Main contractor's representative.
- Site supervisor/foreman
- Environmental consultant (EC/ECO)
- Environmental site officer (ESO)

Minutes of the on-site Start-Up Meeting will be condensed to a report format and circulated to all attendees of the above named meeting for their perusal and comments if needed. A non-response is deemed an acceptance of the contents and agreements of the report. (**Appendix 1)**

The main contractor must provide (i) a list of all sub-contractors and their scope of work for the contract and (ii) a time schedule of works.

The On-site Start-up Meeting report will also form part of this Environmental Management Plan. If any discrepancies between the start-up report and the EMPr arise then the EMPr will take

precedence until clarification on the discrepancy is clarified. If any discrepancies between the EMPr and the EA then the EA will take precedence until clarification on the discrepancy is clarified.

IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTORS TO ENSURE THAT ALL SUB-CONTRACTORS, THAT WORK ON THE SITE DURING AND AFTER THE CIVILS CONTRACT, ARE INFORMED OF THE ENVIRONMENTAL CONDITIONS PERTAINING TO THE SITE.

NB! NO WORK WILL START UNTIL THE ABOVE IS IN PLACE AND AGREED ON.

6. METHOD STATEMENT

Method statements from the contractor will be required for specific sensitive actions on request of the authorities, Applicant/'s representative or the ECO. A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the Contractor and ECO/Applicant, as circumstances unfold. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr main document.

These documents must be available to the authorities for inspection or on request.

A method statement describes the scope of the intended work in a step-by-step description in order for the ECO and the Applicant to understand the contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimize environmental impact during these tasks.

The Contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the ECO and Applicant have approved the method statement.

Method statements need to be compiled by the contractor for approval by the Applicant and the ECO. The contractor must submit written method statements to the Applicant for the purposes of the environmental specification, a "Method Statement" is defined as a written submission by the contractor to the Applicant setting out the plant, materials, labour and method the contractor proposes using to carry out an activity, in such detail that the Applicant and the ECO is able to assess whether the contractor's proposal is in accordance with the specifications and/ or will produce results in accordance with specifications.

The contents of the Method Statement cannot be changed or altered.

The Method Statement must cover applicable details with regard to:

- Construction procedures
- Materials and equipment to be used
- Getting the equipment to and from site
- How the equipment/ material will be moved while on site
- How and where material will be stored
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material (of any potential hazardous material) that may occur
- Timing and location of activities

- Compliance/ non-compliance with the Specifications, and
- Any other information deemed necessary by the Applicant and the ECO.

The Contractor must abide by these approved method statements, and any activity covered by a method statement must not commence until the Applicant and the ECO has approved of such Method Statement.

NB: No work may commence or take place until all relevant parties have approved the Method Statement.

Explanation of method statements and a pro forma method statement sheet that must be completed by the Contractor for each activity requiring a method is attached as **Appendix 4** & **Appendix 5.**

7. ENVIRONMENTAL DECLARATION of UNDERSTANDING

for the Environmental Management Plan/Programme (EMPr)

The purpose of the Environmental Declaration of Understanding agreement between the applicant / client, the engineer, the contractor and the Environmental Consultant is;

1. To enforce compliance by ALL parties with the EA & this EMPr.
2. To maintain proof of compliance with the site EA.
3. Applicant to inform all relevant parties of the EA & EMPr (as per condition of the EA).
4. To protect the ENVIRONMENT of the site against environmental damage;
5. To mitigate and rehabilitate any damage to the ENVIRONMENT.
6. Ensure that all contractors and sub-contractors are familiar with the EMPr & EA and sign the mandatory Declaration of Understanding indicating their undertaking to work within the framework of the environmental requirements.

This agreement outlines the obligations on the ECO to ensure compliance by all parties with the EMPr

8. PENALTIES

The Applicant (on recommendation by the ECO) reserves the right at all times for the duration of this agreement to impose restrictions and associate penalties on the contractor with respect to the specific nature, timing and extent of construction activities on environmentally sensitive sites.

In instances of non-compliance with the EMPr by the contractor (or any of their employees) or sub-contractor/s (or any of their employees) that move on or off the site, the on-site ECO must issue a written warning indicating the non-conformance to the contractor.

The Applicant, in consultation with the Environmental Consultant/ECO must determine the amount of the penalty applicable in accordance with the Penalties for Non-Compliance Schedule of Tariffs (**Appendix 2**).

Such penalty amount must be produced in writing and presented to the contractor within seven (7) days of the written warning. The Applicant may recover penalties by deducting the fine from the offending contractor.

The contractor will be responsible for all costs incurred where emergency procedures are implemented to deal with accidents impacting on the environment as well as the rehabilitation of such damage in conjunction with the ECO and site engineer.

In serious cases, at the discretion of the Applicant and the Environmental Consultant/ECO, any multiple offences can be added together.

The ECO (after consultation with Environmental Consultant/ the Applicant) may also *stop the works or part thereof until the situation is resolved; no extension of time is claimable by the contractor.*

These penalties do not preclude any prosecution under any law or regulation.

This set of procedures must be understood by all relevant onsite project managers / project managers and site workers.

See **Appendix 2** for the Penalties for Non- Compliance.

9. RESPONSIBILITY OF STELLENBOSCH MUNICIPALITY (as the Applicant)

Stellenbosch Municipality (as the Applicant) must be responsible for ensuring compliance with the conditions contained in the EA by any person acting on his behalf, including but not limited to an agent, servant, employee or any person rendering a service to the Applicant in respect of the activity, including but not limited to contractors and consultants.

The Applicant is responsible for appointing the ECO, Site Engineer and Contractor for the duration of the construction contract and for ensuring that the Site Engineer and Contractor fulfil their obligations in terms of this EMPr.

The Applicant and or its representative must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of this authorisation is not adhered to.

10. THE SITE ENGINEER / SITE MAIN CONTRACTOR

The Site Engineer / Site main contractor is responsible for ensuring that the construction contract and daily construction activities as per the original site specifications are implemented in terms of the Environmental Management Plan which includes additional on-site Start-Up Meeting agreements

The Site Engineer and the ECO are expected to develop a close working relationship and to stay in contact with each other.

The Site Engineer issues site instructions to the Contractor and all requests and communications between the ECO and Contractor are via the Site Engineer.

The only exception to this is where the ECO needs to issue a “stop works” order on the Contractor or the Site Engineer if serious environmental harm is about to happen or is happening as a result of construction activity. This “stop-order” must be confirmed by the ECO as soon as practically possible to all affected construction personnel.

When the ECO is not on site, the resident engineer will be responsible for implementation of the EMPr. Any construction and construction related activities that might lead to damage to the environment should be immediately brought to the attention of the site ECO.

The site engineer or the appointed engineer’s representative must complete the “**ENVIRONMENTAL WEEKLY CHECKLIST” (see Appendix 9)**

11. THE CONTRACTOR

The Contractor must ensure that all of its sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in the site EMPr. The Contractor must liaise closely with the Site Engineer and the ECO and must ensure that the works on site are conducted in an environmentally sensitive manner and fully in accordance with the requirements of the EMPr, at all times.

Any main bulk service providers must be advised of the construction activities as well as the requirements of this EMPr and the Contractor must be responsible for their activities conducted within their work areas.

All contractors working on site must have proper and competent contractor supervision during their time of contract.

If more than one contractor work on the site simultaneously then the responsibility lies on each contractor to adhere to the conditions of the EMPr and related documents.

This is for the duration of the contract.

The supervisors must work closely with the appointed environmental officer and discuss the daily programme with the appointed environmental officer. Any problems that might lead to damage to the environment must be discussed prior to commencement of the activity.

<u>THE ECO MUST ENSURE THAT ALL CONTRACTORS / SUB-CONTRACTORS HAVE SIGNED THE “DECLARATION OF UNDERSTANDING” (Appendix 3) IN THIS CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN BEFORE CONSTRUCTION COMMENCES.</u>

12. SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING

All daily site construction personnel must attend an on-site Induction Environmental Education and Awareness training (E&AT) session together with any site-specific environmental training they may require to carry out their duties.

All contractor and sub-contractor teams involved in work on site must be briefed on their obligations towards environmental controls and methodologies in terms of this EMPr prior to commencement of any construction and construction related activities

The on-site Environmental Education and Awareness Training session must take the form of an on-site environmental talk and where necessary relevant demonstrations conducted by the ECO.

The on-site Environmental Education and Awareness Training session must be aimed at all levels of site contractors, sub-contractors and related site workers & site management.

In the case of new workers coming on site throughout the construction programme, the site contractor is responsible to ensure all new labour arriving on site is made aware of the contents of the EMPr and is briefed on the E&AT.

13. ENVIRONMENTAL CONTROL OFFICER

13.1 Frequency of site visits

An ECO must be appointed for the duration of the construction phase (as required by the EA). The ECO must comply with the following:

- Conduct a start-up meeting before construction commences
- ECO to monitor the development at least twice a month until the development is completed
- Conduct a closing down visit as soon as possible after completion of the Development
- Conduct an environmental compliance audit within 6 months after completion of the civil contract.

13.2 Requirements for the Posts

Environmental Control Officer (ECO)

- A recognised environmental practitioner with a degree in environmental management and a sound knowledge of the environment and environmental management principles.
- An independent person with 5 or more years of environmental site management and able to ensure EMPr compliance monitoring experience on construction projects.

13.3 Monitoring responsibilities of the ECO

- The ECO will undertake regular site inspections and to monitor and assist in environmental tasks he/she must compile a weekly report/checklist and submit to EnviroAfrica/the Applicant
- Is to ensure that the mitigation/rehabilitation measures and recommendations referred to in the Environmental Authorisation are implemented and to ensure compliance with the provisions of the EMPr.
- Must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of the EA is not adhered to.
- Is responsible for the environmental issues involved with the construction phase of the project;
- Co-ordinating any aspect of site activity that may have an effect on the environment;
- Must work in close conjunction with the Applicant /Site representative, contractors and sub-contractors
- Must identify and demarcate the impact area i.e. construction footprint area before any construction activities commence
- Must demarcate the necessary areas for storage of materials, ablutions, eating areas of contract workers, etc.
- Must identify 'No-go' areas and areas sensitive to erosion and have these areas demarcated. Environmental awareness of the workers is essential. This must be in the form of an on-site talk and must be conducted at an appropriate technical level
- The ECO will keep a site inspection diary. The purpose of the site diary is to record construction progress and environmental compliance. This information is then recorded in the form of an ECO checklist and/or diary entries and photographic records for visual reference. (Appendix 8).
- These documents must be available to the authorities for inspection or on request. The diary must include meetings/discussions with the contractor and must reflect environmental queries, agreed actions and dates of eventual compliance. These must form part of the official environmental record

13.4 Authority of the ECO

The ECO has the authority to stop works if in his/her opinion there is a serious threat to or impact on the environment caused directly from the construction operations.

This authority is to be limited to non-compliance to the EMPr and emergency situations where consultation with the Environmental Consultant is not immediately available.

The ECO is to inform the Environmental Consultant of the reasons for the stoppage as soon as possible. A relevant reason should be supplied to the Applicant/Site representative as soon as possible after stoppage of such works.

Upon failure by the contractor or his employee to show adequate consideration to the environmental aspects of this contract i.e. wilful destruction of the environment, the ECO may recommend to the Applicant/site representative to have the contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied.

No extension of time will be considered in the case of such suspensions and all costs will be borne by the contractor

13.5 Appointment of an Environmental Site Officer (ESO)

When necessary the ECO may appoint an ESO to carry out the site inspections and the following will apply:

- The ESO is appointed prior to commencement of construction activities, site inspections are decided upon between the Applicant and the ECO depending on the environmental sensitivity of the construction areas and site location.
- The frequency of site inspections is also determined prior to commencement of works but can change if the need arises.

13.5 Qualifications of an ESO

The appointed ESO must fulfil the following criteria:

- Have at least 5 years' experience as an ESO.
- Have a sound understanding of the contents of the EMPr.
- Must be able to enforce compliance to all relevant site documents.
- Have a basic knowledge of the NEMA and other relevant information.
- A construction background would be an advantage.
- Must be able to work with site personnel and resident engineers.

14. CHANGES TO MANAGEMENT PLAN

Although care has been taken to address all known relevant environmental issues for the construction phase, it may become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMPr.

Only those additions or amendments of this EMPr that will either improve environmental protection or can be proven not to have any negative effect to the immediate and surrounding environment will be considered.

Changes or deviations have to be motivated in writing by means of a Method Statement and the same procedures for a standard Method Statement have to be followed.

Any additions or amendments must be submitted by the ECO to DEA&DP after the ECO has consulted with the Environmental Consultant and the Applicant. Please note that any additions or amendments to this EMPr must be approved by DEA&DP before they are implemented.

No deviation from the contents of the EMPr is allowed without the above-named prescribed procedures.

15. RECORD KEEPING

All records relating to the implementation of this management plan (e.g. Declaration of Understanding, ECO Checklist and/or diary, Method Statements, etc.) must be kept together and can be retrieved easily. These records must be available for scrutiny by any relevant authorities.

Photographs are to be taken of the site prior to, during and immediately after construction, as a visual reference. These photographs must be stored with other records related to this EMPr.

Any environmental non-compliances reported must have the support of sufficient photographic proof to mitigate the non-compliance report.

16. ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement is a report by the ECO/EC to the relevant authorities stating completion of the project and compliance with the EMPr and conditions.

The following environmental statements must be completed on completion of all site construction activities and submitted in line of sequence to the relevant office for perusal and reference.

16.1 ESO: ENVIRONMENTAL CLOSING STATEMENT

The ESO must submit an **environmental closing statement** on completion of the construction phase of the development. The environmental closing statement must cover all aspects of daily/weekly construction activities that took place during the ESO site inspections.

16.2 ECO: ENVIRONMENTAL COMPLETION STATEMENT

The ECO must submit an **environmental closing statement** relating to all environmental and technical issues that occurred on site as well as any conclusions regarding incidents such as written warnings, stoppages of works and penalty fines.

16.3 ENVIRONMENTAL AUDIT REPORT

An Environmental Audit Report by the ECO must be submitted by the Applicant to the satisfaction of the Department of Environmental Affairs and Development Planning, within six months after construction has been completed and also after the site has been rehabilitated.

Auditing and reporting as detailed in the Freshwater Rehabilitation Maintenance and Management Plan attached as Appendix 13.1 of this EMPr must be adhered to.

17. MANAGEMENT SPECIFICATIONS (CONSTRUCTION PHASE)

(This EMPr is additional to conditions as set out in the EA)

17.1 Fauna and Flora

The Contractor must not deface, paint, damage or mark any natural features (e.g. trees, rock formations, buildings, etc.), if these should be situated in or around the Site, for survey or other purposes unless agreed beforehand with the Engineer and the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the Engineer and the ECO.

Except to the extent necessary for the carrying out of the works, flora must not be removed, damaged or disturbed nor must any vegetation be planted. Any removal of vegetation that is necessary should be kept strictly to the demarcated area. Indigenous vegetation patches surrounding the proposed site, if any, should be established as no-go areas.

No bush or brush clearing to be undertaken without the knowledge of the ECO. Before an area is cleared, a Spring (August/September) botanical scan must be undertaken to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal (see Appendix E4 of BAR).

Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site. Should the control of vermin or extra-limital species be required, the correct permits/licences must be in place before such animal control takes place.

Where the use of herbicides, pesticides and other poisonous substances are to be used, the Contractor must submit a Method Statement which must be in line with the Botanical Assessments and Table 1 of the Freshwater Rehabilitation Maintenance and Management Plan, recommendations.

All incidents of harm to any animal or natural vegetation (apart from the agreed upon areas) must be reported to the ECO.

17.2 Protection and Rescue of Fauna and Flora

If any indigenous general vegetation can be salvaged can also be used for landscaping purposes in the 'green park/open spaces' of the development. Before an area is cleared, a Spring (August/September) botanical scan must be undertaken to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal (see Appendix E4 of BAR).

If any fauna removal from the site is required, it must be done in accordance with the requirements of the Nature Conservation Ordinance regulating these activities and should be conducted by a suitably qualified and experienced person. The necessary permits that may be required from Cape Nature must first be obtained.

If required, any flora identified during construction to be rescued must be removed and placed in an area specifically allocated for these plants to ensure that the necessary care thereof will take place until being relocated and planted in designated areas.

Any areas of vegetation that are to be protected during construction must be demarcated and indicated on a site plan. A Method Statement is to be submitted to the ECO by the Contractor, detailing the method of fencing for protection of the conservation areas.

17.3 Clearing of Vegetation, Stripping & Conservation of Topsoil

A Method Statement must be submitted detailing the methods to be used for vegetation clearing. All cleared areas must be stabilised as soon as possible. Burning of cleared vegetation on site is prohibited. The burying of cleared vegetation or use as part of backfill or landscape shaping is prohibited unless written approval is obtained from the ECO.

Cleared vegetation may be used for mulch or slope stabilisation of the Site. Should bulk vegetation be removed from the designated working areas (foot print area) then tall vegetation shall first be removed through brush cutting and chipping of larger shrub materia. If approved by the ECO, this may be added to the topsoil material stockpiles as mulch. Unless otherwise agreed upon, only indigenous plant material shall be used for this purpose.

Larger, alien invasive/plantation trees to be removed will be replaced with indigenous (and water wise vegetation) where possible in the landscaping. Clearance of the alien vegetation on site will be in conjunction with the Municipality's annual plan of operation for alien invasive plant removal as co-ordinated by the Community Services Department.

Prior to any activities within the demarcated work areas, topsoil material shall be removed to a depth of 300mm or deeper if specified by botanical specialist in consultation with the ECO and engineer, and stockpiled in a designated area for use in rehabilitation of the site post construction. Any area where the topsoil will be impacted by construction activities, including the construction offices and storage areas, must have the topsoil stripped and removed and covered with herbaceous vegetation (other than alien species), overlying grass and other fine organic matter and stockpiled for subsequent use in rehabilitation.

Should the topsoil layer in any area be less than 300mm, or in areas where it is not possible to remove the topsoil, the depth/amount of topsoil to be removed will be up to the discretion and approval of the ECO (in conjunction with the botanical specialist, if needs be).

Topsoil storage areas must be convex and should not exceed 2m in height. The Contractor must ensure that the material does not blow or wash away. Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. In particular, topsoil must not be subject to compaction greater than 1 500 kg/m^2 and must not be pushed by a bulldozer for more than 50 m. Trucks may not be driven over the stockpiles.

Topsoil from different soil types must be stockpiled separately and replaced in the same areas from which they were taken if possible. Specific attention should be given to the areas that may house rare and threatened species. Topsoil areas must be demarcated in order to ensure the safekeeping of topsoil and to separate different stockpile types.

17.4 Protection of Archaeological & Paleontological Remains

If remains or artefacts are discovered on Site during earthworks, work in the vicinity must cease and the Contractor must immediately inform the Engineer and the ECO who must contact Heritage Western Cape and/or the South African Heritage Resources Agency (SAHRA) for information on the appropriate course of action to be taken. SAHRA Contact: 021 - 462 4502. Heritage Western Cape Contact: 021 - 483 9682.

In the event that previously unknown archaeological features are exposed during the construction phase, the Contractor should inform the Engineer and the ECO who will advise the Applicant on the necessary course of action.

Note that the Contractor may not, without a permit issued by the responsible heritage resource authority; destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site or archaeological material. The latter is a criminal offence under the Heritage Resources Act.

17.5 Appropriate Use of Machinery

Contractor must, at all times, carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage.

The contractor may not operate any machinery including a fuel driven compressor outside the demarcated area.

Where practical, all maintenance of plant and machinery on Site must be performed in workshops. If it is necessary to do maintenance outside of a workshop area, the Contractor must obtain the approval of the Engineer and the ECO prior to commencing activities

All vehicles and equipment must be routinely inspected for fuel and oil leaks, kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the Site. When servicing equipment, drip trays must be used to collect the waste oil and other lubricants. Drip trays must also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays will be kept free of water that will float the oil to overspill. All drip trays / bungs to attain a 120% capacity of the plant fuel / oil capacity.

Appropriate 2.5kg (minimum requirement) dry powder SABS approved and service certified fire-fighting extinguisher must be a mandatory item on all vehicles working and moving on or off the construction site.

17.6 Demarcating and Fencing

Final site demarcation must be carried out with all relevant parties (who will be responsible) present for the day-to-day activities on the site, they include;

Applicant	Stellenbosch Municipality Representative
Environmental Consultant	Environmental Consultant Representative
Main Contractor	Project Site Manager
Sub-contractor	Project contractor
ECO/ESO	Environmental Control Officer or Site Officer

The proposed site will be demarcated prior to the commencement of any construction activities whatsoever, this includes site establishment, the moving of construction material or any other items onto the site, etc.

The site will be demarcated with appropriate strong steel dropper poles. A single strand of orange baler twine is to be attached to the dropper poles to indicate boundaries and no-go areas for site personnel and vehicular movement. (Alternative fencing may be decided upon dependent on site requirements)

The construction area i.e. road, stockpile areas and development footprint etc. must be demarcated and fenced off with steel dropper poles and orange baler twine approximately 1m high is considered adequate. The demarcation will be agreed on during the start-up meeting.

All fencing and fence placement / positioning must be approved by the ECO on site.

Work areas and access routes must be clearly demarcated to minimise environmental impact.

NB. Steel dropper poles and orange baler twine has proven to be the most environmentally friendly means of on-site demarcation.

In the event that sensitive features are threatened by construction activities, temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended.

The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of construction activities, or as otherwise instructed. Any temporary fencing removed for the execution of any portion of the works is to be reinstated by the Contractor as soon as practicable. The Contractor at the end of the contract must remove all demarcation, fencing or barriers not forming part of the final works on Site.

Once in place the demarcation barriers may not be moved or altered without consultation with the site ESO and the main contractor.

17.7 "NO-GO" Areas

"NO-GO" areas, if so designated by the EMPr, EA or ON SITE START-UP MEETING, are certain pre-determined areas where construction activities are prohibited. The contractor must ensure that no person, machinery and/or equipment enter the "NO-GO" areas at any time during the contract period.
If so required by specifications in the EMPr, certain areas must be "No-go" areas. The Contractor must ensure that, insofar as he has the authority, no person, machinery, equipment or material enters the designated "No-go" areas at any time.

Areas of special importance will be decided upon between the Engineer, Contractor and the ECO and demarcated as "No-go" areas on a site plan and fenced off. Such areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff and to any other person involved in the construction, without the written permission specified by the ECO.

All private property outside of the construction areas as set out in the site layout plan shall be considered no-go areas.

17.8 Water, Storm water, Erosion & Sedimentation Control

The Contractor must take appropriate and active measures to prevent erosion resulting from his own construction activities and operations as well as storm water control measures to the satisfaction of the ECO.

Occupants on site must have access to safe drinking water. Water to be supplied by the contractor shall be from a legal source and comply with recognised standards for potable and other uses.

During construction, the Contractor must protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible.

It is illegal to discharge water into a public stream if the quality does not conform to the required health or water standards. Other measures as may be necessary must be taken to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. All potential hazardous fluids / materials must be protected from the rain to prevent them being washed into storm water channels or any aquatic ecosystems. All such measures must be discussed with and approved by the ECO.

17.9 Fuel, Tar Compounds and Oil

Basic guidelines to follow if any fuels are to be stored are as follows:

- These areas must comply with general fire safety requirements.
- All vehicles, equipment, fuel and petroleum services and containers must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies. Drip trays are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks.
- All plants / fuel tanks must have a drip tray present to use in the event off accidental spillage of oils and fuels and must contain a capacity level of 120% of the capacity of the plant fuel and oil tanks.
- Drip trays must be used when refuelling plant or equipment.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established.
- Fuels and oils must be safely located out of harm's way from the elements and safety and fire prevention must be strictly adhered to.
- All spills are to be recorded in the ESO diary.
- A bioremediation/ hydrocarbon spill remediation product approved by the ECO must be stored on site and near the fuel stores for any emergencies such as spills. Once a purpose manufactured hydrocarbon spill remediation product has been used or has been used to treat contaminated materials (soil, rubble etc.), it can be disposed of as per general waste provided this is not in excessive quantities.

Fuel Storage proposals must be cleared by the ECO before any storage or stockpiling takes place.

17.10 Hazardous Substances

If potentially hazardous substances are to be stored on site, the Contractor must provide a Method Statement detailing the substances/materials to be used, together with the storage, handling and disposal procedures of the materials to the Engineer and the ECO.

Paints: - No paint products may be disposed of on Site and brush/roller wash facilities must be established to the satisfaction of the Engineer and the ECO. Oil based paints and chemical additives

and cleaners such as thinners and turpentine must be strictly controlled. A Method Statement detailing the paint management procedures is required.

Hazardous building materials: - Any Hazardous building materials (e.g. asbestos, fibre claddings, refrigerants, coolants, sub-station cooling oils, etc.) must be identified and dealt with in accordance with the relevant safety and health legislation. All such material must be separated on Site and disposed of at appropriate licensed disposal sites. The Contractor must supply the ECO with a certificate of disposal.

Hazardous materials should be stored under lock and key in designated areas with properly displayed and visible warning signs.

17.11 Concrete Works

The Engineer (in collaboration with the ECO) must indicate the permitted location of batching plants (including the location of cement stores and sand and aggregate stockpiles), if these are to be present on Site, on a site plan. A Method Statement indicating the layout and preparation of such facilities must be submitted.

Cleaning of equipment and flushing of mixers must not result in pollution of the surrounding environment. All wastewater resulting from batching of concrete must be disposed of via the contaminated water management procedure. Used cement bags must be stored in weatherproof containers to prevent wind dispersion and water contamination. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.

Disposal of cement bags on site must be arranged with the site ECO.

All visible remains of excess concrete must be physically removed and disposed of on completion of cement work. Washing the remains into the ground is not acceptable. All excess aggregate must also be removed.
The following recommendations must be implemented to minimise impact.

- The concrete mixing must take place on top of boarding and/or impermeable sheeting to protect the ground. This board and or sheeting must be removed from the site once the mixing is complete
- Concrete batching to take place at identified areas only in consultation with the ECO.
- Cement contaminated water may not enter a natural or man-made (e.g. trench / sloot or dam) water system. Preventative measures include establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.
- Dry mixing batching areas to be carefully placed in consultation with the ECO.
- If possible/appropriate ready mix concrete must be used.
- Cement bags are to be stored securely out of harm’s way from the elements (wind and rain). Bags has to be covered and placed on plastic sheeting
- Sand and stone to be stored on plastic if it is stored outside the future fenced off site.
- Excess or spilled concrete must be confined within the works area and then removed to a waste site.

- Wash-down areas must be confined to within the concrete batching area only.

NB: In the event of Ready Mix concrete deliveries taking place on site the site foreman, must ensure that no wash-down of ready mix trucks takes place on or around the site, except at the concrete batching area where concrete wastewater may be contained in the existing bunding pit. Any alternative method of disposal must have to approval of the site ECO.

17.12 Blasting / drilling (if required)

In the unlikely event where blasting or rock drilling is required, the following recommendations must be implemented:

- A Method statement must be provided for each case separately **prior** to commencement of blasting works.
- The contractor must take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly rock.
- The contractor must ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid. The contractor must take all reasonable measures to limit dust generation as a result of drilling operations.
- The ECO must be given 24-hour notice before blasting events.

17.13 Fires and smoking

No fires are allowed on site.

If Smoking is allowed on site then arrangements to be made for disposal of cigarette buds. No smoking will be allowed outside the agreed upon areas.

Adequate fire fighting equipment according to the fire hazard during the construction period must be available on site and in good working order (at least one type ABC (all-purpose) 2.5 kg extinguisher and 3 fire beaters per working area). The persons on site must be trained in the use of such equipment.

The main contractor must provide a list of all authorities involved in fire fighting in the region. This list must include emergency contact numbers and must be visible at the site office.

Welding, gas cutting or cutting of metal will only be permitted inside the working areas.

The Contractor must pay the costs incurred to organizations called to put out any fires started by him. The Contractor must also pay any costs incurred to reinstate burnt areas as deemed necessary by the Applicant.

It is required that contractors have available the emergency telephone numbers of the nearest local Fire Fighting Station and that an emergency fire fighting re-action plan has been drawn up with on-site workers and the land-owner.

17.14 Emergency Procedures

It is the responsibility of the contractor to assess the potential risks to the environment as a result of the project. As such, the contractor must have the necessary standard emergency operating procedures in place to deal with any potential emergency such as oil spills or fire.

All staff should be made aware of the necessary basic emergency procedures in the event of an emergency including injuries to staff. The appropriate equipment and identified personnel to deal with such basic emergencies should be available on site.

Fire: The Contractor must advise the relevant authority of a fire as soon as one starts and must not wait until he can no longer control it. The Contractor must ensure that his employees are aware of the procedure to be followed in the event of a fire.

Spills: The Contractor must ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which must include notifying the Engineer, the ECO and the relevant authorities. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO and Local Authority.

17.15 Dust Control

The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities (including dust generated on haul roads) to the satisfaction of the ECO and Local Authority

17.16 Solid Waste Management

No on-site burying or dumping of any waste materials, vegetation, litter or refuse must occur.

The Contractor must provide problem-animal and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on the bins at all times. Bins must not be allowed to become overfull and must be emptied at least once a day. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Engineer and the ECO has approved.

All solid waste must be disposed of off-site at an approved landfill site in terms of section 20 of the Environment Conservation Act (Act No. 73 of 1989).The Contractor must supply the ECO with a certificate of disposal. All hazardous waste must be disposed of at a licensed hazardous waste site.

The Contractor must make provision for workers to clean up the Contractor's camp and working areas on a daily basis so that no litter is left lying around and so that the site is in a neat and tidy state. The Contractor must remove from site the refuse collected at least once a week.

The Contractor must be responsible for the establishment of a refuse control system that is acceptable to the ECO.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts.

17.17 Toilets & Ablution Facilities

The Contractor must provide suitable sanitary arrangements near the construction site for all site employees. A minimum of one toilet must be provided per 15 persons at each working area (station) or as stipulated in the Management plan.

The toilet must be within easy reach (max 300m) of the working area and be in good working condition and cleaned on a daily basis. Toilet paper must be provided. The toilets must be emptied on a weekly basis or when full or when instructed by the ECO on site.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts. Sanitation provision and servicing must be to the satisfaction of the ECO. The Contractor must ensure that toilets are emptied prior to any builders' holidays, and/or weekends.

Toilets must be of a neat construction and must be provided with doors and locks and must be secured to prevent them blowing over. Toilets should be properly screened from the adjacent properties.

NB. NO BURYING OR BURNING OF ANY WASTE MATERIAL ON OR NEAR THE CONSTRUCTION SITE NOR ANYWHERE ON THE SURROUNDING PROPERTY IS PERMITTED.

17.18 Stockpiling

Any stockpiling of gravel, cut, fill or any other material including spoil must only be allowed in degraded areas or areas below the future cover of buildings and tar or paved parking surface. The Contractor must indicate the proposed areas for such operations and method of undertaking such operations in a Method Statement to be submitted to the ECO for approval before any such activity begins. Any area used for stockpiling and not covered by building development must be returned to at least the state they were in before stockpiling and it must be ensured that the erosion potential of these areas is not increased.

The Contractor must ensure that the material does not blow or wash away or mix with each other. If the stockpiled material is in danger of being washed or blown away, the Contractor must cover it with a suitable material, such as hessian, netting or plastic.

17.19 Preparation of Building Material

The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The Contractor must ensure that these delivery drivers are supervised during off-loading, by someone with an adequate understanding of the requirements of the Specifications.

All manufactured and/or imported material must be stored within the demarcated area, and, if so required, out of the rain. All lay down areas outside of the construction camp must be subject to the Engineer and the ECO’s approval in such a way as not to cause a nuisance or environmental damage.

All building materials are to be prepared at the batching plant, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed.

It is essential that any imported material i.e. base material for road works, building sand, bedding base sand for pipe / cable lines etc. must be screened and of which the origins must be identified prior to arriving at the receiving environment, and this must be approved by the Engineer / ECO.

17.20 Discharge of Construction Water

Potential pollutants of any kind and in any form must be kept, stored, and used in such a manner that any escape can be contained and the water table not endangered. This particularly applies to water emanating from runoff from fuel depots/workshops/truck washing areas. Wash down areas must be placed and constructed in such a manner to ensure that the surrounding areas are not polluted.

Contaminated water includes water that is carrying excess sediment due to construction activities. The contractor, being responsible for the construction and effective containment and maintenance of settlement ponds must ensure that the surrounding environment is not adversely affected as a result of

construction activities. Contaminated water storage facilities must not be allowed to overflow and appropriate protection from rain and flooding must be implemented. Contaminated water that is removed from site must be disposed of at a facility approved by the ECO and Local Authority. No contaminated water that does not meet the water quality standards and criteria under the National Water Act may be released into a natural system, whether it is to surface or groundwater

All cement effluent from mixer washings, and run-off from batching areas and other work areas must be contained in suitable sedimentation ponds. Sedimentation ponds must be allowed to dry out on a regular basis to allow for solid material to be removed. This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the ECO.

17.21 Treating (flushing / testing) of Pipelines (if required)

Cleaning/sterilization/flushing of pipelines shall not impair surrounding environmental quality. Any contaminated water from such activities shall be contained until it complies with the standards contained in the National Water Act or other relevant Acts, as well as those laid down by the Local Authority. Alternatively, it shall be removed from site and disposed of at an approved waste disposal site.

17.22 Contractors Temporary Camping Site & Eating Areas

The Contractor must designate eating areas for the approval of the ECO, which must be clearly demarcated. No eating of meals must take place outside these designated areas without the approval of the Contractor/ECO. The feeding or leaving of food for animals is strictly prohibited. Sufficient waste bins must be present in this area and emptied regularly.

The contractor must supply cooking facilities that are suitable for the environment and are not liable to cause the outbreak of fires.

No overnight camping/stay on site allowed. If overnighting is necessary for security purposes then it must be cleared with the ECO on site.

No washing in dams or streams is allowed.

17.23 Traffic, Access Routes & Haul Roads

The Contractor must control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes. In addition, such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site, vehicles will adhere to municipal and provincial traffic regulations.

As far as possible, any access routes/haul roads must utilise existing roads or tracks. Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up-hill.

All temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the ECO.

Method Statements for any new access/ haul roads must be submitted

17.24 Site Clean Up and Rehabilitation

The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site must be cleared, and cleaned to the satisfaction of the ECO.

Immediately after the demolition of the campsite, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape.

The contractor's procedure for rehabilitation shall be approved by the ECO and Engineer.

This shall include but not be limited to:

- Earthworks to reinstate the physical characteristics of the site. Here attention to the natural vertical and lateral heterogeneity in landform shall guide the reinstatement of natural areas
- Replacement of topsoil material – care shall be taken to ensure that the same material that was removed from each area is replaced there, since this will carry the seed complement appropriate for re-establishment of each plant community type
- Final landscaping by machine, but landscaping by hand may be required in many areas under rehabilitation
- Re-seeding and / or replanting of rehabilitated areas

The Contractor shall not be permitted to use fertilisers or pesticides

It is imperative that any potential erosion problems are addressed. This may require subsequent site visits to monitor the efficacy of erosion control measures.

17.25 Land Management

Vehicles accessing the construction site must be made aware of driving in hazardous road conditions, sharp bends, narrow roads, bad weather, or near children or domestic animals along the road.

Vehicle movements should be kept to a minimum during rain to avoid damage to access roads.

No fences or gates on the relevant construction property must be damaged. All access gates to the property (construction site) to be kept closed at all times to prevent domestic and or wild animals from getting out. Access by unauthorised personnel should be controlled. The access gates to the construction areas must always be closed.

Soil erosion must be prevented at all times along the access roads and around construction areas.

No bush or brush clearing to be undertaken without the knowledge of the ECO / Engineer. Before an area is cleared, a botanical scan must be undertaken in Spring to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal(see Appendix E4 of BAR).

Larger, alien invasive/plantation trees to be removed will be replaced with indigenous (and water wise vegetation) where possible in the landscaping. Clearance of the alien vegetation on site will be in conjunction with the Municipality's annual plan of operation for alien invasive plant removal as co-ordinated by the Community Services Department.

17.26 Socio-Cultural Issues

Adjacent and nearby property owners or property occupiers must be treated with respect and courtesy at all times.

The cultural lifestyles of the communities living in close proximity to the construction areas must be respected. In that regard, the provision of a walled/solid barrier on the northern perimeter of the development has been recommended in the BAR to accommodate local farm-worker beliefs on the adjacent property. Inspections to ensure the robustness of this barrier once it is constructed, must form part of the ECO and operation management inspections.

17.27 Additional Associated Installations

17.27.1 Construction of new access roads (if required)

In the event of the construction of a new access road to the site, the access route is pre-determined prior to the On Site Start-Up Meeting.

Discussions pertaining to the "Access Road Start-Up Meeting" include the following but not restricted to;

- EMPr and contents thereof
- Demarcation of the access route
- Containment of soil and rock from excavations
- Transit areas for excess excavation road materials
- Stockpile areas for sub-base and surface material
- Earthmoving machinery for specific tasks
- Mandatory Site Equipment
- Placing of on-site toilet facilities
- Specific requests from land-owners
- Dust Pollution
- Post construction erosion methods
- Site Specific agreements emanating from the Start-Up Meeting

18 MANAGEMENT SPECIFICATIONS (OPERATIONAL PHASE)

The most important part of the operational phase will be to ensure that the site is meticulously maintained and that the operations are carefully monitored. The applicant will remain overall responsible for the environmental performance of the site and must be aware of the legal requirements and obligations. The applicant must also be aware of the legal action that can be taken against him as a person with regards to negligence leading to environmental pollution.

This section of the Environmental Management Programme report (EMPr) is required to address the protection and ongoing management of the natural resources both on and off the site during the operational stages of the development to guide the Property Owner/Property Owners Association (POA) to manage activities on site on an ongoing basis in an environmentally sustainable manner. The overarching goal is to ensure that undue or reasonably avoidable impacts of the proposed development are avoided and that positive impacts of the development are enhanced.

The following points of action must be considered during the operational phase (maintenenace activities) to avoid any environmental impacts:

- All maintenance activities will consider the environment.
- The POA will ensure that any maintenance activities that are undertaken are carried out in line with the specifications and recommendations set out in section 17 of this document.
- Any incidents that have resulted in a large negative impact on the environment are to be reported to DEA&DP.

19 TERMS AND ABBREVIATIONS:

The following definitions and abbreviations are applied:

CMC	Cape Metropolitan Council
DEA	Department of Environmental Affairs and Tourism
DEA&DP	Department Environmental Affairs & Development Planning
DWA&F	Department of Water Affairs and Forestry
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme report, although the term Environmental Management *Plan* is often used interchangeable with *Programme*.
EMS	Environmental Management System
IEM	Integrated Environmental Management
***ECO**	Environmental Control Officer
***ESO**	Environmental Site Officer
ER	Engineer's Representative
HWC	Heritage Western Cape
I&AP	Interested & Affected Party
OSSM	On Site Start-Up Meeting
POA	Property Owners Association
SAHRA	South African Heritage Resources Agency

Environment means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Potentially hazardous substance is a substance, which, in the reasonable opinion of the Engineer, can have a deleterious (detrimental) effect on the environment.

Method Statement is a written submission by the Contractor to the Engineer or relevant responsible person such as the Project Leader, in response to the Specification, or a request by the Engineer/Project Leader, setting out the plant, materials, labour, method, responsible persons and timeframe that the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer/Project Leader when requesting the Method Statement, in such detail that the Engineer/Project Leader is enabled to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

The Method Statement shall cover applicable details with regard to:

- construction procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;

- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/non-compliance with the Specifications;
- any other information deemed necessary by the Engineer/Project Leader.

reasonable means, unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the client, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the Environmental Management Act (Act No 107,1998).

solid waste means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

contaminated water means water contaminated by the Contractor's activities, *e.g.* concrete water and runoff from plant/ personnel wash areas.

construction site means the area influenced and affected by the construction activities or under the control of the Contractor, often referred to as “the Site”.

contractor’s camp means the designated and suitably demarcated areas on the Site within which all site offices and staff facilities are situated and within which equipment will be stored, for instance, borrow areas, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

construction means the period of the project during which the actual works are carried out, deemed to include site establishment, site preparation, the works, maintenance period and decommissioning.

precautionary principle means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to undertake actions that will have minimum risk.

Applicant	The person/organisation (usually the holder of the Environmental Authorisation) with rights to undertake the development of the site.
Audit/Monitoring	Regular inspection and verification of construction activities for degree of compliance to the Environmental Management Programme.
Bund	Enclosure under/around a storage facility to contain any spillage – the storage capacity of the bung must be 120% of the total capacity of the possible spillage amount
Batch plant	Machinery used on site for the large-scale mixing and production of concrete or plaster and associated equipment and materials.
Construction phase	The construction phase period of a cellular communications Construction site is defined as from the commencement of site establishment up to and including the practical site handover.
Contract	An accepted offer to execute specified work within a stated time for a monetary reward. It takes the form of all the documents and drawings issued when tenders are invited (in which the nature and quantity of the work to be executed are set out), the schedules of which documents have been priced by the contractor for completion within a stated time, and the acceptance, in writing, of the Contractor’s price) (source: SABS 0120; 1986). OR The General Conditions of Contract and Special Conditions, Specifications, Drawings, Tender, written records of matters agreed after the submission of the Contractor’s tender, Letter of Acceptance and Agreement, together with other documents which the parties have agreed in writing shall form part of the Contract and such amendments or additions to the Contract as may be agreed in writing between the parties (source: GCC, 1990).
Contractor	The natural or juristic person or partnership whose tender has been accepted by, or on behalf of the Employer and where applicable, includes the Contractor’s heirs, executors, administrators, trustees, judicial managers or liquidators, as the case may be.
Declaration of Understanding	Form that is signed by all contractors involved in the construction works of their understanding and acceptance of the CEMPr and site-specific additions to the CEMPr.

Development site	The boundary and extent of development works and infrastructure.
Developer	The developer is the person/body responsible for the development of the project and could be the same as, or different to the Applicant.
Emergency	A situation requiring immediate action and where failure to implement appropriate actions timeously may result in environmental damage.
Engineer	A person who represents the Applicant and is responsible for the technical, environmental and contractual implementation of the works to be undertaken.

Engineer's Representative	The person appointed from time to time by the Engineer in terms of the General Conditions of Contract. The Engineer's Representative shall:
	• Observe the execution of the Works, examine and test materials and workmanship and receive from the Contractor such information as he shall reasonably require.
	• Have the authority:
	  o Given to him by any provisions of the Contract.
	  o Given to him by the Engineer.
	  o To deliver to the Contractor oral or written communications from the Engineer.
	  o To receive on behalf of the Engineer oral or written communications from the Contractor.
	The powers and authority of the Engineer's Representative would be subject to certain conditions.

Environmental Awareness Course	An environmental education course for the Contractors management staff and labour force which informs them of the requirements of the EMPr.
Environmental Completion Statement	A report document submitted to the relevant authority showing that the EMPr environmental controls were appropriately implemented on a project.
Environmental Completion Audit	Similar to an Environmental Completion Statement but it is more detailed and will contain detailed information regarding controls and their effectiveness. This document would be required for large projects normally where a professional environmental scientist was appointed as the ECO.
Environmental Management Programme:	A programme for managing potential impacts identified during the approval process. It could consist of one or more of the following components, depending on necessity dictated by the nature of the development: • Standard Environmental Specification • Detailed Environmental Specification • Guideline documents and tools for implementation by the different role players • The Environmental Education Course • Standard Revegetation Specification • Detailed Revegetation Specification As mentioned earlier, the term Environmental Management *Plan* is often used interchangeable with Environmental Management *Programme*, and for the purposes of this document will be assumed to have the same definition.
Environmental Authorisation	Environmental Authorisation issued by DEADP for the authorisation to commence construction under certain environmental compliances.
***ESO (Environmental Site Officer**	Designation is reserved for suitably qualified environmental site managers, who are to be appointed by the Engineer, and are mainly associated with large and complex developments.
***ECO (Environmental Control Officer)**	Designation is reserved for suitably qualified authority or officer acting on their behalf. The ECO is usually a professionally registered Environmental Scientist.
Environmental Specification	For the purposes of this study, this designation is reserved for the combination of the Standard Environmental Specifications and the Detailed Environmental Specifications.
ECO vs. ESO	ECO might also mean the ESO but the ESO does not mean the ECO. The ESO is responsible to the ECO
General Conditions of Contract	A document that sets out the general rights and obligations of the parties to a contract, on such matters as sureties, quality of work, program, supervision, insurance, co-operation with others, provision of plant, material and labour, the regulation of wages, samples, tests, examination, commencement and completion of work, penalties for delay, requirements for maintenance, methods of dealing with defects, variations, measurements and payments, and the settlement of disputes. In South Africa, the most widely accepted general conditions of contract for general civil engineering works is the SAICE General Conditions of Contract for Works of Civil Engineering Construction (sixth edition, 1990).
No Go Areas	Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to

	unauthorised persons. Authorisation must be obtained from the Engineer/Project Leader prior to entry.
Particular Specification	A specification that covers construction work involving a specialist type of operation that is not adequately covered in a Standardized Specification.
Project Specification	A specification that describes the Works in general terms (including the locality, the conditions on Site, the extent of the Contract, the construction programme, and the service facilities available and to be taken into consideration) and that may include clauses that amend or amplify or add to any requirement(s) of a standardized specification (or standard or particular specification) in the sequence in which the requirements and specifications occur in the contract documents.
Reference Group:	The funding body and major role-players (including the environmental authorities) who may resolve environmental disputes, which could arise between the different role-players on site.
Revegetation Specification	This designation is reserved for the combination of the Standard Revegetation Specifications and the Detailed Revegetation Specifications.
Site	The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.
Specification	A technical description of the standards of materials and workmanship that the Contractor is to use in the Works to be executed, the performance of the Works when completed and may include the manner in which payment is to be made. It is essential for the specifications to be clear, concise and to the point, and use should not be made of ambiguous terms or phraseology.
Standard Specification	An established or accepted model specification. In South Africa the most widely accepted standard specification for general civil engineering works is the set of SABS 1200 Standardized Specifications (refer to definition below), however, other Standard Specifications such as BS, AAWA and Standard Water Specifications are also used.
Standardized Specification	A specification that is published by the South African Bureau of Standards (SABS) and that so covers a particular class of civil engineering construction that the specification is generally applicable throughout the Republic of South Africa.
Top material	This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.
Works	The works to be executed in accordance with a contract.

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APPENDIX 1: START-UP REPORT

To be included after start-up meeting

APPENDIX 2: PENALTIES FOR NON-COMPLIANCE

PENALTIES FOR NON-COMPLIANCE

The contractors / sub-contractors must contact the ECO at any stage if unsure about any matter, or if a pollution incident occurs, or vegetation or animals are damaged.

ECO = Environmental Control Officer ESO= Environmental Site Officer

PHASE		
PRE-CONSTRUCTION PHASE	**Penalty for Non-compliance**	
	Bottom range	Top Range*
Construction area to be marked off before construction starts.		5000
The demarcated area must be maintained throughout the construction phase	500	1000
Site area for stock piling of building material must be demarcated	500	5000
Site area for storing of waste material must be demarcated	500	5000
Fencing off the construction site with mesh fencing of 1.8m, where necessary or other suitable material as agreed on by ECO	500	1000
Sitting of access road/s to be approved by ECO & demarcated with stakes before any construction starts (if applicable)		5000
Temporary route used for construction must be determined on site with ECO (if applicable)	1000	5000
Telecommunications & AC power routes must be determined with the ECO (if applicable)	1000	5000
Sensitive features that may be harmed must be clearly marked or demarcated.	500	2000
Vegetation that may not be removed must be clearly marked or demarcated.	500	5000
Contractor must make the Construction team and all sub-contractors aware of all environmental aspects that could lead to imposition of penalties	100	5000
Contractor to sign Declaration of understanding (DOU) before construction starts		5000
Contractor to assure that all subcontractors be informed and signed DOU	1000	5000
Method statements must be provided on request by the ECO. No work may commence until the Method Statement is accepted by the ECO and Engineer	1000	5000
CONSTRUCTION PHASE		
Information		
A copy of the EMPr & Record of Decision with all the conditions of approval and the relevant Method Statements must be at site at all times.	200	5000
Construction crew behaviour		
Construction crews may not overnight on site.	200	5000
No amplified music allowed on site	100	200
Construction crew must stay within the demarcated construction area. (Applicable in sensitive sites)	50	500
Eating of meals only allowed in demarcated area	50	500
No pets permitted on site		100
Driving, Parking & Storing of machinery and vehicles are only allowed inside demarcated areas and existing roads	1000	5000
Machinery may only be used on the road and may not disturb the vegetation on the sides of the road except if cleared by ECO. Machinery used must be carefully considered to limit environmental damage	500	5000
No vegetation other than that agreed on may be damaged - i.e. no access to areas outside construction area.	500	2000
No individual may cause unnecessary damage to flora and fauna on, around or near the site	20	2000
No littering allowed (incl. cigarette butts)	50	500

Excavations		
No topsoil may be removed or altered outside the demarcated area and/or which was not specified.		2000
Commercial sources of sand, rock and gravel to be cleared with ECO	200	5000
All surplus material to be taken off-site and be disposed of at approved site	500	5000
Toilets		
Sufficient ablution facilities must be provided		3000
Toilets to be secured to prevent them from falling or blowing over.	100	1000
They must be serviced regularly, (according to the manufacturer's instructions) and kept clean.	100	1000
Everybody on site must make use of ablution facilities	50	1000
Fire Prevention		
All mandatory fire fighting equipment (as specified at start-up) must be on site at all times	500	4000
Fire fighting equipment to be in good working order and serviced.	500	2000
No fires, including cooking fires, allowed on site	1000	5000
Concrete & Cement Activities		
Wash-down site of Ready Mix delivery trucks must be pre-determined prior to commencement of the activity.	500	5000
Concrete may only be mixed within the boundaries of the bunding area or demarcated area and/or where was agreed on by the ECO.	500	5000
All excess cement & concrete mixes to be contained on construction site and removed from site when necessary or requested by the ECO	200	5000
Any cement / concrete spillage to be cleaned up immediately.	500	5000
Mixing and storage areas must be appropriately located in demarcated area or as agreed upon at the on-site Start-Up Meeting	500	1000
Dust pollution control		
Ensure that loose building material is covered to prevent dust pollution	100	1000
Water run-off		
Contamination of water bodies, rivers, dams or wetlands must be prevented at all cost	500	5000
Rainwater from construction & building site/s must be channelled, contained & allowed to dry out, so as not to transport any pollutants into the surrounding area. Temporary trenches, straw stabilising, brush cutting can be used	500	5000
Waste control		
Sufficient refuse bins must be placed on site	500	2000
Refuse bins must be cleaned on a regular basis	100	1000
General litter / building refuse must be cleaned up on a regular basis from the site	500	3000
Cement-contaminated water; paint; oil; cement slurries etc. must be stored in watertight containers or as agreed with ECO	500	5000
Store all refuse & waste material in wind & animal proof containers	100	1000
Waste must be disposed of at an official waste deposit site on a regular basis.	500	5000
The absence of or inadequate drip trays or bunding facilities	500	5000
Failure to address oil/fuel leaks from on-site machinery	200	5000
Herbicides		
No indiscriminate use of herbicides or pesticides may be used. Where the use of herbicides, pesticides and/or other poisonous substances are to be used, a Method Statement in line with the Botanical Assessments and Table 1 of the Freshwater Rehabilitation Maintenance and Management Plan, must be in place prior to use and must be strictly adhered to.	200	2000
Construction road		
Road must be upgraded to prevent degradation and erosion of the road and surrounds.	500	5000
Power and Telecommunications supply		
Demarcate power supply route	500	5000
No vehicles to drive through vegetation unless authorised by ECO	500	5000

Storage of equipment may only take place at an area demarcated by the ECO.	500	5000
Working must be done in phases to prevent trampling of vegetation	N/A	
Use of generators and fuel powered equipment		
A watertight cover must be place under the power generator equipment to prevent accidental spillage of fuel & oil seeping into the soil.	500	5000
Drip tray must be able to take 120% of fuel on site	500	5000
All waste material generated from the use of this equipment must be contained and removed from the site	500	5000
Mobile fuel powered equipment must be well maintained and must not have any fuel or oil leaks.	200	5000
Soil Stabilisation		
Ensure that soil material for filling and stabilisation comes from a source that does not contain seeds alien to the area. The source must be cleared with the ECO.	100	2000
Rehabilitation		
Remove rocks and stones and stock pile in area recommended by ECO	500	5000
Remove all plants that can be used for rehabilitation and store on- or off-site in appropriate manner as agreed with ECO	200	5000
Removal of all old concrete and alien materials from site	500	5000
Site must be cleared of all waste and building material	500	5000

*(Large scale / repeated offence)

APPENDIX 3: DECLARATION OF UNDERSTANDING

CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK FACILITY

DECLARATION OF UNDERSTANDING

I, _____

Representing _____

Declare that the conditions of the authorisation were brought under my attention and that I have read and understood the contents of the Environmental Management Plan (which includes all documents as per the Environmental Authorisation).

SITE: _____

Environmental Authorisation ref: _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site.

I also undertake to inform all persons under my supervision of such specifications and contents of the documents.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

APPENDIX 4: INFORMATION ON METHOD STATEMENTS

INFORMATION ON METHOD STATEMENTS

Method Statements are to be completed by the person undertaking the work (i.e. the Contractor). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

The Method Statement can only be implemented once approved by the ECO.

The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The ECO will use the Method Statement to audit compliance by the Contractor with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the ECO denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement MUST contain sufficient information and detail to enable the ECO to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works.

THE TIME TAKEN TO PROVIDE A THOROUGH, DETAILED METHOD STATEMENT IS TIME WELL SPENT. INSUFFICIENT DETAIL WILL RESULT IN DELAYS TO THE WORKS WHILE THE METHOD STATEMENT IS REWRITTEN TO THE ER'S AND ESO'S SATISFACTION. The page overleaf provides a *pro forma* method statement sheet, which needs to be completed for each activity requiring a method statement in terms of the EMPr.

APPENDIX 5: EXAMPLE OF METHOD STATEMENT

METHOD STATEMENT

CONTRACT:……..……... **DATE:**……..

PROPOSED ACTIVITY (give title of method statement and reference number):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):
Note: please attach extra pages if more space is required

DECLARATIONS

1) ENVIRONMENTAL CONSULTANT AND/OR ENVIRONMENTAL CONTROL OFFICER
The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____
(Signed) (Print name)

_____ _____
(Signed) (Print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS
I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement

_____ _____
(Signed) (Print name)

Dated: _____

3) APPLICANT/REPRESENTATIVE
The works described in this Method Statement are approved.

_____ _____ _____
(Signed) (Print name) (Designation)

Dated: _____

4) APPROVING AUTHORITY
The works described in this Method Statement are approved.

_____ _____ _____
(Signed) (Print name) (Designation)

Dated: _____

APPENDIX 6: ENVIRONMENTAL INCIDENT REPORT FORMAT

ENVIRONMENTAL INCIDENT REPORT

No. _____

PROJECT NAME			
PROJECT LOCATION			
SITE AGENT			
DATE OF INCIDENT		**TIME**	

BRIEF DESCRIPTION AND CAUSE OF INCIDENT:

WHAT IMMEDIATE ACTIONS / CONTROL MEASURES WERE TAKEN:

WHAT CORRECTIVE ACTIONS WERE TAKEN TO ENSURE NO REPEATS OF THE INCIDENT:

ECO/ESO RESPONSE TO INCIDENT AND RECOMMENDATIONS:

IS THIS INCIDENT A: ☐ **FIRST OFFENCE** ☐ **ECOND OFFENCE** ☐ **THIRD OFFENCE**

SIGNATURE OF SITE AGENT: _____ **DATE** _____

SIGNATURE OF ECO/ESO _____ **DATE** _____

REMEMBER TO BE FACTUAL WHEN DESCRIBING THE INCIDENT

APPENDIX 7: ENVIRONMENTAL COMPLAINTS REGISTER

COMPLAINTS REGISTER FORM

NO.	DATE	NAME OF COMPLAINANT	CONTACT NO.	NATURE OF COMPLAINT

APPENDIX 8: EXAMPLE OF METHOD STATEMENT REGISTER

EMENT REGISTER	SITE AGENT:		PROJECT NAME:	
	CONTRACTOR:		PROJECT LOCATION:	

STATEMENT ACTIVITY CE	DATE CREATED	DATE RECEIVED	CREATED BY	ACCEPTED / REJECTED	D APP
on					
f vegetation and topsoil removal					
storage facilities					
on camp and site offices					
ge					
facilities					
nd haul roads					
site equipment					
nagement/control					
ixing and batching areas					
on vehicle maintenance					
ol					
ntrol					
rol					
gical and heritage finds					
ion					

APPENDIX 9: CONTACTOR'S ENVIRONMENTAL WEEKLY CHECKLIST

CONTACTOR/S REPRESENTATIVE:
ENVIRONMENTAL WEEKLY CHECKLIST

SITE: _____

PHASE OF WORK AND % OF COMPLETION:_____

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
• How many workers are on site		
• All new personnel on site are aware of the contents of the EMPr and have been through the environmental awareness course.		
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Sufficient and appropriate fire fighting equipment is visible and readily available.		
• Waste control and removal system is being maintained.		
• Refuse bins in place and maintained		
• Toilets are in place and clean		
• Demarcation and other fences are being maintained.		
• What machinery are on site		
• Drip trays are being utilised were there is a risk of incidental spillage		
• Bunds/ drip trays are being emptied on a regular basis (especially after rain).		
• No leakages (oil & fuel) are visible from construction vehicles		
• No go areas, remaining natural features and trees have not been damaged.		
• Dust control measures (if necessary) are in place and are effectively controlling dust.		
• Noise Control measures (if necessary) is in place and is working effectively.		
• Erosion control measures (if necessary) are in place and are effective in controlling erosion. (Access road, site areas etc.)		
• Stockpiles are located within the boundary of the site, do not exceed 2 m in height and are protected from erosion.		

Completed by:…… Sign:……..…….. Date:……

To be submitted at the end of each week to the Environmental Control Officer (ECO)

Received by:

Environmental Site/Control Officer: ……. Sign:……..……..

Date:……..……

APPENDIX 10: BASIC RULES OF CONDUCT

BASIC RULES OF CONDUCT

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid.
NOTE: **ALL new site personnel must** attend an environmental awareness presentation. Please inform your foreman or manager if you have not attended such a presentation or contact the ESO.

DO:

- USE THE TOILET FACILITIES PROVIDED – REPORT DIRTY OR FULL FACILITIES
- CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBISH AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.
- REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.
- DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)
- CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.
- USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.
- PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.
- ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY "HOT WORK" IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.
- REPORT ANY INJURY OF AN ANIMAL.
- DRIVE ON DESIGNATED ROUTES ONLY.
- PREVENT EXCESSIVE DUST AND NOISE.

DO NOT:

- REMOVE OR DAMAGE VEGETATION WITHOUT DIRECT INSTRUCTION.
- MAKE ANY FIRES.
- INJURE, TRAP, FEED OR HARM ANY ANIMALS – this includes birds, frogs, snakes, lizards etc.
- ENTER ANY FENCED OFF OR MARKED AREA.
- ALLOW CEMENT OR CEMENT BAGS TO BLOW AROUND.
- SPEED OR DRIVE RECKLESSLY
- ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM
- SWIM IN THE DAM.
- LITTER OR LEAVE FOOD LAYING AROUND

Notes:
1. Must any animals such as tortoises, chameleons or snakes be encountered then do not harm them. The ESO or ER must be contacted to remove these safely. The harming of any animal will result in disciplinary action.
2. Construction and heavy machine operators must be particularly sensitive to staying within access routes and prevention of unnecessary damage. Dust and noise is also of particular concern. Ensure that vehicles and machinery do not leak fuel or oils. Refuelling or maintenance must be done within the maintenance camp area only.
3. Alien plant clearing and control work teams must be closely supervised/monitored by the Municipal Community Services Department.

BASIESE GEDRAGSKODES

Die volgende lys vertenwoordige die Moets en Moenies vir omgewingsbewustheid wat alle deelnemers aan hierdie projek in ag moet neem tydens die uitvoer van hul take. Hierdie lys is nie volledig nie en dien slegs as ‘n vinnige verwysing.
NOTA: **ALLE nuwe terreinpersoneel moet** ‘n aanbieding ten opsigte van omgewingsbewustheid bywoon. Indien u nog nie so ‘n aanbieding bygewoon het nie, lig asseblief u voorman of bestuurder in of kontak die Omgewings Terreinbeampte.

MOETS:

- GEBRUIK DIE BESKIKBARE TOILET-GERIEWE – RAPPORTEER VUIL OF VOL GERIEWE.
- MAAK U WERKPLEK SKOON VAN ROMMEL OF BOUROMMEL AAN DIE EINDE VAN ELKE DAG – gebruik beskikbare vullisdromme en verseker dat rommel nie rondwaai nie.
- RAPPORTEER ALLE BRANDSTOF- EN OLIE STORTINGS ONMIDDELLIK – STOP VERDERE STORTING.
- WEES VERSIGTIG MET DIE WEGDOEN VAN SIGARETTE EN VUURHOUTJIES. (rommelstrooi is ‘n oortreding.)
- BEPERK WERKAKTIWITEITE EN DIE STOOR VAN TOERUSTING TOT DIE ONMIDDELLIKE WERKAREA.
- GEBRUIK VEILIGHEIDSTOERUSTING EN VOLDOEN AAN ALLE VEILIGHEIDS-MAATREËLS.
- VOORKOM BESOEDELING VAN STROME EN WATERBANE
- VERSEKER DAT ‘N BRANDBLUSSER IN WERKENDE TOESTAND BYDERHAND IS WANNEER “WARM” WERK VERRIG WORD bv. Sweis, wegslyp, gasny, ens.
- RAPPORTEER BESEERDE DIERE.
- RY SLEGS OP AANGEWESE ROETES.
- VOORKOM OORMATIGE STOF EN GERAAS.

MOENIE:

- PLANTEGROEI VERWYDER OF BESKADIG SONDER DIREKTE INSTRUKSIE NIE.
- ENIGE VURE MAAK NIE.
- ENIGE DIERE DOOD, BESEER, VANG OF VOER NIE, insluitende voëls, paddas, slange, akkedisse, ens.
- ENIGE OMHEINDE OF AFGESPERDE AREAS BINNETREE NIE.
- SEMENT OF SEMENTSAKKE LAAT RONDWAAI NIE.
- VINNIG OF ROEKELOOS BESTUUR NIE.
- ENIGE ROMMEL, AFVAL, OLIE OR ENIGE VREEMDE MATERIAAL IN STROME LAAT BELAND NIE.
- IN DIE DAM SWEM NIE.
- ROMMELSTROOI OF KOS LAAT RONDLÊ NIE.

Notas:
1. Indien enige diere soos skilpaaie, verkleurmannetjies of slange teëgekom word, moet hulle nie beseer of dood nie. Kontak die OTB of RI om hulle veilig te verwyder. Die besering van diere sal lei tot dissiplinëre optrede.
2. Operateurs van konstruksie- en swaar masjiene moet veral versigtig wees om binne toegangsroetes te bly en om enige onnodige skade te voorkom. Verseker dat voertuie en masjiene nie olie of brandstof lek nie. Brandstofaanvulling en voertuigonderhoud mag slegs binne die onderhoudsarea gedoen word.
3. Streng toesig moet gehou word oor indringerplantbeheerspanne.

EZIPPHAMBILI EKUNYANZELEKILEYO UKUBA ZENZIWE

Zonke ezi zinto zilandelayo zizinto ekufuneka zenziwe nekufuneka zingenziwanga. Wonke umntu ofikayo kufuncka afundiswe ngemigaqo kupala. Needa yazisa iforman yakho ikuba awukhange uye kufundiswa.

IZINTO EMAZENZIWE

- SEBENZISA IZINDLU ZANGASESE, YAZISA XA KUKHO UMONAKALO.
- ZAMA UKUCOCA APHO UBUSEBENZA KHONA.
- SEBENZISA IMIGQOMO YENKUKUMA UNGAYEKI IPHAPHTIEKE.
- YAZISA XA UBONA IOIL ECHITHSKALAYO OKANYE IPETROL.
- CIMA LOZOLI CIGARETTE XA UGQIBIBILE UKUTSHAYA
- ZONKE IZIXHOBO USEBENZA ZIBUYISELE APHO ZIHLAKA KHONA XA UCGIBILE APHO ZIHLALA KHONA XA UGQIBILE UKUZISEBENZISA.
- ZISEBENZISE IZIKHUSELIXA UZINKIWE.
- SUKUGALELA IZINTO EMLANJENI.
- MASIBEKHO ISICIMA MLILO XAUSEBENZA NGOMLILO.
- YAZISA MSINYANE XA UBONE ISILWANYANA EZONZAKELEYO.
- XAUQHUBA ISITHUTHI HAMBA ENDLELENI QHA UNGAFATHULINJE.
- NAPHINA ZAMAUNGENZI THULI OKANYE INGXOLO XA USEBENZA.

EMAZINGENZIWA

- SUKUSUSA NESIPHINA ISITYALO UNGAKHANGE UXELELWE
- SUKWENZA MLILO NOKUBA SEKUBANDA
- AMAGQARA UKUBULALA IZILWANYANA NOKUZIFIDA AKUVUMELEKANGA
- SUKUNGENA XA KUVALIWE NGAPHANDLE KWE MVUME
- INGXOWA ZESAMENTE MAZINCEDWE ZINGALAHLWA NJE
- SUKUQHUBA NGESANTYA ESIPHAKAMILEYO
- SUKUGALELE NAYIPHI INTO PHAYA EMLANJENI
- SUKUQUBHA EDAMENI Q OQOSHA YONK INKUKUMA

APPENDIX 11: ECO/ESO REPORT/CHECKLIST

ECO / ESO SITE VISIT CHECKLIST / REPORT

PROJECT NAME: DATE:
PROJECT & PHASE: LOCATION:

ENVIRONMENTAL COMPLIANCE RATING SCORECARD:

Compliance Rating 0/3/4/5/6 **0 = Poor / 3 = Average / 4 = Good / 5 = Very Good / 6 = Excellent**				
Item No.	**Description/ Environmental Aspect**	**Environmental Comments and Audit Findings**	**Score**	**Environmental Rating**
1	**DEMARCATION**	**METHOD STATEMENT** **Boundaries of "no go" areas, construction sites, offices, temporary storage areas as well as labourer's facilities must be demarcated (EMPr and ECO requirements) and maintained for the length of the construction period.**		
2		**NO-GO AREAS/PROTECTION OF FAUNA & FLORA** **Identified "No-Go Areas", remaining natural veld and indigenous- or significant trees are protected features and must be demarcated for protection from construction damage (including secondary impact).** **All areas outside of the demarcated construction sites and access roads to be regarded as NO-GO areas unless otherwise agreed upon with the client and ECO.** **All flora identified to be rescued must be removed and placed/planted in an area specifically allocated and taken care of until re-used in a pre-approved way.** **Identified areas with significant vegetation must be protected as NO-GO areas.**		
3	**CLEARING OF VEGETATION & TOPSOIL REMOVAL**	**METHOD STATEMENT** **Before any construction or earthworks, topsoil must be stripped to at least a depth of 300mm (or more as per the botanical specialist's and /or ECO recommendation and with the site engineers approval) and stockpiled for rehabilitation/ landscaping.** **Stockpiles:** **must be protected (may not blow or wash away or gets compacted) and must be stored separately from other soils).** **may not be moved further than 50m or mixed with any other soil.** **must be convex and should not exceed 2m in height.** **In addition:** **Cleared areas must be stabilized.** **Burning or burying of cleared vegetation is prohibited, but may be used for mulch or slope stabilisation on site.**		
4	**STOCKPILING**	**METHOD STATEMENT** **Top- and subsoil's from trenches must be located within site boundaries, stabilised and may not exceed 2m in height.**		
5	**TEMPORARY STORAGE FACILITIES**	**METHOD STATEMENT** **Must be demarcated, organised, neat and tidy and of acceptable standards.**		
6	**CONSTRUCTION CAMP & SITE OFFICES**	**METHOD STATEMENT** **Must be demarcated, organised and free of day-to-day litter**		

		(maintaining good housekeeping standards).		
7	**FUEL STORAGE**	**Fuel storage areas must be situated within the demarcated construction camp site (or an area approved by the ECO).** **Bunds must be built (EMPr and ECO requirements) around larger fuel storage areas (accidental spillages).** **Drip trays must be used (in accordance with EMPr) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.**		
8	**LABOURER'S FACILITIES**	**METHOD STATEMENT** **Facilities must be of acceptable standards suitably demarcated, well maintained, neat and tidy and with adequate ablution facilities.**		
9	**ENTRANCE AND HAUL ROADS**	**METHOD STATEMENT** **Only approved entrance and haul roads may be used (existing roads and infrastructure). No new roads or parking areas may be developed without written approval from the ECO.**		
10	**MANDATORY SITE EQUIPMENT**	**METHOD STATEMENT** **Mandatory site equipment must be in place, well maintained and in accordance with EMPr and ECO requirements.** **Sufficient refuse bins must be on site (well placed and conspicuous) and must be cleaned regularly.** **Fire extinguishers must be readily available, maintained and functional.** **Drip trays must be used (in accordance with EMPr) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.** **Toilets and sanitation facilities must be kept clean neat and hygienic (toilet paper must be available).**		
11	**WASTE CONTROL**	**METHOD STATEMENT** **The contractor is expected to control all construction related waste material and general litter on actual construction sites and its immediate surroundings.** **Waste management must be in accordance with the EMPr, of acceptable standards, with regular removal of general waste, hazardous waste as well as construction waste (e.g. concrete waste and spoil).**		
12	**CEMENT MIXING & BATCHING AREAS**	**METHOD STATEMENT** **Mixing areas must be approved by the ECO, suitably demarcated and may not result in pollution.** **Polluted cement water may only be released into sedimentation ponds.** **Sedimentation ponds must be maintained and cleaned regularly (and reinstated after use).**		
13	**CONSTRUCTION VEHICLE MAINTENANCE**	**METHOD STATEMENT** **Construction vehicles must be in good working order and well maintained to prevent oil and fuel leakages and to reduce noise levels.** **Maintenance areas must be approved by ECO.** **Refuelling must be done in accordance with the EMPr, using drip trays.**		
14	**HEAVY EARTHMOVING EQUIPMENT**	**Construction vehicles and equipment may only operate <u>within</u> the demarcated site boundaries (and approved access roads), especially heavy earthmoving vehicles.**		
15	**DUST CONTROL**	**METHOD STATEMENT**		

		Adequate control measures must be in place to prevent dust pollution as a result of construction activities (especially with regard to entrances/exits, haul roads and exposed surfaces). **Areas of concern must be watered regularly during construction AND periods of strong winds, BUT must take water saving into account.**		
16	**EROSION CONTROL**	**METHOD STATEMENT** **Erosion resulting from works must be controlled .** **Temporary and permanent drainage works must be maintained.** **Erosion damage and damage in drainage courses must be reinstated.**		
17	**NOISE CONTROL**	**METHOD STATEMENT** **Effective noise control measures must be in place and acceptable working hours must be kept (deviations must be approved by the ECO).**		
18	**ENVIRONMENTAL CONDUCT**	**Environmental conduct of construction personnel must be acceptable (e.g. no burning or burying of refuse; no littering and no cement bags or other construction waste material lying around).**		
19	**ARCHAEOLOGICAL & HERITAGE FINDS**	**METHOD STATEMENT** **Should any archaeological or heritage remains be exposed during excavations or any activity on site, these must immediately reported to The site agent/engineer, the ECO HWC or SAHRA.**		
20	**REHABILITATION**	**METHOD STATEMENT** **On completion of the project or phase, all areas impacted by the construction activities must be reinstated and/or rehabilitated to the satisfaction of the ECO with emphasis on the following:** **Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **Labourer's facilities must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **All construction site areas must be rehabilitated or reinstated to the satisfaction of the ECO.** **All temporary fencing and demarcation must be removed and the areas reinstated to the satisfaction of the ECO.** **Temporary storage areas must be rehabilitated or reinstated to the satisfaction of the ECO.** **All remaining construction material must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **Any additional disturbed areas must be rehabilitated or reinstated to the satisfaction of the ECO.**		
21	**ADDITIONAL METHOD STATEMENTS**	**Method statements must be submitted and approved before commencement of the works and must be available at the site offices.**		
22	**ENVIRONMENTAL CHECKLIST**	**The contractor must ensure that the weekly environmental checklist is completed at the end of each week and it must be available at the site offices.**		
23	**SPOT FINES & PENALTIES**	**Spot fines and penalties must be recorded and documented by the ECO (in accordance with the EMPr).**		
24	**FIXED POINT PHOTOS**	**Photographs must be taken by the ECO, Site Engineer and or Site Manager, prior to, during and immediately after construction as visual reference. These photographs must be stored with other records relating to the EMPr.**		
			Total Score	**out of /100** **= %**

ECO OBSERVATION SHEET

+

ECO: _____

ECO SIGNATURE: _____

DATE: _____

APPENDIX 12: MAPS AND DRAWINGS

APPENDIX 13: ANY OTHER RELEVANT DOCUMENTS

APPENDIX 13.1 - APPROVED ENVIRONMENTAL AUTHORISATION (and approved amendments)

APPENDIX 13.2 - APPROVED WATER USE LICENCE

APPENDIX 13.3 - APPROVED FRESHWATER REHABILITATION, MAINTENANCE AND MANAGEMENT PLAN

APPENDIX 13.4 – BOTANICAL ASSESSMENTS

STELLENBOSCH
STELLENBOSCH • PNIEL • FRANSCHHOEK
MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

35. BASIC ASSESMENT REPORT

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

BASIC ASSESSMENT REPORT
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED)

October 2017

PROJECT TITLE

Proposed Calcutta Public Cemetery and Memorial Park on Farm Calcutta No. 29, Stellenbosch Municipality

NOVEMBER 2018

REPORT TYPE CATEGORY	REPORT REFERENCE NUMBER	DATE OF REPORT
Pre-Application Basic Assessment Report (if applicable)[1]	16/3/3/6/7/1/B4/45/1288/17	November 2018
Draft Basic Assessment Report[2]	16/3/3/6/7/1/B4/45/1288/17	January 2019
Revised Draft Basic Assessment Report[2]	16/3/3/6/7/1/B4/45/1288/17	April 2019
Final Basic Assessment Report[3] ~~or, if applicable Revised Basic Assessment Report[4]~~ (strikethrough what is not applicable)	16/3/3/1/B4/45/1030/19	May 2019

Notes:

1. In terms of Regulation 40(3) potential or registered interested and affected parties, including the Competent Authority, may be provided with an opportunity to comment on the Basic Assessment Report prior to submission of the application but must again be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority. The Basic Assessment Report released for comment prior to submission of the application is referred to as the "Pre-Application Basic Assessment Report". The Basic Assessment Report made available for comment after submission of the application is referred to as the "Draft Basic Assessment Report". The Basic Assessment Report together with all the comments received on the report which is submitted to the Competent Authority for decision-making is referred to as the "Final Basic Assessment Report".

2. In terms of Regulation 19(1)(b) if significant changes have been made or significant new information has been added to the Draft Basic Assessment Report , which changes or information was not contained in the Draft Basic Assessment Report consulted on during the initial public participation process, then a Final Basic Assessment Report will not be submitted, but rather a "Revised Basic Assessment Report", which must be subjected to another public participation process of at least 30 days, must be submitted to the Competent Authority together with all the comments received.

DEPARTMENTAL REFERENCE NUMBER(S)

Pre-application reference number:	16/3/3/6/7/1/B4/45/1288/17
File reference number (EIA):	16/3/3/1/B4/45/1030/19
NEAS reference number (EIA):	
File reference number (Waste):	
NEAS reference number (Waste):	
File reference number (Air Quality):	
NEAS reference number (Air Quality):	
File reference number (Other):	
NEAS reference number (Other):	

CONTENT AND GENERAL REQUIREMENTS

Note that:

1. The content of the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended), any subsequent Circulars, and guidelines must be taken into account when completing this Basic Assessment Report Form.
2. This Basic Assessment Report is the standard report format which, in terms of Regulation 16(3) of the EIA Regulations, 2014 (as amended) must be used in all instances when preparing a Basic Assessment Report for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")and the EIA Regulations, 2014 (as amended) and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("NEM:WA"), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA") when the Western Cape Government: Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority/Licensing Authority.
3. This report form is current as of October 2017. It is the responsibility of the Applicant/ Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the report form have been released by the Department. Visit the Department's website at **http://www.westerncape.gov.za/eadp** to check for the latest version of this checklist.
4. The required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The tables may be expanded where necessary.
5. The use of "not applicable" in the report must be done with circumspection. All applicable sections of this report form must be completed. Where "not applicable" is used, this may result in the refusal of the application.
6. While the different sections of the report form only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.
7. Unless protected by law, all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for believing that the information is protected.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This Report must be submitted to the Department and the contact details for doing so are provided below.
10. Where this Department is also identified as the Licencing Authority to decide applications under NEM:WA or NEM:AQA, the submission of the Report must also be made as follows, for-
    - Waste management licence applications, this report must also (*i.e.*, another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office.
    - Atmospheric emissions licence applications, this report must also be (*i.e.*, another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (tel: 021 483 2798 and fax: 021 483 3254) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE		**GEORGE REGIONAL OFFICE**
REGION 1 **(City of Cape Town & West Coast District)**	**REGION 2** **(Cape Winelands District & Overberg District)**	**REGION 3** **(Central Karoo District & Eden District)**
Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel.: (021) 483-5829 Fax: (021) 483-4372	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 2) at: Tel.: (021) 483-5842 Fax: (021) 483-3633	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel.: (044) 805-8600 Fax: (044) 805 8650

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ACRONYMS USED IN THIS BASIC ASSESSMENT REPORT AND APPENDICES:

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government: Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process

DETAILS OF THE APPLICANT

Applicant / Organisation / Organ of State:	Stellenbosch Municipality		
Contact person:	Mr. Piet Smit (Manager: Property Management, for Municipal Manager)		
Postal address:	P. O. Box 17, Stellenbosch		
Telephone:	(021) 808 8750	Postal Code:	7599
Cellular:	084 506 5065	Fax:	(021) 887 6167
E-mail:	Piet.Smit@stellenbosch.gov.za		

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

Name of the EAP organisation:	EnviroAfrica CC		
Person who compiled this Report:	Vivienne Thomson		
EAP Reg. No.:	A.I.A.I. (S.A.) Membership Number: 219 (Bernard de Witt, Owner, EnviroAfrica)		
Contact Person (if not author):	Bernard De Witt (or Vivienne Thomson)		
Postal address:	P. O. Box 5367		
Telephone:	(021) 851 1616	Postal Code:	7135
Cellular:	082 464 2874 / 082 448 9991	Fax:	(086) 512 0154
E-mail:	vivienne@enviroafrica.co.za bernard@enviroafrica.co.za		
EAP Qualifications:	Vivienne Thomson: BSc, Zoology (UCT); EIA short course (PU), Environmental Law (PU), Advanced Environmental Law (Mandela Institute School of Law, Wits), ISO 14001 Lead Auditors Course (WTH Management and Training), Root Cause Analysis Technique (IRCA), Environmental Performance Measurement Workshop (African Centre for Energy and Environment), Basic Principles of Ecological Rehabilitation and Mine Closure (PU), Member: National Association for Clean Air; South African Coal Ash Association Bernard de Witt: BSc Forestry (SU); BA (Hons) Public Administration (Stellenbosch); National Diploma in Parks and Recreation Management; EIA Short course (UCT); ISO 14001 Auditors course (SABS); Member: AIAI-SA		

Please provide details of the lead EAP, including details on the expertise of the lead EAP responsible for the Basic Assessment process. Also attach his/her Curriculum Vitae to this BAR.

Vivienne Thomson:

Vivienne holds a BSc in Zoology from the University of Cape Town (1995) and has over twenty years industry experience in the construction, power generation and mining sectors. She has completed an ISO 14001 Lead Auditors course, as well as several environmental short courses and has guest lectured for the MSc in Environmental Science Environmental Impact Assessment (EIA) course at the University of the Witwatersrand.

Vivienne is a member of the National Association for Clean Air (NACA) and has served as NACA National Council Member. She is a member of the South African Coal Ash Association and an affiliate of the Institute of Innovators and Inventors. She was also a member of the Committee of Interested Parties which acted as an independent, advisory body to ensure impartiality of Pricewaterhouse Coopers' Certification Body in their governance and sustainability division.

Since 2004, Vivienne has been involved in environmental consulting with experience in EIAs, establishing and implementing ISO 14001 EMSs, contract management, legal compliance evaluations, as well as developing, implementing and assessing environmental management plans and monitoring programmes.

Bernard De Witt:

After qualifying with a BSc in Forestry and a BA (Hons) in Public Administration at the University of Stellenbosch, Bernard joined the Department of Forestry as an Indigenous Forest Planner in 1983, going on to become Manager of the Table Mountain Reserve with the Cape Town Council.

He then joined Cape Nature Conservation (CNC) and headed its Conservation Planning Section before taking up the position of District Manager of the Boland area (including the Hottentots Holland and Kogelberg).

As a Regional Ecologist, he co-ordinated managerial and scientific inputs into Provincial Nature Reserves in the Boland, Overberg and West Coast regions.

For the last four years of his employment he assessed and evaluated development applications, from an environmental perspective, on behalf of CNC (now DEA&DP). Since he left DEA&DP 20 years ago, Bernard has been involved in environmental consulting in the private sector as director of EnviroAfrica.

EXECUTIVE SUMMARY OF THE BASIC ASSESSMENT REPORT:

Public cemeteries in the Stellenbosch Municipal area are nearing maximum occupation. The shortage of suitable land for the development of cemeteries has long been one of the major challenges facing many South African municipalities.

Despite the availability of various alternatives, conventional burial and funeral practises are still the most common and preferred, thus, funeral and burial services offered by local municipalities cannot be decontextualised from the cultural and religious customs that communities follow (SALGA, 2016).

The strategy employed by the Applicant, Stellenbosch Municipality, was to expand local cemeteries where possible, as an interim measure, while establishing new cemeteries in at least two of the three Municipal regions identified viz. Northern Stellenbosch, Eastern Stellenbosch (Franshoek Valley) and Southern Stellenbosch, as per the map in Figure 1 below. This allows easier access to the various communities in these regions.

To address the increasing predicament of a lack of available regional burial space, Stellenbosch Municipality appointed CK Rumboll and Partners to facilitate the identification and various licencing processes required for the establishment of at least two regional cemeteries.

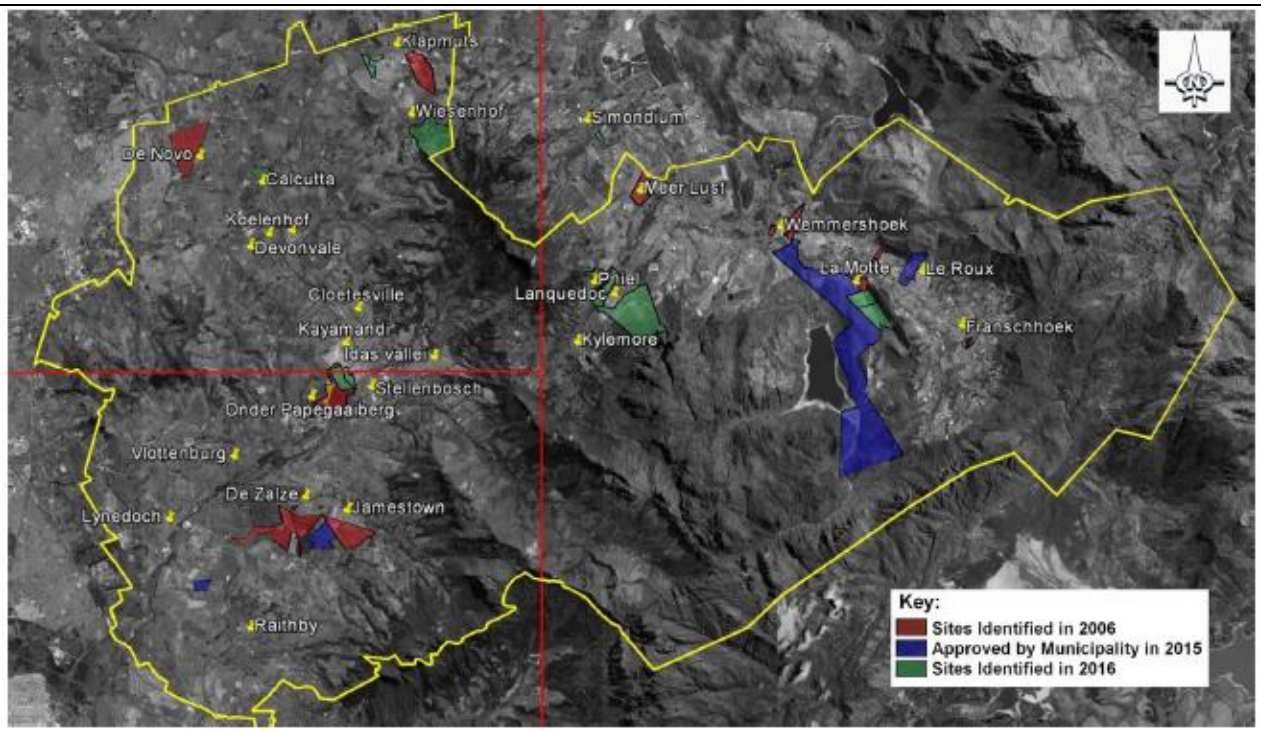


Figure 1: Stellenbosch Municipality jurisdiction outlined in yellow and divided into three regional areas *viz.* Northern Stellenbosch (top left corner), Eastern Stellenbosch (right half) and Southern Stellenbosch (top left corner)

In the period from 2015 to end of 2017, utilising, as a starting point, the Cemetery Feasibility Study, Stellenbosch Municipal Area, Consultative Draft 1 Report (2006) as prepared by Dennis Moss Partnership and attached as Appendix N, as well as the nine potential sites approved by the Stellenbosch Municipal Council at a February 2015 Council meeting, over fifty potential proposed development sites were identified and investigated.

By mid-2017, through a systematic assessment of various criteria as detailed in Appendices L (*First Report, Final October 2016: Identification and Acquisition of Authorisations and Approvals for the Establishment of One or More Regional Cemeteries for Stellenbosch Municipality*) and Appendix M (*Motivation to obtain Stellenbosch Council's endorsement of Regional Cemetery Sites in fulfilment of tender B/SM No. 17/16: Acquisition of Authorisations and Approvals for the establishment of one or more regional cemeteries for Stellenbosch Municipality*), as well as various precluding factors detailed in these Appendices, five potential sites for the entire Municipal area were identified as best suited for the proposed development of regional public cemeteries and memorial park (as per section 4 of Appendix M).

These five sites comprised two from the nine potential sites already approved by the Municipality in 2015, as well as three additional sites. Municipal endorsement for the three additional sites was obtained in August 2017 (partial minutes attached as Appendix K). These five potential sites were further evaluated in terms of their suitability, albeit to varying degrees, to service the three relevant Municipal regions identified above. Besides regional suitability, and the criteria mentioned in Appendices L and M, two of the critical factors in determining whether land was viable for the proposed development or to be used as a possible alternative development site, were ownership of the land and whether the land had already been earmarked for some other infrastructural or development project.

Note: Although some of the preliminary reports attached in the appendices list various sites in a comparison, the purpose of these reports was to refine the list of potential sites and possible alternatives per Municipal region, so that applications to develop a cemetery and memorial park in at least two municipal regions could be made.

It must further be noted that although the Dennis Moss Feasibility Study was undertaken in 2006, it was conducted in order to prevent a future shortage of burial space. The then future shortage is now a reality and has been exacerbated by the increase in population numbers in the Stellenbosch region together with the utilisation of existing burial spaces. The criteria for site suitability and By-law framework mentioned in the 2006 study, are still relevant today which is why the report was used as a starting point for the 2016/2017 feasibility assessments undertaken (as per Appendices L and M).

Providing the amenity of a cemetery and memorial park in two regions in the Municipal area provides a more accessible service to local communities. This FBAR focuses only on the **Northern** Municipal region:

The proposed Calcutta public cemetery and memorial park aims to promote a novel concept to that of traditional public cemeteries: The memorial park concept is well suited to Stellenbosch Municipality's desire to keep the region 'green' and promote and areas.

Currently the Calcutta site is degraded and heavily infested with alien *Eucalyptus* species and some *Acacia saligna*. Clearance of the property for development will facilitate the reintroduction of indigenous vegetation in landscaped areas. Besides allocating areas for traditional burial methods and a remembrance wall or columbarium, a garden of remembrance will be established where the ashes of a loved one may be buried at the foot of a tree or shrub indigenous to the area. The Garden of remembrance will follow a landscaped plan and patrons may purchase a tree and plaque to serve as a living memory of their deceased loved one. This also serves as greener approach to the establishment of burial grounds, while promoting an alternate, less land-demanding options for burial and/or remembrance.

The seasonal stream that runs through the western portion of the proposed development site will be rehabilitated and besides the initial restoration and rehabilitation, two wooden pedestrian bridges, a grass block 'drift' low river crossing to the south, and portions of the boundary fence, no other development will take place within the setback required for watercourse/wetland conservation.

To the west of the stream, it is proposed that burial free areas which will form of the 'public park' area of the memorial park be established. Conservation and awareness regarding the heritage resources of the site *viz.* outspans, will be undertaken in this region (utilising information boards/pedestals).

Several walkways and seating benches within the public cemetery and memorial park will be made available particularly, along the south-western section of the property where educational information boards regarding the unique "outspan" heritage of the region will be highlighted to help preserve this part of the region's history – a modern analogy of the resting places the historic 'outspans' provided.

It is proposed that the memorial park be an area where critical areas of biodiversity and heritage are rehabilitated and preserved, as much as possible as a part of the 'park' aspect of the cemetery/memorial park. In additional, indigenous vegetation reintroduction will be promoted through the landscaping and memorial park and garden of remembrance areas within the proposed public cemetery and memorial park.

Community or social utilisation of the memorial park other than for burial/remembrance purposes is advocated through the rehabilitation and preservation of the "Outspan" heritage significance of particularly the south-western section of the proposed development site, as well as the rehabilitation of the seasonal stream and re-introduction of indigenous riparian habitat within the set back of the currently degraded seasonal stream that runs through the western/south western portion of the property.

Proposed Development Rationale:

It is estimated that most of the existing municipal/public cemeteries in the region have less than 5% of their original capacity left to provide surrounding communities with this important service.

Proposed Development Description:

The Applicant, Stellenbosch Municipality, is the owner of the land proposed for this development. The land, remainder of Calcutta Farm No. 29 is currently zoned for Agricultural 1.

The current proposed site is strategically positioned to meet this community need since it services the northern region of the Municipal area and will be relatively convenient for local communities to use.

Legislated Environmental Requirements

The National Environmental Management Act No. 107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority, based on the findings of an Environmental Impact Assessment.

The NEMA is a national act, which is enforced by the national Department of Environmental Affairs (DEA). In the Western Cape, these national powers have been delegated to the Western Cape Department of Environmental Affairs & Development Planning (DEA&DP).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities:

Government Notice R327 (Listing Notice 1):

Activity No. 12: "***Development*** *within a watercourse/32m from a watercourse.*"

Activity No. 19: "The **infilling** or **depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from** a **watercourse**;
(a) will occur behind a development setback;
(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies."

Activity No. 23: "*The* ***development*** *of* ***cemeteries*** *of 2500 square metres or more in size.*"

Activity No. 24: "*The* ***development*** *of;*
(i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or
(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;
but excluding;

(a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or
(b) roads where the entire road falls within an urban area."

Government Notice R324 (Listing Notice 3):

Activity No. 4: *"The **development** of a **road** wider than 4 metres with a reserve less than 13.5 metres."*

(Possibly) Activity No. 12: *"The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan."*

It should be noted that the exclusion of Government Notice R327 (Listing Notice 1), Activity 27 has been confirmed by the botanical specialist. It is the opinion of the botanical specialist that any possible dormant indigenous floral species which may surface after alien tree/plantation removal would not be in excess of 1ha.

Site Description

The property is approximately 39.64 ha and a maximum of 30 ha is proposed for the development of the public cemetery /memorial park (which includes any buffer/setback areas).

The site co-ordinates are **33º 51' 13.55"S, 18° 48' 35.96"E**.

Please refer to **Appendix A** for the locality map, as well as **Appendix B** (site plans) and **Appendix C** for photographs of the site.

Civil Services

Storm water will be transported from hardened surfaces (roofs of buildings and roads) to a storm water attenutation system or retention pond where storm water can be polished and used for irrigation of gardens/trees/park areas.

Storm water from outside the actual developed cemetery footprint within the proposed site i.e. purely from park areas, will be incorporated into the storm water reticulation system leading to the attenuation facility.

The option of providing permeable paving will be investigated in order to transport storm water from the development. It is envisaged that any overflow (however unlikely) from the attenuation facility could be taken to the ephemeral stream on the western boundary.

The provision of a cut off trench facility on the north and eastern boundaries will be investigated during the design phase.

Surface storm water from the areas earmarked for graves and informal areas will be taken via swales or rock lines channels to the storm water reticulation system in order to feed into the attenuation facility.

Subsurface drainage will be provided to minimise the potential negative effects of a possible high-water table in winter months. Soil tests and profiling of the terrain have been performed to establish

the exact condition of the in-situ material and water table. The design of pavement structures and other amenities will take cognizance of the prevailing geotechnical conditions.

Electrical Services

It is further proposed that while electricity may be provided by Eskom, wherever possible, electricity supply should be supplied through off-grid electricity resources (e.g. solar panels). The terrain for the development is within the Eskom Provision Area and the option of connecting to Eskom power will be investigated. It is however envisaged that a solar and/or wind turbine system be provided in order to supply electricity to the development.

During winter months sunlight might necessitate the introduction of a wind turbine to provide electricity. The cost of this installation will be compared to the rates from Eskom as a supplier and installation costs. The position of the closest Eskom connecting point will contribute to additional costs, if connecting electrical lines need to be established. During the design phase of the electrical distribution network, both options will be investigated.

Water

There is a Municipal potable water pipeline that runs along the R304 adjacent to the proposed site. A single point tie in will be made to this line for potable water only. Refer to Appendix E5 of BAR (Communication from Stellenbosch Municipality).

Non-potable water for toilets and irrigation will be obtained from the on-site water treatment package plant and reed-bed polishing system i.e. will be recycled. It is proposed that a borehole/s be provided to supply additional (non-potable) water to the development. Initial investigations indicated poor quality of water and the yield of 1 l/s could necessitate more than one borehole. Further study is required to determine the position/s of the borehole/s. During this phase of the project, the detail of water provision will be finalised.

From the boreholes, water will be pumped to the offices and toilets via an underground pipe system. It is foreseen that a network of Ø 110 / Ø 160 mm main feed lines will be provide for the development. Analysis during the design stage, will however verify the required sizes of the water lines.

Sewage

Sewage during construction will be managed via a portable toilet contract with regular servicing.

Sewage during operation will be managed via an on-site sewage/effluent treatment plant. There is currently no existing sewer network services on the terrain or any municipal reticulation system close to the proposed site for development. It is therefore proposed that a package plant be constructed on site which can treat the effluent from the offices/toilets. It is furthermore proposed that the sewer treatment occurs upstream of the attenuation facility/retention pond which can then contribute to the capacity to irrigate the green areas.

A reticulation underground system will be provided, leading from wet areas to the treatment plan, via sewer pipes and manholes. It is foreseen that a network of 160 mm piping will be adequate with smaller 110mm individual connections to different buildings.

Waste Management

Any solid waste from the activity during construction and operation will be removed to the nearest registered Municipal landfill site, or appropriately registered waste disposal site.

Access

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at ±km50.58 will be required. The Final Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"
It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualing of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: ±12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Access control to the proposed development will most likely be facilitated via fencing/palisade fencing and a lockable gate with a security guard on duty. This also provides a local employment opportunity.

Conclusion

Based on the specialist reports in Appendix G of the BAR, the proposed Calcutta Public Cemetery and Memorial Park will provide a much-needed service to the regional community whilst also facilitating the rehabilitation and protection of the property in terms of biodiversity and existing water courses.

In addition, the cultural/heritage aspects of the property which have been somewhat neglected and lost, will be rehabilitated and preserved through the proposed development.

The aesthetic impact of the proposed public cemetery and memorial park will improve since the current property is infested with alien plants and is often used as a dumping ground.

The following specialist assessment further highlights the environmental benefits of the proposed development, as indicated below:

i. **Biodiversity** – the site currently has a low biodiversity significance but can be rehabilitated provided the requirements as detailed in the botanical statement/scan reports (attached as Appendices G1 and G2) are taken into account.

ii. **Freshwate**r – the proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, as long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated and the freshwater rehabilitation, maintenance and management plan (FRMMP) attached as Appendix G5, are adhered to.

iii. **Geohydrology** – the majority of the site is classified as having a 'low/medium' groundwater vulnerability rating. The southern portion of the site has been classified as 'medium', grading into a 'very high' venerability classification.

iv. **Geotechnical** – provided the cemetery is sited as recommended in the geotechnical report, the site is considered satisfactory for development of a cemetery.

v. **Heritage** – The potential impact of the proposed cemetery site on the old outspan is significant in that it is a wholesale change of land use from woodlot to cemetery. However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone. Were the outspan site and surrounds carefully conserved and landscaped, this would retain a memory of its core purpose and allow for local associations to be retained of the site's outspan purpose and character thus mitigating associative impact and retaining landmark value.

a. Archaeology – Archaeological visibility is extremely low due to dense vegetation cover, but indications are that the receiving environment is not a sensitive archaeological landscape.

b. Palaeontological – No fossil remains were recorded on Farm Calcutta RE/29 during the short palaeontological site visit. It is concluded that the palaeontological sensitivity of the Memorial Park study area is very low.

c. Visual – The proposed development will have a moderate impact on the landscape causing some change to the visual environment. The development's visual impact has site-related to local extent, long term duration, medium intensity, definite probability, and medium significance on the landscape.

vi. **Socio-economic** – socio-economic costs and benefits were listed in section five of the report. Eleven potentially positive impacts (job and skill levels increase; the creation of a social space; continuation of social networks; equality and exclusivity; employment equity of vulnerable groups; use of social amenities; positive change in the sense of place; preservation of social history; access to leisure opportunities; access to natural resources; sales and GGP) versus three (crime/neglect; individual and family changes; dust and noise levels) potentially negative impacts were listed related to the proposed development.

According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations).

Refer to Appendix D for Biodiversity sensitivity maps.

A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.

The proposed development will positively impact and improve the ESA, CBA condition, as well as eliminate the dense infestation of alien trees on the property.

In addition to preserving and promoting the introduction of indigenous vegetation in the area, the proposed public cemetery and memorial park will preserve the cultural heritage of the regions Outspan site and provide employment for local individuals, while meeting the need for the essential service of a contextualised public cemetery and memorial park.

Considering all the information, it is not envisaged that this will have a significant overall negative impact on the environment.

It is therefore recommended that this application be authorised with the necessary conditions of approval as described throughout this BAR.

SECTION A: PROJECT INFORMATION

1. ACTIVITY LOCATION

Location of all proposed sites:	Calcutta Farm No. 29, Stellenbosch Municipality, Western Cape
Farm / Erf name(s) and number(s) (including Portions thereof) for each proposed site:	Calcutta Farm No. 29, Stellenbosch Municipality, Western Cape
Property size(s) in m^2 for each proposed site:	396 400 m^2 (39.64 ha)
Development footprint size(s) in m^2:	300 000 m^2 (30 ha)
Surveyor General (SG) 21 digit code for each proposed site:	C06700000000002900000

2. PROJECT DESCRIPTION

(a) Is the project a new development? If "NO", explain:

YES ✓	NO

(b) Provide a detailed description of the scope of the proposed development (project).

Proposed Development Rationale:

Public cemeteries in the Stellenbosch Municipal area are nearing maximum occupation. It is estimated that most of the existing municipal/public cemeteries in the region have less than 5% of their original capacity left to provide surrounding communities with this important service. The shortage of suitable land for the development of cemeteries has long been one of the major challenges facing many South African municipalities.

Despite the availability of various alternatives, conventional burial and funeral practises are still the most common and preferred, thus, funeral and burial services offered by local municipalities cannot be decontextualised from the cultural and religious customs that communities follow (SALGA, 2016).

The strategy employed by the Applicant, Stellenbosch Municipality, was to expand local cemeteries where possible, as an interim measure, while establishing new cemeteries in at least two of the three Municipal regions identified i.e. Northern Stellenbosch, Eastern Stellenbosch (Franshoek Valley) and Southern Stellenbosch. This would allow for easier access by the various communities in these regions to the facilities.

To address the increasing predicament of a lack of available regional burial space, Stellenbosch Municipality appointed CK Rumboll and Partners to facilitate the identification and various licencing processes required for the establishment of at least two regional cemeteries.

In the period from 2015 to end 2017, utilising, as a starting point, the Cemetery Feasibility Study, Stellenbosch Municipal Area, Consultative Draft 1 Report (2006) as prepared by Dennis Moss Partnership and attached as Appendix N to this BAR, as well as the nine potential sites approved by the Stellenbosch Municipal Council at a February 2015 Council meeting, over fifty potential proposed development sites were identified and investigated.

By mid-2017, through a systematic assessment of various criteria as detailed in Appendix L (*First Report, Final October 2016: Identification and Acquisition of Authorisations and Approvals for the Establishment of One or More Regional Cemeteries for Stellenbosch Municipality*) and Appendix M

(*Motivation to obtain Stellenbosch Council's endorsement of Regional Cemetery Sites in fulfilment of tender B/SM No. 17/16: Acquisition of Authorisations and Approvals for the establishment of one or more regional cemeteries for Stellenbosch Municipality*), five potential sites for the entire Municipal area were identified as best suited for the proposed development of regional public cemeteries and memorial parks.

These five sites comprised two from the nine potential sites already approved by the Municipality in 2015 and three additional sites. Municipal endorsement for the three additional sites was obtained in April 2017 as indicated under point 7.3.2 of the 8th Council Meeting of the Council of Stellenbosch Municipality (partial minutes attached as Appendix K).

The five potential sites were further evaluated by a team of specialists in terms of their suitability, albeit to varying degrees, to service the three relevant Municipal regions identified above. Besides regional suitability, and the criteria mentioned in Appendices L and M, two of the critical factors in determining whether land was viable for the proposed development or to be used as a possible alternative development site, were ownership of the land and whether the land had already been earmarked for some other infrastructural or development project.

Although some of the preliminary reports by the different specialist members on the project team, list various sites in a comparison, the purpose of these reports was to refine the list of potential sites as well as possible alternative sites per Municipal region, leaving at least two municipal regions with potential sites and associated alternative sites.

In the case of the proposed Calcutta public cemetery and memorial park, after a thorough process of assessing several sites in the Northern Stellenbosch region, two sites (*viz.* De Novo and Calcutta) would remain as the preferred site and an alternative site for proposal in the NEMA authorisation applicant process (besides the no-go alternative).

However, due to land ownership issues (the land is not owned by Stellenbosch Municipality and transfer of ownership from the state to the local municipality was not forthcoming), as well as several competing land uses at a national/state and local level which were already allocated to the property, and the fact that the biodiversity rating placed it as the most sensitive of the five shortlisted sites, De Novo was precluded from the shortlist of potential sites/alternative sites.

Therefore, in the Northern Stellenbosch Municipal region, only one alternative remained to provide a regional cemetery and memorial park for the area – Calcutta. This BAR focuses on the Northern Municipal region only.

Proposed Development Description:

The Applicant, Stellenbosch Municipality, is the owner of the land proposed for this development. The land, remainder of Calcutta Farm No. 29 is currently zoned for Agricultural 1.

The proposed Calcutta public cemetery and memorial park aims to promote a novel concept to that of traditional public cemeteries: The memorial park concept is well suited to Stellenbosch Municipality's desire to keep the region's 'green'/garden status.

Currently the Calcutta site is degraded and heavily infested with alien *Eucalyptus* species and some *Acacia saligna*. Clearance of the property for development will facilitate the reintroduction of indigenous vegetation in landscaped areas. Besides allocating areas for traditional burial methods and a remembrance wall or columbarium, a garden of remembrance will be established where

the ashes of a loved one may be buried at the foot of a tree or shrub indigenous to the area. The Garden of remembrance will follow a landscaped plan and patrons may purchase a tree and plaque to serve as a living memory of their deceased loved one. This also serves as greener approach to the establishment of burial grounds, while promoting an alternate, less land demanding options for burial and/or remembrance.

The seasonal stream that runs through the western portion of the proposed development site will be rehabilitated and besides the initial restoration and rehabilitation and an access bridge across the watercourse, no other development will take place within the 32m setback required for watercourse conservation.

To the west of the stream, it is proposed that burial free areas which will form of the 'public park' area of the memorial park be established. Conservation and awareness regarding the plant life , history of the site and the heritage resources of the site will be undertaken in this region. Several walkways and seating benches within the public cemetery and memorial park will be made available particularly along the south-western section of the property where educational information boards/pedestals highlighting the unique "outspan" heritage of the region will be highlighted to help preserve this part of the region's history – a modern analogy of the resting places the historic 'outspans' provided.

It is proposed that the memorial park be an area where critical areas of biodiversity and heritage are rehabilitated and preserved, as much as possible as a part of the 'park' aspect of the cemetery/memorial park. In additional, indigenous vegetation reintroduction will be promoted through the landscaping and memorial park and garden of remembrance areas within the proposed public cemetery and memorial park.

Community or social utilisation of the memorial park other than for burial/remembrance purposes is advocated through the rehabilitation and preservation of the "Outspan" heritage significance of particularly the south-western section of the proposed development site, as well as the rehabilitation of the seasonal stream and re-introduction of indigenous riparian habitat within the set back of the currently degraded seasonal stream that runs through the western/south western portion of the property.

The current proposed site is strategically positioned to meet this community need since it services the northern region of the Municipal area and will be relatively convenient for local communities to use.

Legislated Environmental Requirements

The National Environmental Management Act No. 107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority, based on the findings of an Environmental Impact Assessment.

The NEMA is a national act, which is enforced by the national Department of Environmental Affairs (DEA). In the Western Cape, these national powers have been delegated to the Western Cape Department of Environmental Affairs & Development Planning (DEA&DP).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities:

Government Notice R327 (Listing Notice 1):

Activity No. 12: "***Development*** *within a watercourse/32m from a watercourse.*"

Activity No. 19: "The **infilling** or **depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from** a **watercourse**;
(a) will occur behind a development setback;
(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies."

Activity No. 23: "*The **development** of **cemeteries** of 2500 square metres or more in size.*"

Activity No. 24: "*The **development** of;*
(i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or
(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;
but excluding;
(a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or
(b) roads where the entire road falls within an urban area."

Government Notice R324 (Listing Notice 3):

Activity No. 4: "*The **development** of a **road** wider than 4 metres with a reserve less than 13.5 metres.*"
Activity No. 12: "*The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.*"

Site Description

The property is approximately 39.64 ha and a maximum of 30 ha is proposed for the development of the public cemetery and memorial park (which includes any buffer/setback areas).

An ephemeral stream runs almost parallel through most of the western boundary portion of the site. The stream is very degraded and will be rehabilitated and restored as part of the development. Associated setbacks and wetland areas will be accommodated as part of the 'park' aspect of the development. It is proposed that one or two walkways/bridges will cross the stream.

The site co-ordinates are **33° 51' 13.55"S, 18° 48' 35.96"E**.

Please refer to **Appendix A** for the locality map, as well as **Appendix B** (site plans) and **Appendix C** for photographs of the site.

Civil Services

Storm water will be transported from hardened surfaces (roofs of buildings and roads) to a storm water attenutation system or retention pond where storm water can be polished and used for irrigation of gardens/trees/park areas.

Storm water from outside the actual developed cemetery footprint within the proposed site i.e. purely from park areas, will be incorporated into the storm water reticulation system leading to the attenuation facility.

The option of providing permeable paving will be investigated in order to transport storm water from the development. It is envisaged that any overflow (however unlikely) from the attenuation facility could be taken to the ephemeral stream on the western boundary.

The provision of a cut off trench facility on the north and eastern boundaries will be investigated during the design phase.

Surface storm water from the areas earmarked for graves and informal areas will be taken via swales or rock lines channels to the storm water reticulation system in order to feed into the attenuation facility.

Subsurface drainage will be provided to minimise the potential negative effects of a possible high-water table in winter months. Soil tests and profiling of the terrain have been performed to establish the exact condition of the in-situ material and water table. The design of pavement structures and other amenities will take cognizance of the prevailing geotechnical conditions.

Electrical Services

It is further proposed that while electricity may be provided by Eskom, wherever possible, electricity supply should be supplied through off-grid electricity resources (e.g. solar panels). The terrain for the development is within the Eskom Provision Area and the option of connecting to Eskom power will be investigated. It is however envisaged that a solar and/or wind turbine system be provided in order to supply electricity to the development.

During winter months sunlight might necessitate the introduction of a wind turbine to provide electricity. The cost of this installation will be compared to the rates from Eskom as a supplier and installation costs. The position of the closest Eskom connecting point will contribute to additional costs, if connecting electrical lines need to be established. During the design phase of the electrical distribution network, both options will be investigated.

Water

There is a Municipal potable water pipeline that runs along the R304 adjacent to the proposed site. A single point tie in will be made to this line for potable water only. Refer to Appendix E5 of BAR (Communication from Stellenbosch Municipality).

Non-potable water for toilets and irrigation will be obtained from the on-site water treatment package plant and reed-bed polishing system i.e. will be recycled. It is proposed that a borehole/s be provided to supply additional (non-potable) water to the development. Initial investigations indicated poor quality of water and the yield of 1 l/s could necessitate more than one borehole. Further study is required to determine the position/s of the borehole/s. During this phase of the project, the detail of water provision will be finalised.

From the boreholes, water will be pumped to the offices and toilets via an underground pipe system. It is foreseen that a network of Ø 110 / Ø 160 mm main feed lines will be provide for the development. Analysis during the design stage, will however verify the required sizes of the water lines.

Sewage

Sewage during construction will be managed via a portable toilet contract with regular servicing.

Sewage during operation will be managed via an on-site sewage/effluent treatment plant. There is currently no existing sewer network services on the terrain or any municipal reticulation system close to the proposed site for development. It is therefore prosed that a package plant be constructed on site which can treat the effluent from the offices/toilets. It is furthermore proposed

that the sewer treatment occurs upstream of the attenuation facility/retention pond which can then contribute to the capacity to irrigate the green areas.

A reticulation underground system will be provided, leading from wet areas to the treatment plan, via sewer pipes and manholes. It is foreseen that a network of 160 mm piping will be adequate with smaller 110mm individual connections to different buildings.

Waste Management

Any solid waste from the activity during construction and operation will be removed to the nearest registered Municipal landfill site, or appropriately registered waste disposal site.

Access

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at ±km50.58 will be required. The Final Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"
It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualling of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: ±12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Access control to the proposed development will most likely be facilitated via fencing/palisade fencing and a lockable gate with a security guard on duty. This also provides a local employment opportunity.

Conclusion

Based on the specialist reports in Appendix G of the BAR, the proposed Calcutta Public Cemetery and Memorial Park will provide a much-needed service to the regional community whilst also facilitating the rehabilitation and protection of the property in terms of biodiversity and existing water courses.

In addition, the cultural/heritage aspects of the property which have been somewhat neglected and lost, will be rehabilitated and preserved through the proposed development.

The aesthetic impact of the proposed public cemetery and memorial park will improve since the current property is infested with alien plants and is often used as a dumping ground.

The following specialist assessment further highlights the environmental benefits of the proposed development, as indicated below:

i. **Biodiversity** – the site currently has a low biodiversity significance but can be rehabilitated provided the requirements as detailed in the botanical statement/scan reports (attached as Appendices G1 and G2) are taken into account.

ii. **Freshwate**r – the proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, as long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated and the freshwater rehabilitation, maintenance and management plan (FRMMP) attached as Appendix G5, are adhered to.

iii. **Geohydrology** – the majority of the site is classified as having a 'low/medium' groundwater vulnerability rating. The southern portion of the site has been classified as 'medium', grading into a 'very high' venerability classification.

iv. **Geotechnical** – provided the cemetery is sited as recommended in the geotechnical report, the site is considered satisfactory for development of a cemetery.

v. **Heritage** – The potential impact of the proposed cemetery site on the old outspan is significant in that it is a wholesale change of land use from woodlot to cemetery. However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone. Were the outspan site and surrounds carefully conserved and landscaped, this would retain a memory of its core purpose and allow for local associations to be retained of the site's outspan purpose and character thus mitigating associative impact and retaining landmark value.

a. Archaeology – Archaeological visibility is extremely low due to dense vegetation cover, but indications are that the receiving environment is not a sensitive archaeological landscape.

b. Palaeontological – No fossil remains were recorded on Farm Calcutta RE/29 during the short palaeontological site visit. It is concluded that the palaeontological sensitivity of the Memorial Park study area is very low.

c. Visual – The proposed development will have a moderate impact on the landscape causing some change to the visual environment. The development's visual impact has site-related to local extent, long term duration, medium intensity, definite probability, and medium significance on the landscape.

vi. **Socio-economic** – socio-economic costs and benefits were listed in section five of the report. Eleven potentially positive impacts (job and skill levels increase; the creation of a social space; continuation of social networks; equality and exclusivity; employment equity of vulnerable groups; use of social amenities; positive change in the sense of place; preservation of social history; access to leisure opportunities; access to natural resources; sales and GGP) versus three (crime/neglect; individual and family changes; dust and noise levels) potentially negative impacts were listed related to the proposed development.

According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations).

Refer to Appendix D for Biodiversity sensitivity maps.

A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.

The proposed development will positively impact and improve the ESA, CBA condition, as well as eliminate the dense infestation of alien trees on the property.

In addition to preserving and promoting the introduction of indigenous vegetation in the area, the proposed public cemetery and memorial park will preserve the cultural heritage of the regions Outspan site and provide employment for local individuals, while meeting the need for the essential service of a contextualised public cemetery and memorial park.

Please note: This description must relate to the listed and specified activities in paragraph (d) below.

(c) Please indicate the following periods that are recommended for inclusion in the environmental authorisation:

(i) the period within which commencement must occur,	Uncertain - it is hoped during 2020/2021 due to the rapid depletion of current burial

		space together with the need to obtain a water use licence. Should an environmental authorisation (EA) be granted, seven calendar days' notice, in writing, will be given to the Competent Authority before commencement of construction activities.
(ii)	the period for which the environmental authorisation should be granted and the date by which the activity must have been concluded, where the environmental authorisation does not include operational aspects;	The EA for construction must be valid for five years from the date of issue which ideally will be 2019/2020 and the development/construction must be concluded within five years from the date of commencement of the first listed activity.
(iii)	the period that should be granted for the non-operational aspects of the environmental authorisation; and	A period of 10 years should be granted for the development of the non-operational aspects of the EA.
(iv)	the period that should be granted for the operational aspects of the environmental authorisation.	At least 30 years

Please note: The Department must specify the abovementioned periods, where applicable, in an environmental authorisation. In terms of the period within which commencement must occur, the period must not exceed 10 years and must not be extended beyond such 10 year period, unless the process to amend the environmental authorisation contemplated in regulation 32 is followed.

(d) List all the listed activities triggered and being applied for.

Please note: The onus is on the applicant to ensure that all the applicable listed activities are applied for and assessed as part of the EIA process. Please refer to paragraph (b) above.

EIA Regulations Listing Notices 1 and 3 of 2014 (as amended):

Listed Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 327)**	**Describe the portion of the development that relates to the applicable listed activity as per the project description.**	**Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.**
12	*"**Development** within a watercourse/32m from a watercourse."*	An ephemeral stream runs almost parallel through most of the western boundary portion of the site. The stream is very degraded and will be rehabilitated and restored as part of the development. Associated setbacks and wetland areas will be accommodated as part of the 'park' aspect of the development. It is proposed that one or two	Development and operational

		walkways/bridges and a grass block 'drift'/low water crossing will cross the stream.	
19	The **infilling** or **depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from** a **watercourse**; (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies."	An ephemeral stream runs almost parallel through most of the western boundary portion of the site. The stream is very degraded and will be rehabilitated and restored as part of the development. Associated setbacks and wetland areas will be accommodated as part of the 'park' aspect of the development. It is proposed that one or two walkways/bridges and a grass block 'drift'/low water crossing will cross the stream. What appears as the northern most portion of the ephemeral stream is actually an artificial/dug drainage line (indicated in Appendices G3 to G5). This portion will be restored filled in and rehabilitated to its natural condition. Stormwater will also be managed through swales and a retention/detention pond and landscaping, freshwater rehabilitation will require the depositing or excavation of more than 10m^3 from a watercourse.	Development and operational
23	*"The **development** of **cemeteries** of 2500 square metres or more in size."*	The total property is approximately 39.64ha and a maximum of 30ha is proposed for the development of the public cemetery and memorial park (which includes any buffer/setback areas).	Development and operational
24	*"The **development** of; (i) a road for which an environmental authorisation was obtained for the route determination*	A new access road and/or slip-road will need to be constructed from the existing public road to the development. Access to the proposed	Development

	in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or *(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;* *but excluding;* *(a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or* *(b) roads where the entire road falls within an urban area."*	development site will be from a dedicated, two way road and will eventually be a circle or signaled intersection as per the diagram provided in the *Proposed Establishment of a Memorial Park (Cemeteries), Stellenbosch Municipality, Road Access Possibilities Report, attached as* Appendix G11 (Final Traffic Study).	
Listed Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 324)**	**Describe the portion of the development that relates to the applicable listed activity as per the project description.**	**Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.**
4 (possibly)	*"The **development** of a **road** wider than 4 metres with a reserve less than 13.5 metres."*	A new access road and/or slip-road will need to be constructed from the existing public road to the development.	Development - *to be confirmed after Spring botanical scan (once alien trees cleared from site)*
12	*"The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan."*	Clearance of proposed development site after verifying (as per CapeNature's comment captured in Appendices G1 and G2 (Biodiversity Assessments)	Development and operational

Waste management activities in terms of the NEM: WA (GN No. 921):

Category A Listed Activity No(s):	Describe the relevant Category A waste management activity in writing as per GN No. 921	Describe the portion of the development that relates to the applicable listed activity as per the project description
N/A		

Note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I.**

Atmospheric emission activities in terms of the NEM: AQA (GN No. 893):

Listed Activity No(s):	Describe the relevant atmospheric emission activity in writing as per GN No. 893	Describe the portion of the development that relates to the applicable listed activity as per the project description.
N/A		

(e) Provide details of all components (including associated structures and infrastructure) of the proposed development and attach diagrams (*e.g.,* architectural drawings or perspectives, engineering drawings, process flowcharts, *etc*.).

Buildings Provide brief description below:	YES ✓	NO
Proposed associated infrastructure includes a bridge/s to cross the watercourse and access the site, structured pathways around and within the site, an entrance wall and perimeter fencing, parking, a memorial wall, possible columbarium, offices, storage room, ablutions (septic tank), possible borehole and solar panel.		
Infrastructure (*e.g.,* roads, power and water supply/ storage) Provide brief description below:	YES ✓	NO
Proposed associated infrastructure includes access roads leading to and within the site, and possible intersection and/or slip way to facilitate access to and from the R 304. It is proposed that a renewable, 'off-grid' solution to electricity be utilised. The small amount of electricity required for lighting could be supplied from solar panels. Water will either be supplied by the local Municipality, or sourced from site (i.e. possible borehole groundwater extraction).		
Processing activities (*e.g.,* manufacturing, storage, distribution) Provide brief description below:	YES	NO ✓
Storage facilities for raw materials and products (*e.g.,* volume and substances to be stored) Provide brief description below:	YES	NO ✓
Storage and treatment facilities for effluent, wastewater or sewage: Provide brief description below:	YES ✓	NO
Septic tanks will be utilised for ablutions – these may need to be serviced by the Municipality from time to time. Storm water runoff from the site will be directed towards the watercourse on or directly north-east of the proposed site.		
Storage and treatment of solid waste Provide brief description below:	YES	NO ✓
Facilities associated with the release of emissions or pollution. Provide brief description below:	YES	NO ✓
Other activities (*e.g.,* water abstraction activities, crop planting activities) – Provide brief description below:	YES ✓	NO
Possible groundwater extraction for water supply to the site for amenities and maintenance of the park areas.		

3. PHYSICAL SIZE OF THE PROPOSED DEVELOPMENT

(a) Property size(s): Indicate the size of all the properties (cadastral units) on which the development proposal is to be undertaken	396 400	m^2
(b) Size of the facility: Indicate the size of the facility where the development proposal is to be undertaken	300 000	m^2
(c) Development footprint: Indicate the area that will be physically altered as a result of undertaking any development proposal (*i.e.,* the physical size of the development together with all its associated structures and infrastructure)	300 400	m^2
(d) Size of the activity: Indicate the physical size (footprint) of the development proposal	300 000	m^2
(e) For linear development proposals: Indicate the length (L) and width (W) of the development proposal	(L) N/A	m
	(W) N/A	m
(f) For storage facilities: Indicate the volume of the storage facility	N/A	m^3
(g) For sewage/effluent treatment facilities: Indicate the volume of the facility (Note: the maximum design capacity must be indicated	N/A	m^3

4. SITE ACCESS

(a) Is there an existing access road? (Informal road from R304 to site)	YES ✓	NO

(b) If no, what is the distance in (m) over which a new access road will be built?	m

(c) Describe the type of access road planned:

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at ±km50.58 will be required.

The FInal Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"

It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualling of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: ±12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Please note: The position of the proposed access road must be indicated on the site plan.

5. DESCRIPTION OF THE PROPERTY(IES) ON WHICH THE LISTED ACTIVITY(IES) ARE TO BE UNDERTAKEN AND THE LOCATION OF THE LISTED ACTIVITY(IES) ON THE PROPERTY

5.1 Provide a description of the property on which the listed activity(ies) is/are to be undertaken and the location of the listed activity(ies) on the property, as well as of all alternative properties and locations (duplicate section below as required).

There are no alternative development properties to service this region of the Municipality although alternative site layout plans have been investigated and three possible alternatives, besides the no-go alternative, are presented in this report. Alternative 1 is the best practical environmental

and aesthetically pleasing option i.e. the preferred option with alternative 3 being the least preferred layout plan.

	Latitude (S): (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec.)		
Coordinates of all the proposed activities on the property or properties (sites):	33°	51'	13.55"	18°	48'	35.96"
	°	‘	“	°	‘	“
	°	‘	“	°	‘	“
	°	‘	“	°	‘	“

Note: For land where the property has not been defined, the coordinates of the area within which the development is proposed must be provided in an addendum to this report.

5.2 Provide a description of the area where the aquatic or ocean-based activity(ies) is/are to be undertaken and the location of the activity(ies) and alternative sites (if applicable).

Rehabilitation and restoration of the watercourse on the proposed site.

	Latitude (S): (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
Coordinates of the boundary /perimeter of all proposed aquatic or ocean-based activities (sites) (if applicable):	33°	51'	13.55"	18°	48'	35.96"
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"

5.3 For a linear development proposal, please provide a description and coordinates of the corridor in which the proposed development will be undertaken (if applicable).

N/A

For linear activities:	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
• Starting point of the activity	°	‘	“	°	‘	“
• Middle point of the activity	°	‘	“	°	‘	“
• End point of the activity	°	‘	“	°	‘	“

Note: For linear development proposals longer than 1000m, please provide an addendum with co-ordinates taken every 250m along the route. All important waypoints must be indicated and the GIS shape file provided digitally.

5.4 Provide a location map (see below) as **Appendix A** to this report that shows the location of the proposed development and associated structures and infrastructure on the property; as well as a detailed site development plan / site map (see below) as **Appendix B** to this report; and if applicable, all alternative properties and locations. The GIS shape files (.shp) for maps / site development plans must be included in the electronic copy of the report submitted to the competent authority.

Locality Map:	The scale of the locality map must be at least 1:50 000. For linear development proposals of more than 25 kilometres, a smaller scale *e.g.*, 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • a linear scale; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (to indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection). For an ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94; WGS84 co-ordinate system.

Site Plan:	

	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan. • The position of each element of the application as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the development must be indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands - including the 32 meter set back line from the edge of the bank of a river/stream/wetland; o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable; o Ridges; o Cultural and historical features; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas. The GIS shape file for the site development plan(s) must be submitted digitally.

6. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF THE RECEIVING ENVIRONMENT

Site/Area Description

For linear development proposals (pipelines, *etc*.) as well as development proposals that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area that is covered by each copy on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	Flatter than 1:10	1:10 – 1:4	Steeper than 1:4

2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es).

Ridgeline	Plateau	Side slope of hill / mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

(b) Provide a description of the location in the landscape.

The proposed site is visible within the larger open landscape as a dense Eucalyptus plantation bound to the north by farm lands/vineyards, to the west by the higher-lying R304 regional road and wide road reserve and bound to the east by grassland, scattered smaller trees (not as dense as the plantation) and a little further away, a northeast/southwest watercourse which is a tributary to the Plankenburg River.

The proposed site to be developed slopes gently towards the south west and south east but is generally flat within an open landscape.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	YES	NO✓	UNSURE
Seasonally wet soils (often close to water bodies)	YES	NO	UNSURE✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	UNSURE
Dispersive soils (soils that dissolve in water)	YES	NO	UNSURE✓
Soils with high clay content	YES	NO	UNSURE✓
Any other unstable soil or geological feature	YES	NO	UNSURE✓
An area sensitive to erosion	YES	NO	UNSURE✓
An area adjacent to or above an aquifer.	YES✓	NO	UNSURE
An area within 100m of a source of surface water	YES✓	NO	UNSURE
An area within 500m of a wetland	YES✓	NO	UNSURE
An area within the 1:50 year flood zone	YES✓ *	NO	UNSURE
A water source subject to tidal influence	YES	NO✓	UNSURE

* The small watercourse to the west of the proposed site and the extreme edge on the east of the site close to the Plankenburg River tributary falls within the 1:50 year flood line of a river

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (Information in respect of the above will often be available at the planning sections of local authorities. The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

(c) Indicate the type of geological formation underlying the site.

Granite	Shale	Sandstone	Quartzite	Dolomite	Dolorite	Other (describe)

Provide a description.

The regional geology consists of:

- Loam and Sandy Loam, Quaternary, overlying
- Greywacke, phyllite and quartzitic sandstone with interbedded lava and tuff of the Tygerberg Formation, Malmesbury Group.
- Granite Plutons comprising mainly coarse grained porphyritic with porphyritic biotite, fine grained leucocratic, hybridic and medium grained tourmaline-bearing variants outcrop towards the east of the site.

4. SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	NO✓	UNSURE
Non-Perennial River	YES✓	NO	UNSURE
Permanent Wetland	YES✓	NO	UNSURE
Seasonal Wetland	YES✓	NO	UNSURE

Artificial Wetland	YES	NO	UNSURE✓
Estuarine / Lagoon	YES	NO✓	UNSURE

(b) Provide a description.

According to the freshwater assessment:

The seasonal watercourse on the western portion of the proposed site were severely degraded mainly due to the dense forests of *Acacia saligna* and *Eucalyptus spp.* along with dense stands of alien grasses, particularly *Lolium perenne*.

Wetlands on site were found to be cryptic, exhibiting sparse wetland vegetation and wetland soil features that were difficult to discern given the level of disturbance and diverse colouration of the terrestrial baseline soils within the property, particularly where wildfires fires had taken place.

The only clear distinguishing soil feature present in every wetland was the surface organic layer discussed at length in the DWAF (2005, updated 2008) delineation manual and in the Job (2009) application thereof. Limited areas were found where substantial wetland hydrology was present.

Given the cryptic, disturbed nature of the wetlands it is possible that wetland areas presently exist that exhibit no wetland vegetation at present and where the surface organic layer was not easily discernible from the dark surface layer cause by repeated fires. It is therefore possible that wetlands are present that have not been delineated.

It is the specialist's opinion that the wetlands were likely much more extensive before the presence of the alien invasive forests that dominate the site. It is also likely that the original wetland hydrology will return once the alien trees have been removed. This area will be estimated by the specialist in the final freshwater assessment report by analysis of historical aerial photographs.

The drainage line indicated by the National Geospatial Information Service was found to be largely present and although wetlands were found within the northern parts thereof, it was found largely to be a true ephemeral drainage line dominated by alluvial soils without hydromorphic soil features present. The drainage line was found to have been subjected to substantial erosion related to the presence of invasive species and may in the past have had more substantial riparian zones and may have provided water wetlands on its banks.

The proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, so long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated – refer to the Freshwater Rehabilitation, Maintenance and Management Plan (FRMMP) outline, attached as Appendix G5.

The entire development takes place within the NWA 500m regulated zone, so a risk assessment must be undertaken. If the risk-rating is high or medium, then a Water Use Licence (WUL) will be required. If, however, the risk rating is low, then registration under a General Authorisation will be required.

The Department of Water and Sanitation who administer the NWA apply a policy of 'no net loss' to wetlands. Therefore, since the development will result in construction or infilling within some portions of wetland, resulting in wetland loss, then a wetland offset is required.

It is proposed that the full FRMMP (based on the outline attached as Appendix G5) for any structures in or crossing the ephemeral stream (such as gabions, bridges, or grass block 'drifts') be included as a condition of the environmental authorisation.

It is further proposed that the full/final FRMMP be submitted to the DEA&DP two weeks (10 working days) prior to commencement of construction of the development that the approved final/full FRMMP be appended to the on-site EMPr, as part of the construction and operational working documents of the proposed development.

The FRMMP forms part of the Water Use Licence Application (WULA) process which is not yet finalised and as indicated in Appendix G5, addresses the following issues environmental issues:

- Combatting unnatural channel and bank erosion;
- Improvement of hydrological volumes and function;
- Re-establishment of natural stream habitat.

These issues will be addressed through the following mechanisms:

- Alien clearing;
- Reshaping of the bed and banks of the stream;
- Re-establishment of natural riparian, instream and terrestrial buffer vegetation.

The rehabilitation activities will be undertaken in such a way that negative impacts to downstream water users during the initial rehabilitation phase are avoided where possible or minimised, and rehabilitation, maintenance and management will be undertaken in such a way that maximum long-term benefit in terms of water volume and quality is derived by on site and downstream water users from the rehabilitation activities.

It should be noted that the proposed development's layout plans have not been finalised as yet either. This impacts the WULA submission to DWS, as well as the final FRMMP, necessitating the above proposal regarding the FRMMP.

5. THE SEAFRONT / SEA

(a) Is the site(s) located within any of the following areas? (highlight the appropriate boxes).
If the site or alternative site is closer than 100m to such an area, please provide the approximate distance in (m).

AREA	YES	NO	UNSURE	If "YES": Distance to nearest area (m)
An area within 100m of the high water mark of the sea	YES	NO✓	UNSURE	
An area within 100m of the high water mark of an estuary/lagoon	YES	NO✓	UNSURE	
An area within the littoral active zone	YES	NO✓	UNSURE	
An area in the coastal public property	YES	NO✓	UNSURE	
Major anthropogenic structures	YES	NO✓	UNSURE	
An area within a Coastal Protection Zone	YES	NO✓	UNSURE	
An area seaward of the coastal management line	YES	NO✓	UNSURE	
An area within the high risk zone (20 years)	YES	NO✓	UNSURE	
An area within the medium risk zone (50 years)	YES	NO✓	UNSURE	
An area within the low risk zone (100 years)	YES	NO✓	UNSURE	
An area below the 5m contour	YES	NO✓	UNSURE	
An area within 1km from the high water mark of the sea	YES	NO✓	UNSURE	
A rocky beach	YES	NO✓	UNSURE	
A sandy beach	YES	NO✓	UNSURE	

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

6. BIODIVERSITY

Note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed development. To assist with the identification of the biodiversity occurring on site and the ecosystem status, consult http://bgis.sanbi.org or BGIShelp@sanbi.org . Information is also available on compact disc ("cd") from the Biodiversity-GIS Unit, Tel.: (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) must be provided as an overlay map on the property/site plan as **Appendix D** to this report.

(a) Highlight the applicable biodiversity planning categories of all areas on preferred and alternative sites and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category. Also describe the prevailing level of protection of the Critical Biodiversity Area ("CBA") and Ecological Support Area ("ESA") (how many hectares / what percentages are formally protected).

Systematic Biodiversity Planning Category	CBA✓	ESA✓	Other Natural Area ("ONA")	No Natural Area Remaining ("NNR")
If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan and the conservation management objectives	According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations). Refer to Appendix D for Biodiversity sensitivity maps			
Describe the site's CBA/ESA quantitative values (hectares/percentage) in relation to the prevailing level of protection of CBA and ESA (how many hectares / what percentages are formally protected locally and in the province)	A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C - Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary. The initial, preliminary study of three of the originally evaluated proposed regional cemetery and memorial park sites by the biodiversity specialist, makes reference to the proportion of area of the proposed site that should be protected due to its potential CBA status (refer to Figure 9 in Appendix G-1)			

(b) Highlight and describe the habitat condition on site.

Habitat Condition	**Percentage of habitat condition class (adding up to 100%) and area of each in square metre (m^2)**		**Description and additional comments and observations (including additional insight into condition, *e.g.* poor land management practises, presence of quarries, grazing/harvesting regimes, *etc.*)**
Natural	%	m^2	
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	m^2	

Degraded (includes areas heavily invaded by alien plants)	95 %	m^2	To be confirmed. The biodiversity specialist made mention of the following comment from Cape Nature in the initial, preliminary study of three of the originally evaluated proposed sites (as per Appendix G-1): "*This site does seem heavily infested with aliens from the road and would need ground-truthing to check if there is any natural vegetation in the understory.*"
Transformed (includes cultivation, dams, urban, plantation, roads, *etc.*)	5%	m^2	To be confirmed. Hardened vehicle tracks were evident throughout the site.

(c) Complete the table to indicate:
(i) the type of vegetation present on the site, including its ecosystem status; and
(ii) whether an aquatic ecosystem is present on/or adjacent to the site.

Terrestrial Ecosystems		**Description of Ecosystem, Vegetation Type, Original Extent, Threshold (ha, %), Ecosystem Status**
Ecosystem threat status as per the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Critically	
	Endangered	
	Vulnerable	
	Least Threatened	Area comprises 95% dense forests of *Acacia saligna* and *Eucalyptus spp.* along with dense stands of alien grasses, particularly *Lolium perenne*. CBA 2– degraded areas but with potential for rehabilitation. Refer to Appendix D for Biodiversity sensitivity maps

Aquatic Ecosystems						
Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
YES✓	NO	UNSURE	YES	NO✓	YES	NO✓

(d) Provide a description of the vegetation type and/or aquatic ecosystem present on the site, including any important biodiversity features/information identified on the site (e.g. threatened species and special habitats). Clearly describe the biodiversity targets and management objectives in this regard.

ESA 2 – ecological support areas (associated with watercourses or plantations).
Refer to Appendix D for Biodiversity sensitivity maps

7. LAND USE OF THE SITE

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	Low density residential	Medium density residential	High density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism and Hospitality facility

Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical centre	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes and more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):	The Stellenbosch Heritage Survey and Management Plan (2018) has graded the southern tip of the proposed development's site as the IIIb.			

(a) Provide a description.

According to the heritage impact assessment report (Appendix G-5), the potential impact of the proposed cemetery and memorial park site on the old outspan area is significant in that it is a wholesale change of land use from woodlot to cemetery.

However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone.

8. LAND USE CHARACTER OF THE SURROUNDING AREA

(a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	Low density residential	Medium density residential	High density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism and Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical centre	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes and more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archaeological site
Other land uses (describe):				

(b) Provide a description, including the distance and direction to the nearest residential area, industrial area, agri-industrial area.

Approximately 500m to the north, east and south of the proposed development site, lie agricultural land which (to the north and south contain wetland and a tributary of the Plankenburg River, respectively).
To the south west and west of the site and within 500m, are a light industrial and associated quarry (across the R304 road). It should be noted that to the north-east and just over 500m from the proposed development site, lies Stellenbosch University's Elsenburg Agricultural Training Institute.

9. SOCIO-ECONOMIC ASPECTS

a) Describe the existing social and economic characteristics of the community in the vicinity of the proposed site, in order to provide baseline information (for example, population characteristics/demographics, level of education, the level of employment and unemployment in the area, available work force, seasonal migration patterns, major economic activities in the local municipality, gender aspects that might be of relevance to this project, *etc.*).

The socio economic cost and benefits are outlined below and listed as a general cost or benefit, followed by specifics for the proposed memorial site and concluded with management directives. Burial alternatives, although provided, are not assessed.

Anticipated & Predicted Impacts	Calcutta	Management directives
Population Characteristics/ Human capital		
Job and skills levels increase: A 30ha memorial park will require landscaping, manicuring and maintaining. Sustainable employment opportunities will be created by the park.	Five to ten (5 – 10) full time permanent jobs are required to landscape, maintain and manicure the memorial park.	Employees should be selected and appointed from within Stellenbosch Municipal Area. Those employed to do so and who may not have appropriate qualifications/ skills should be afforded the opportunity to obtain the qualification/ skills.
Social health of community/ youth As a memorial park is a place to celebrate life, it represents a social space reflecting the value a community attach to the memories of their family, friends and colleagues. A memorial park will become such a social space.	Entrance control of the site and control of allowable activities will enhance the celebration of life. The park should be managed as a park and visual links should be created to the outspan site and historical oak trees south of the Calcutta. The trek path should be celebrated and replaced as a recreational route.	Entrance to the cemetery should be controlled during the day and the cemetery should be locked at night. Voluntary manicure and maintenance programmes should be managed involving educational institutions. Linking the site to a network of recreation routes i.e. walking or cycling will expand the celebration of life.
Crime/ Neglect Safety of visitors are key and controlled access and activity are but some of the aspects to ensure security of burial sites and safety of visitors.	The memorial park will be a significant improvement as the Eucalyptus and Acacia woodlot on site is used as a dumping site and is by no means inviting for people to perceive it as a social space or amenity.	The memorial park will be managed similarly to the cemetery at Jamestown; entrance control should be stricter.

Community & Institutional Arrangements			
	The lack of cemetery space may **disrupt social networks which will bring about** changes in social ethos of community.	The MP will provide the required cemetery space and celebrate the lives of the deceased and honour the dead. Community homogeneity and cohesion could be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving neighbouring communities.	Provide a MP in each of the major municipal areas i.e. north and south Regulate the use of burial space and rent out space for a specific period i.e. 25 years or less.
	Equality and Exclusivity: A memorial park provides for all income groups, all cultures and all religions: The MP and its design and use should not exacerbate class equalities or cultural exclusivity. The MP should make allowance to accommodate dissimilarities in social practices i.e. social standards (burial options), religion and values.	MP to provide for all income groups and all religions.	Develop a MP policy or by-law to address access to resources i.e. burial space. Allow for limited economic opportunity i.e. flower sellers and a nursery. Economic opportunity to be ceased by vulnerable members of the community.
	Employment equity of vulnerable groups: Of the people employed, women and youth should be afforded the opportunity to join the workforce.	The employment opportunities at the MP will enable a few families to benefit from the employment opportunities associated with MP development.	As women and youth have to compete with more appropriately qualified applicants from Stellenbosch Municipal area, skills development and improvement of educational qualification should be a strong project component.
Political & Social Resources			
	Use of social amenities: The MP will provide for the need for burial space within the Stellenbosch community but may cause an increased demand from neighbouring municipalities for burial space.	The demand for basic services i.e. water, electricity and sewerage will be limited and not compete with the requirements for human settlements within the Stellenbosch Municipal area.	Regulate burial space to benefit the community of Stellenbosch. Alternative energy use should be promoted. Water should be sources on the property. Sewerage should be managed on site.

	As far as possible the MP services have to be sourced and generated on site. Water sources should be protected from possible impacts.	A resource management plan should be compiled and implemented as part of the maintenance and management of the site.
Increased use of municipal & authority services will be required but merely to regulate and guide **traffic**.	The slow moving traffic of funeral processions will disrupt daily traffic which is fast moving and will impact on cyclists using the R304. Processions should not be allowed on provincial roads. Encourage users of the MP to hold services on site.	Regulate traffic and abandon processions. Develop an amenity information brochure marketing the facility and the different components thereof i.e. the chapel that is interdenominational.
Individual & Family Changes: Burial practices are often linked to religious practices. Family burial practises may change over time.	Provide for alternative burial options in the MP.	Families have to be encouraged to consider different burial options which are less land dependant. Develop a burial alternative awareness campaign.
Community Resources		
Dust & Noise levels: Sporadic dust & increased noise levels may occur as the park is established, graves are prepared and burial ceremonies are taking place. It is anticipated that all of the above will happen but within acceptable levels.	Keep dust suppression measures accessible on site. The necessary equipment and procedures have to be supplied and be in place.	Regulate noise on site and compile standard operational procedures. Budget and provide for dust suppression measures and equipment on site.
Sense of Place: The change of sense of place will impact on people's relationship to environment and surroundings.	Visual and scenic issues, and thus sense of place, relate to the likely impact of this memorial park development on the Grade IIIb agricultural landscape. As the site is covered by an immature gum and Acacia plantation and has an untidy, overgrown atmosphere the change in use will enhance the **Landscape Character** of the site. The site is surrounded by vineyards and rolling pastures and a scatter of	Design and compile a landscape plan to ensure the conservation of the landscape.

	European Oak trees down to the river. The high visual absorption capacity of the site and the low absorption capacity of its surroundings and its visibility versus the proposed activity will enhance the impact to be positive. Cemetery activities on site could easily be hidden behind decent landscaping, where structures are low with the exception of a central chapel facility.	
Social History: The social history relates to patterns that were valued, but fallen into disuse (outspans), and which is part of the social history of an area will be enhanced.	Heritage Grading There are no structures on the site to grade but the area landscape has already been graded IIIb in the SHS&MP (2018), as has the outspan site on the southern portion been graded IIIb. Calcutta Bos has high significance as an historic outspan site but a low significance as a woodlot in its current condition. Its rural setting makes it well-suited to the purposes of a memorial park. Being one of only seven or eight outspans it is quite prominent in the Stellenbosch District. Changing its use to a memorial park where the deceased are laid to rest at the end of their life's journey and being jointly a recreational park should enhance Calcutta outspan's collective heritage.	Should any heritage resources be discovered during the clearing of the site, the appropriate procedure required by HWC should be followed to secure and conserve such resources. The potential scientific significance of the site lies in the possibility of uncovering any significant archaeological remains. This will not be known until such time as excavation or development occurs but it is unlikely that anything would be recovered until such time as it is densely covered and transformed by, at the very least, gum plantation. It could have been ploughed prior to gum planting.
Access to leisure opportunities: MPs as commissioned by Stellenbosch Municipality are simultaneously designed to enhance recreation and	The MP will enhance access to leisure opportunities.	Encourage leisure and recreational activities i.e. compile and market a park calendar.

	leisure opportunities: hiking & biking trails etc.		
	Access to natural resources: The MP has no impact on people's access to natural resources i.e. wood, water and medicinal plants	The MP should enhance to use of natural resources and should not compete with the community's access i.e. use of on-site sources to provide water, manage sewerage and generate alternative energy.	Compile a resource management plan.
	Sales & GGP: Sales related to the land will contribute to the economy of the municipality.	Burial space will have to be leased for limited periods of time i.e. 25 years or even shorter.	Regulate use of burial space. Provide for subsidies for vulnerable communities.

10. HISTORICAL AND CULTURAL ASPECTS

(a) Please be advised that if section 38 of the NHRA is applicable to your proposed development, you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Heritage Western Cape must be given an opportunity, together with the rest of the I&APs, to comment on any Pre-application BAR, a Draft BAR, and Revised BAR.

Section 38 of the NHRA states the following:
"*38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*
(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000m² in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000m² in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

(b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the NHRA, must also be investigated, assessed and evaluated. Section 3(2) states the following:
"*3(2) Without limiting the generality of subsection (1), the national estate may include—*
(a) places, buildings, structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds, including—
(i) ancestral graves;
(ii) royal graves and graves of traditional leaders;
(iii) graves of victims of conflict;
(iv) graves of individuals designated by the Minister by notice in the Gazette;
(v) historical graves and cemeteries; and
(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
(h) sites of significance relating to the history of slavery in South Africa;
(i) movable objects, including—
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
(ii) objects to which oral traditions are attached or which are associated with living heritage;
(iii) ethnographic art and objects;
(iv) military objects;

(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)".

Is Section 38 of the NHRA applicable to the proposed development?	YES✓	NO	UNCERTAIN
If YES or UNCERTAIN, explain:	Section 38 of the National Heritage Resources Act, 1999, is applicable since the proposed public cemetery and memorial park is more than 5000m^2 and will change the character of the site; The site will be rezoned and exceeds 10 000 m^2. At the time of this report, no submissions were made to HWC. Although, a Heritage Screening as prepared by CTS Heritage (Appendix G-5a) in March 2018 was submitted to HWC. HWC responded to the public participation process (as per Appendix E) with a reference number and request to complete a NID.		
Will the development impact on any national estate referred to in Section 3(2) of the NHRA?	YES✓	NO	UNCERTAIN
If YES or UNCERTAIN, explain:	Due to the Outspan heritage site as highlighted in Appendix G-5 (Heritage Impact Assessment), the proposed site appears to be a national estate. However, both the archaeological and paleontological assessments indicated that the proposed site is not a sensitive landscape. In addition, the proposed development actual will result in a very positive impact of the Outspan heritage site since it will restore the area and cater for the preservation of the Outspan region through the memorial park aspect of the development.		
Will any building or structure older than 60 years be affected in any way?	YES	NO✓	UNCERTAIN
If YES or UNCERTAIN, explain:			
Are there any signs of culturally or historically significant elements, as defined in section 2 of the NHRA, including Archaeological or paleontological sites, on or close (within 20m) to the site?	YES	NO✓	UNCERTAIN
If YES or UNCERTAIN, explain:			

Note: If uncertain, the Department may request that specialist input be provided **and** Heritage Western Cape must provide comment on this aspect of the proposal. (Please note that a copy of the comments obtained from the Heritage Resources Authority must be appended to this report as Appendix E1).

11. APPLICABLE LEGISLATION, POLICIES, CIRCULARS AND/OR GUIDELINES

(a) Identify all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to the development proposal and associated listed activity(ies) being applied for and that have been considered in the preparation of the BAR.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**ADMINISTERING AUTHORITY and how it is relevant to this application**	**TYPE Permit/license/authorisation/comment / relevant consideration** (*e.g.* rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, *etc.*)	**DATE** (if already obtained)**:**
National Environmental Management Act, No. 107 of 1998 and associate EIA Regulations 2014	Department of Environmental Affairs and Development Planning (DEA&DP)	Environmental Authorisation	Basic Assessment process is currently underway.
National Water Act, No. 36 of 1998	Department of Water Affairs	Water Use Licence (WUL) or General Authorisation	WUL Application to be submitted
Stellenbosch Land Use Planning By-law, 2015	Stellenbosch Municipality	Rezoning	Application to be submitted
National Heritage Resources Act, No 25 of 1999	Heritage Western Cape (HWC)	Authorisation	NID to be submitted

(b) Describe how the proposed development **complies with and responds** to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**Describe how the proposed development complies with and responds:**
DEA&DP Guidelines on: Public Participation; EIA Regulations; Need and Desirability; Alternatives	A voluntary pre-application round of public participation to register I&APs was undertaken. Guideline documents were consulted.
National Environmental Management Act, No. 107 of 1998	This application is being undertaken according to the NEMA.
National Heritage Resources Act, No. 25 of 1999	A Heritage Screener was submitted to HWC (as per Appendix G-5a). Submission of the Notice of Intent to Develop is pending and will be submitted shortly. Refer to Appendix E (communication from HWC).

National Water Act, No. 36 of 1998 (NWA)	Process to authorise Section 21 activities under the NWA to be undertaken.

Note: Copies of any comments, permit(s) or licences received from any other Organ of State must be attached to this report as **Appendix E**.

Section C: PUBLIC PARTICIPATION

The PPP must fulfil the requirements outlined in the NEMA, the EIA Regulations, 2014 (as amended) and if applicable, the NEM: WA and/or the NEM: AQA. This Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must also be taken into account.

1. Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was an exemption applied for.

In terms of Regulation 41 of the EIA Regulations, 2014 (as amended) -			
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -			
(i) the site where the activity to which the application relates, is or is to be undertaken; and	YES✓	EXEMPTION	
(ii) any alternative site	YES	EXEMPTION	N/A ✓
(b) giving written notice, in any manner provided for in Section 47D of the NEMA, to –			
(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES✓	EXEMPTION	N/A
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES✓	EXEMPTION	
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	YES	EXEMPTION	
(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;	YES✓	EXEMPTION	
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES✓	EXEMPTION	
(vi) any other party as required by the Department;	YES✓	EXEMPTION	N/A
(c) placing an advertisement in -			
(i) one local newspaper; or	YES✓	EXEMPTION	
(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	YES	EXEMPTION	N/A ✓
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken	YES	EXEMPTION	N/A ✓
(e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	YES	EXEMPTION	N/A ✓
If you have indicated that "EXEMPTION" is applicable to any of the above, proof of the exemption decision must be appended to this report.			
Please note that for the NEM: WA and NEM: AQA, a notice must be placed in at least two newspapers circulating in the area where the activity applied for is proposed.			
If applicable, has/will an advertisement be placed in at least two newspapers? N/A	YES	NO	
If "NO", then proof of the exemption decision must be appended to this report.			

2. Provide a list of all the State Departments and Organs of State that were consulted:

Refer to I&AP Lists attached as Appendix H and Appendices F to F2

State Department / Organ of State	Date request was sent:	Date comment received:	Support / not in support

3. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
   (The detailed outcomes of this process, including copies of the supporting documents and inputs must be included in a Comments and Response Report to be attached to the BAR (see note below) as **Appendix F**).

Please refer the Comment and Response Trail Reports (with supporting documents) attached as Appendix F.

4. Provide a summary of any conditional aspects identified / highlighted by any Organs of State, which have jurisdiction in respect of any aspect of the relevant activity.

Please refer the Comment and Response Trail Reports (with supporting documents) attached as Appendix F.

Note:
Even if pre-application public participation is undertaken as allowed for by Regulation 40(3), it must be undertaken in accordance with the requirements set out in Regulations 3(3), 3(4), 3(8), 7(2), 7(5), 19, 40, 41, 42, 43 and 44.

If the "exemption" option is selected above and no proof of the exemption decision is attached to this BAR, the application will be refused.

A list of all the potential I&APs, including the Organs of State, notified and a list of all the registered I&APs must be submitted with the BAR. The list of registered I&APs must be opened, maintained and made available to any person requesting access to the register in writing.

The BAR must be submitted to the Department when being made available to I&APs, including the relevant Organs of State and State Departments which have jurisdiction with regard to any aspect of the activity, for a commenting period of at least 30 days. Unless agreement to the contrary has been reached between the Competent Authority and the EAP, the EAP will be responsible for the consultation with the relevant State Departments in terms of Section 24O and Regulation 7(2) – which consultation must happen simultaneously with the consultation with the I&APs and other Organs of State.

All the comments received from I&APs on the BAR must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** of the BAR. If necessary, any amendments made in response to comments received must be effected in the BAR itself. The Comments and Responses Report must also include a description of the PPP followed.

The minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded, must also be submitted as part of the public participation information to be attached to the final BAR as **Appendix F.**

Proof of all the notices given as indicated, as well as notice to I&APs of the availability of the Pre-Application BAR (if applicable), Draft BAR, and Revised BAR (if applicable) must be submitted as part of the public participation information to be attached to the BAR as **Appendix F**. In terms of the required "proof" the following must be submitted to the Department:

- a site map showing where the site notice was displayed, a dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION D: NEED AND DESIRABILITY

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and

guidelines available on the Department's website: **http://www.westerncape.gov.za/eadp**). In this regard, it must be noted that the *Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010* published by the national Department of Environmental Affairs on 20 October 2014 (GN No. 891 on Government Gazette No. 38108 refers) (available at: http://www.gov.za/sites/www.gov.za/files/38108_891.pdf) also applied to EIAs in terms of the EIA Regulations, 2014 (as amended).

1. Is the development permitted in terms of the property's existing land use rights?	YES	NO ✓	Please explain
The land, remainder of Calcutta Farm No. 29 is currently zoned for Agricultural 1. A rezoning application was submitted to the Stellenbosch Municipality on 26 March 2019 by Rumboll and Associates (Pty) Ltd, as per Appendix J (Rezoning information).			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("**PSDF**").	YES ✓	NO	Please explain
The Western Cape PSDF aims to establish a coherent framework for the Province's urban and rural areas that "serves as a basis for coordinating, integrating and aligning 'on the ground' delivery of National and Provincial departmental programmes".			
(b) Urban edge / edge of **built environment** for the area.	YES ✓	NO	Please explain
According to the socio-economic statement attached as Appendix G10, the proposed site is in a rural setting which is well suited for the development of a cemetery and memorial park.			
(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (*e.g.,* would the approval of this application compromise the integrity of the existing approved and credible municipal **IDP and SDF**?).	YES	NO ✓	Please explain
The mandate to investigate and pursue the development of a regional cemetery and memorial park was given by Stellenbosch Municipality at several Council meetings since 2015. Municipal endorsement for the proposed development site was obtained in August 2017 (partial minutes attached as Appendix K).			
(d) An Environmental Management Framework ("**EMF**") adopted by this Department. (*e.g.,* Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO ✓	Please explain
Approval of this application would promote the preservation of heritage resources and the conservation of ESA and CBA areas on the site. It also meets the very real need for burial space within the Municipal region – providing the public with a much-needed socio-economic amenity. Therefore, it promotes and is justified in terms of sustainability considerations.			
(e) Any **other** Plans (*e.g.,* Integrated Waste Management Plan (for waste management activities), *etc.*)).	YES ✓	NO	Please explain
The removal of alien invasive trees/plantation would be in conjunction with the Municipality's annual operational plan for alien plant removal.			
3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
Unknown – the land use was Agricultural 1 (Plantation) and the plantation forms part of the Municipality Annual Plan of Operations for alien tree removal and control. The development proposes to remove the current alien plant/tree infestation and conserve any indigenous species of note (as identified by a botanical specialist) and restore and protect biodiversity as well as freshwater/wetland and heritage aspects of the development site.			

4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	YES	NO ✓	Please explain
The proposed development of a cemetery and memorial park is well suited for this rural setting. It is proposed that the development be 'stand-alone' and as much 'off-grid' as possible, in terms of utility supply i.e. electricity and water			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (*e.g.,* development is a National Priority, but within a specific local context it could be inappropriate.)	YES ✓	NO	Please explain
There is a need for public cemeteries and memorial parks since most of the cemeteries in the Municipal area are at or near capacity. This amenity is needed by the community in terms of accessibility to the facility, as well as job provision.			
6. Are the necessary **services** available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project? (Confirmation by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES ✓	NO	Please explain
The Applicant is the Municipality. Refer to Appendix E5 (Comments from Stellenbosch Municipality) regarding availability and capacity to provide required services. The proposed development of a cemetery and memorial park is well suited for this rural setting. It is proposed that the development be 'stand-alone' and as much 'off-grid' as possible, in terms of utility supply i.e. electricity and water			
7. Is this project provided for in the **infrastructure planning** of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES✓	NO	Please explain
Please refer to communication with Municipality in Appendix E5 regarding availability and capacity to provides required services Refer to Appendix G11 (Final Traffic Study) regarding a 2012 Arterial Management Plan which address accessibility issues off/from the region road to the proposed development site			
8. Is this project part of a **national programme** to address an issue of national concern or importance?	YES	NO	Please explain
Unknown - The shortage of suitable land for the development of cemeteries has long been one of the major challenges facing many South African municipalities. Public cemeteries in the Stellenbosch Municipal area are nearing maximum occupation. Despite the availability of various alternatives, conventional burial and funeral practises are still the most common and preferred, thus, funeral and burial services offered by local municipalities cannot be decontextualised from the cultural and religious customs that communities follow.			
9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	YES ✓	NO	Please explain

Due to the current neglected and degraded state of the proposed development site, as well as the high potential for positive impact in terms of heritage and environmental resources, it appears that locations factors favour this land use on this property.

10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	YES ✓	NO	Please explain

Yes. However, the impact on freshwater, biodiversity and cultural/heritage aspects will be positive. There may be a negative impact on groundwater resources.

11. Will the development impact on people's health and well-being (*e.g.*, in terms of noise, odours, visual character and 'sense of place', *etc.*)?	YES	NO	Please explain

There will probably be minimal traffic noise associated with the occasional motorcade is expected along the R304. The impact is expected to be low.

The activity will not create any emissions or odours that are not typical of a cemetery. Please note that no crematorium is proposed on the site

The activity will impact on the visual character of the area as the site is located on higher ground above most of the town. However, the site is adjacent to an existing cemetery.

12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	YES	NO ✓	Please explain

Although the development will result in the loss of vacant land, the site has been earmarked for cemetery expansion by the municipality.

13. What will the **cumulative impacts** (positive and negative) of the proposed land use associated with the development proposal and associated listed activity(ies) applied for, be?

Negative impacts include the potential risk of leachate from the cemetery polluting the groundwater or surface water down gradient of the cemetery.

14. Is the development the **best practicable environmental option** for this land/site?	YES ✓	NO	Please explain

The proposed development will result in the rehabilitation and restoration of ESA and CBA areas as well as the removal of alien tree infestation, whilst promoting heritage preservation and sustainable conservation. It will also provide socio-economic upliftment through job provision and meeting the need for a contextualised public cemetery and memorial park.

15. What will the benefits be to society in general and to the local communities?	Please explain

The proposed development will result in the rehabilitation and restoration of ESA and CBA areas as well as the removal of alien tree infestation, whilst promoting heritage preservation and sustainable conservation. It will also provide socio-economic upliftment through job provision and meeting the need for a contextualised public cemetery and memorial park. The facility will be easily accessible to communities in the Northern Stellenbosch region.

16. Any **other** need and desirability considerations related to the proposed development?	Please explain

The need to change the mindset of the public to choose less land hungry burial options will be gently introduced through the use of the memorial garden, columbarium and memorial walls in an aesthetically please 'park' setting.

17. Describe how the **general objectives of Integrated Environmental Management** as set out in Section 23 of the NEMA have been taken into account:

The general objectives of Integrated Environmental Management have been taken into account through the following:

- The actual and potential impacts of the activity on the environment, socio-economic conditions and cultural heritage have been identified, predicted and evaluated, as well as the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impact, maximizing benefits and promoting compliance with the principles of environmental management – *please refer to Section F below*.
- The effects of the activity on the environment have been considered before actions taken in connection with them – *alternatives have been considered but there are no feasible or viable alternatives due to the nature of the activity and the location of the activity*.
- Adequate and appropriate opportunity for public participation was ensured through the public participation process – *please refer to Appendix F for the public participation information, including the list of identified Interested and Affected parties, as well as the methods for identifying and informing I&APs of the application and proposed activity*.

The environmental attributes have been considered in the management and decision-making of the activity – *an EMP has been included (Appendix O) with the proposed activity and must adhere to the requirements of all applicable state authorities.*

18 Describe how the **principles of environmental management** as set out in Section 2 of the NEMA have been taken into account:

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural and social interests – *the proposed activity will have a beneficial impact on people, as it will provide much needed additional burial space opportunities.*
- Development must be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. - *Although the activity is expected to have a medium to low botanical impact, these impacts have been considered, and mitigation measures have been put in place. This is dealt with in the EMP (Appendix O).*
- Where waste cannot be avoided, it is minimised and remedied through the implementation and adherence of the EMPr.
- The use of non-renewable natural resources is responsible and equitable – *no exploitation of non-renewable natural resources occurs with the proposed activity.*
- The negative impacts on the environment and on people's environmental rights have been anticipated and prevented, and where they cannot be prevented, are minimised and remedied - *refer to Section F below*.
- The interests, needs and values of all interested and affected parties have been taken into account in any decisions through the Public Participation Process – *please refer to Appendix F for the public participation information.*
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and benefits as per Appendix G10.
-

The effects of decisions on all aspects of the environment and all people in the environment have been taken into account, by pursuing what is considered the best practicable environmental option – *the proposed activity is expected to have minimal/negligible environmental impacts, especially after mitigation measures as described under Section O and in the EMP are implemented.*

SECTION E: DETAILS OF ALL THE ALTERNATIVES CONSIDERED

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website **http://www.westerncape.gov.za/eadp**.

The EIA Regulations, 2014 (as amended) defines "*alternatives*" as " *in relation to a proposed activity, means different means of fulfilling the general purpose and requirements of the activity, which may include alternatives to the—*
(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
(f) and includes the option of not implementing the activity;"

The NEMA (section 24(4)(a) and (b) of the NEMA, refers) prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in the NEMA and the National Environmental Management Principles set out in the NEMA are taken into account; and
- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management (section 23 of NEMA, refers) is, *inter alia*, to "*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management*" set out in the NEMA.

The identification, evaluation, consideration and comparative assessment of alternatives directly relate to the management of impacts. Related to every identified impact, alternatives, modifications or changes to the activity must be identified, evaluated, considered and comparatively considered to:

- in terms of negative impacts, firstly avoid a negative impact altogether, or if avoidance is not possible alternatives to better mitigate, manage and remediate a negative impact and to compensate for/offset any impacts that remain after mitigation and remediation; and
- in terms of positive impacts, maximise impacts.

1. DETAILS OF THE IDENTIFIED AND CONSIDERED ALTERNATIVES AND INDICATE THOSE ALTERNATIVES THAT WERE FOUND TO BE FEASIBLE AND REASONABLE

Note: A full description of the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exists.

(a) Property and **location/site** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The design and layout of the cemetery avoids potential negative visual impacts.
No alternative sites exist for this project. Please see mention in the Executive Summary and point 2(b) above, as well as in Appendices L and M.

(b) **Activity** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

None that are known.

(c) **Design or layout** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The design and layout of the cemetery avoids potential negative visual impacts. Four alternatives in terms of layout exist for this project:

Alternative 1 (preferred alternative) – refer to Appendix B1:
This layout plan accommodates the wetland buffer zones (25m to 30m setback regions) and provides ample memorial park/garden space to the west of the site.
The proposed peripheral/boundary security/fence road does involve an additional crossing of the ephemeral stream to the south but it is proposed that this crossing be a low water grass block 'drift' which, if place immediately adjacent to the south-eastern security fence crossing the stream, also provide an means of access control during times when the watercourse is dry. In addition, the proposed peripheral road does not traverse wetland G to the north-west of the property.
Additional environmental benefits of this layout alternative, are that the conservancy tank/sewer treatment plant is not positioned close to, or in, the wetland buffer zone and the stormwater management network includes two polishing plants as well as a stormwater retention/detention pond adjacent to the delineated wetland buffer zone, to manage possible stormwater input into the ephemeral watercourse.
Schematic layout plans for the sewage/effluent treatment and stormwater polishing plant are included in Appendix B4.

Alternative 2 (not preferred alternative) – refer to Appendix B2:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 2 does not accommodate).
This alternative's development footprint places structures (maintenance nursery and buildings), as well as cultivated park areas (indicated as 'orchards' in Appendix B2) directly in the wetland areas which it is proposed are rehabilitated and maintained as part of the park aspect of this project.
While a widening of the ephemeral stream is indicated in the region where the conservancy tank is located (see Appendix B2a) there is no indication or accommodation of any effluent water treatment/polishing plant or retention pond. In addition, the conservancy tank is located very close to the watercourse within the buffer area.
Although this alternative provides the largest allocation of burial and internment space, it does not accommodate the proposed need for establishing adequate indigenous 'park' areas.

Alternative 3 (concept plan 1 – least preferred layout option) – refer to Appendix B3:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 3 does not accommodate).
This alternative's development footprint places structures (maintenance and nursery buildings), as well as cultivated park/picnic areas (indicated along the western boundary in Appendix B3) directly in wetland area G which it is proposed are to be rehabilitated and maintained as part of the indigenous park aspect of this project.
The access route for Alternative 3 also does not speak to the final road traffic survey (Appendix G 12).
This alternative was the initial concept plan for the project and is included in this post application BAR since it was submitted in the first pre-application (draft) BAR. However, once more detailed specialist studies were conducted, it is apparent that this is the least feasible and environmentally favourable layout plan.

No-go alternative – (least preferred alternative):
This alternative does not meet the urgent need to provide public burial space for the region. It is the least preferred alternative.

Appendices L and M indicate that there is no significant reason for there to be a no-go for this proposed site.

(d) **Technology** alternatives (*e.g.,* to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The proposed green options for water reuse and possible off-grid electricity supply are the same for Alternatives 1 to 3 - Besides the use of non-potable water for effluent management and recycled/grey water for irrigation or the gardens/memorial park areas, the use of solar panels or wind turbines for the provision of electricity where possible, will be implemented.

Refer to the services report, attached as Appendix G13, for a detailed description of proposed and possible technology alternatives.

Schematic layout plans for the sewage/effluent treatment and stormwater polishing plant are included in Appendix B4.

(e) **Operational** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The use of a garden of remembrance where people begin to green the proposed site with indigenous trees which they purchase to bury the ashes of a loved one at or near the base, also will be used to promote the idea of alternative burial methods. The idea is that once the initial purchase of a 'family tree' is made, subsequent burial of ashes of loved ones in allocated points around the tree (so as not to affect tree growth/health).

A review and possible amendment to local by-law/s may also need to be made to accommodate multiple interments in a single burial space, after sufficient time has past between each interment.

(f) The option of **not implementing** the activity (the '*No-Go*' Option):

The Municipality will face a crisis situation in terms of burial ground availability since the interim relief measure of expanding certain cemeteries (which were able to expand), will also rapidly be diminished.

(g) **Other** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Please refer to Appendices L and M to indicate why no site alternatives exist.

Four alternatives in terms of layout exist for this project:

Alternative 1 (preferred alternative) – refer to Appendix B1:
This layout plan accommodates the wetland buffer zones (25m to 30m setback regions) and provides ample memorial park/garden space to the west of the site.
The proposed peripheral/boundary security/fence road does involve an additional crossing of the ephemeral stream to the south but it is proposed that this crossing be a low water grass block 'drift' which, if place immediately adjacent to the south-eastern security fence crossing the stream, also provide an means of access control during times when the watercourse is dry. In addition, the proposed peripheral road does not traverse wetland G to the north-west of the property.
Additional environmental benefits of this layout alternative, are that the conservancy tank/sewer treatment plant is not positioned close to, or in, the wetland buffer zone and the stormwater management network includes two polishing plants as well as a stormwater retention/detention pond adjacent to the delineated wetland buffer zone, to manage possible stormwater input into the ephemeral watercourse.
Schematic layout plans for the sewage/effluent treatment and stormwater polishing plant are included in Appendix B4.

Alternative 2 (not preferred alternative) – refer to Appendix B2:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 2 does not accommodate).
This alternative's development footprint places structures (maintenance nursery and buildings), as well as cultivated park areas (indicated as 'orchards' in Appendix B2) directly in the wetland areas which it is proposed are rehabilitated and maintained as part of the park aspect of this project.
While a widening of the ephemeral stream is indicated in the region where the conservancy tank is located (see Appendix B2a) there is no indication or accommodation of any effluent water treatment/polishing plant or retention pond. In addition, the conservancy tank is located very close to the watercourse within the buffer area.
Although this alternative provides the largest allocation of burial and internment space, it does not accommodate the proposed need for establishing adequate indigenous 'park' areas.

Alternative 3 (concept plan 1 – least preferred layout option) – refer to Appendix B3:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 3 does not accommodate).
This alternative's development footprint places structures (maintenance and nursery buildings), as well as cultivated park/picnic areas (indicated along the western boundary in Appendix B3) directly in wetland area G which it is proposed are to be rehabilitated and maintained as part of the indigenous park aspect of this project.
The access route for Alternative 3 also does not speak to the final road traffic survey (Appendix G 12).
This Alternative was the initial concept plan for the project and is included in this post application BAR since it was submitted in earlier pre-application draft BARs. However, once more detailed specialist studies were conducted, it is apparent that this is the least feasible and environmentally favourable layout plan.

No-go alternative – (least preferred alternative):
This alternative does not meet the urgent need to provide public burial space for the region. It is the least preferred alternative.

(h) Provide a **summary** of all alternatives investigated and the outcome of each investigation:

Four alternatives in terms of layout exist for this project:

Alternative 1 (preferred alternative) – refer to Appendix B1:
This layout plan accommodates the wetland buffer zones (25m to 30m setback regions) and provides ample memorial park/garden space to the west of the site.
The proposed peripheral/boundary security/fence road does involve an additional crossing of the ephemeral stream to the south but it is proposed that this crossing be a low water grass block 'drift' which, if place immediately adjacent to the south-eastern security fence crossing the stream, also provide an means of access control during times when the watercourse is dry. In addition, the proposed peripheral road does not traverse wetland G to the north-west of the property.
Additional environmental benefits of this layout alternative, are that the conservancy tank/sewer treatment plant is not positioned close to, or in, the wetland buffer zone and the stormwater management network includes two polishing plants as well as a stormwater retention/detention pond adjacent to the delineated wetland buffer zone, to manage possible stormwater input into the ephemeral watercourse.
Schematic layout plans for the sewage/effluent treatment and stormwater polishing plant are included in Appendix B4.

Alternative 2 (not preferred alternative) – refer to Appendix B2:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 2 does not accommodate).
This alternative's development footprint places structures (maintenance nursery and buildings), as well as cultivated park areas (indicated as 'orchards' in Appendix B2) directly in the wetland areas which it is proposed are rehabilitated and maintained as part of the park aspect of this project.
While a widening of the ephemeral stream is indicated in the region where the conservancy tank is located (see Appendix B2a) there is no indication or accommodation of any effluent water treatment/polishing plant or retention pond. In addition, the conservancy tank is located very close to the watercourse within the buffer area.
Although this alternative provides the largest allocation of burial and internment space, it does not accommodate the proposed need for establishing adequate indigenous 'park' areas.

Alternative 3 (concept plan 1 – least preferred layout option) – refer to Appendix B3:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 3 does not accommodate).
This alternative's development footprint places structures (maintenance and nursery buildings), as well as cultivated park/picnic areas (indicated along the western boundary in Appendix B3) directly in wetland area G which it is proposed are to be rehabilitated and maintained as part of the indigenous park aspect of this project.
The access route for Alternative 3 also does not speak to the final road traffic survey (Appendix G 12).
This Alternative was the initial concept plan for the project and is included in this post application BAR since it was submitted in earlier pre-application draft BARs. However, once more detailed specialist studies were conducted, it is apparent that this is the least feasible and environmentally favourable layout plan.

No-go alternative – (least preferred alternative):
This alternative does not meet the urgent need to provide public burial space for the region. It is the least preferred alternative.

(i) Provide a detailed **motivation for not further considering** the alternatives that were found not feasible and reasonable, including a description and proof of the investigation of those alternatives:

See page 55 below.

Alternatives in terms of layout exist for this project:

Alternative 1 (preferred alternative) – refer to Appendix B1:
This layout plan accommodates the wetland buffer zones (25m to 30m setback regions) and provides ample memorial park/garden space to the west of the site.
The proposed peripheral/boundary security/fence road does involve an additional crossing of the ephemeral stream to the south but it is proposed that this crossing be a low water grass block 'drift' which, if place immediately adjacent to the south-eastern security fence crossing the stream, also provide an means of access control during times when the watercourse is dry. In addition, the proposed peripheral road does not traverse wetland G to the north-west of the property.
Additional environmental benefits of this layout alternative, are that the conservancy tank/sewer treatment plant is not positioned close to, or in, the wetland buffer zone and the stormwater management network includes two polishing plants as well as a stormwater retention/detention pond adjacent to the delineated wetland buffer zone, to manage possible stormwater input into the ephemeral watercourse.
Schematic layout plans for the sewage/effluent treatment and stormwater polishing plant are included in Appendix B4.

Alternative 2 (not preferred alternative) – refer to Appendix B2:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 2 does not accommodate).
This alternative's development footprint places structures (maintenance nursery and buildings), as well as cultivated park areas (indicated as 'orchards' in Appendix B2) directly in the wetland areas which it is proposed are rehabilitated and maintained as part of the park aspect of this project.
While a widening of the ephemeral stream is indicated in the region where the conservancy tank is located (see Appendix B2a) there is no indication or accommodation of any effluent water treatment/polishing plant or retention pond. In addition, the conservancy tank is located very close to the watercourse within the buffer area.
Although this alternative provides the largest allocation of burial and internment space, it does not accommodate the proposed need for establishing adequate indigenous 'park' areas.

Alternative 3 (concept plan 1 – least preferred layout option) – refer to Appendix B3:
This layout plan does not take adequate cognisance of the wetland delineation (minimal buffer zones are indicated i.e. 10m to 15m). While this is minimal setback is mentioned in the freshwater assessment and management plan reports (Appendix G3 to G5), Figure 2 of the freshwater impact report indicates the proposed 25m to 30m setback (which Alternative 3 does not accommodate).
This alternative's development footprint places structures (maintenance and nursery buildings), as well as cultivated park/picnic areas (indicated along the western boundary in Appendix B3) directly in wetland area G which it is proposed are to be rehabilitated and maintained as part of the indigenous park aspect of this project.
The access route for Alternative 3 also does not speak to the final road traffic survey (Appendix G 12).
This Alternative was the initial concept plan for the project and is included in this post application BAR since it was submitted in earlier pre-application draft BARs. However, once more detailed specialist studies were conducted, it is apparent that this is the least feasible and environmentally favourable layout plan.

No-go alternative – (least preferred alternative):
This alternative does not meet the urgent need to provide public burial space for the region. It is the least preferred alternative.

2. PREFERRED ALTERNATIVE

(a) Provide a **concluding statement** indicating the preferred alternative(s), including preferred location, site, activity and technology for the development.

The preferred alternative for the proposed Calcutta Public Cemetery and Memorial Park is Alternative 1 on Farm Calcutta No. 29, Stellenbosch Municipality, as indicated in this post-application BAR.

SECTION F: ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE ALTERNATIVES

Note: The information in this section must be DUPLICATED for all the feasible and reasonable ALTERNATIVES.

1. DESCRIBE THE ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ITS ALTERNATIVES, FOCUSING ON THE FOLLOWING:

(a) Geographical, geological and physical aspects:

Please refer to Appendix I attached.

(b) Ecological aspects:

Will the proposed development and its alternatives have an impact on CBAs or ESAs? If yes, please explain: Also include a description of how the proposed development will influence the quantitative values (hectares/percentage) of the categories on the CBA/ESA map.	YES	NO
According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations). Refer to Appendix D for Biodiversity sensitivity maps. A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.		
Will the proposed development and its alternatives have an impact on terrestrial vegetation, or aquatic ecosystems (wetlands, estuaries or the coastline)? If yes, please explain:	YES✓	NO
According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations). Refer to Appendix D for Biodiversity sensitivity maps. A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.		

Will the proposed development and its alternatives have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species? If yes, please explain:	YES	NO✓
N/A		
Describe the manner in which any other biological aspects will be impacted:		
It is not anticipated that other biological aspects, other than those mentioned in specialist reports and this report, will be impacted.		
Will the proposed development also trigger section 63 of the NEM: ICMA?	YES	NO✓
If yes, describe the following: (i) the extent to which the applicant has in the past complied with similar authorisations; (ii) whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development proposal or listed activity is consistent with the purpose for establishing and protecting those areas; (iii) the estuarine management plans, coastal management programmes, coastal management lines and coastal management objectives applicable in the area; (iv) the likely socio-economic impact if the listed activity is authorised or is not authorised; (v) the likely impact of coastal environmental processes on the proposed development; (vi) whether the development proposal or listed activity— (a) is situated within coastal public property and is inconsistent with the objective of conserving and enhancing coastal public property for the benefit of current and future generations; (b) is situated within the coastal protection zone and is inconsistent with the purpose for which a coastal protection zone is established as set out in section 17 of NEM: ICMA; (c) is situated within coastal access land and is inconsistent with the purpose for which coastal access land is designated as set out in section 18 of NEM: ICMA; (d) is likely to cause irreversible or long-lasting adverse effects to any aspect of the coastal environment that cannot satisfactorily be mitigated; (e) is likely to be significantly damaged or prejudiced by dynamic coastal processes; (f) would substantially prejudice the achievement of any coastal management objective; or (g) would be contrary to the interests of the whole community; (vii) whether the very nature of the proposed activity or development requires it to be located within coastal public property, the coastal protection zone or coastal access land; (viii) whether the proposed development will provide important services to the public when using coastal public property, the coastal protection zone, coastal access land or a coastal protected area; and (ix) the objects of NEM: ICMA, where applicable.		
N/A		

(c) Social and Economic aspects:

What is the expected capital value of the project on completion?	R25 000 000	
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the project?	R8 700 000	
Will the project contribute to service infrastructure?	YES	NO
Is the project a public amenity?	YES	NO
How many new employment opportunities will be created during the development phase?	Approx. 25 for 6-8 months	
What is the expected value of the employment opportunities during the development phase?	R4 750 000	
What percentage of this will accrue to previously disadvantaged individuals?	80%	
How will this be ensured and monitored (please explain):		

Stellenbosch Municipality's Preferential Procurement Policy shall be applied to source and appoint contractor.

How many permanent new employment opportunities will be created during the operational phase of the project?	Approx. 10
What is the expected current value of the employment opportunities during the first 10 years?	R 9 500 000
What percentage of this will accrue to previously disadvantaged individuals?	95%
How will this be ensured and monitored (please explain):	
Stellenbosch Municipality's is an equal opportunity employer and selection of staff will be done accordingly. Stellenbosch Municipality will be required to secure some 60% of the job opportunities for youth and females and to make skills development/ educational qualifications accessible.	
Any other information related to the manner in which the socio-economic aspects will be impacted:	
Please refer to Socio-economic statement as per Appendix G-6	

(d) Heritage and Cultural aspects:

Please refer to Heritage Impact Assessment as per Appendix G5 and Socio-economic statement as per Appendix G-6

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the development proposal produce waste (including rubble) during the development phase?	YES✓	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?		m^3
The only solid waste anticipated from the activity during construction and operation will be domestic waste which will be removed to the nearest registered Municipal landfill site.		

Will the development proposal produce waste during its operational phase?	YES✓	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?		m^3
Domestic waste (paper, plastic, organic/garden refuse)		

Will the development proposal require waste to be treated / disposed of on site?	YES	NO✓
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?		m^3
If no, where and how will the waste be treated / disposed of? Please explain. Indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?		6 to 12m^3 domestic waste
The only solid waste anticipated from the activity during construction and operation will be domestic waste which will be removed to the nearest registered Municipal landfill site.		
Has the municipality or relevant authority confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? If yes, provide written confirmation from the municipality or relevant authority.	YES	NO✓

Will the development proposal produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	YES	NO✓
If yes, has this facility confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? Provide written confirmation from the facility. N/A	YES	NO
Does the facility have an operating license? (If yes, please attach a copy of the licence.) N/A	YES	NO

Facility name:	
Contact person:	
Cell:	Postal address:
Telephone:	Postal code:
Fax:	E-mail:

Describe the measures that will be taken to reduce, reuse or recycle waste:
Recycling bins will be provided to separate waste produced at source.

(b) Emissions into the atmosphere

Will the development proposal produce emissions that will be released into the atmosphere?	YES✓	NO
If yes, does this require approval in terms of relevant legislation?	YES	NO✓
If yes, what is the approximate volume(s) of emissions released into the atmosphere?		m^3
Describe the emissions in terms of type and concentration and how these will be avoided/managed/treated/mitigated:		
Fugitive particulate emissions/dust during initial site preparation/grading. Smaller amounts of fugitive particulate emissions when graves are excavated. Vehicle emissions from during construction and normal operation of facility.		

3. WATER USE

(a) Indicate the source(s) of water for the development proposal by highlighting the appropriate box(es).

Municipal	Water board	Groundwater	River, Stream, Dam or Lake	Other	The project will not use water

Note: Provide proof of assurance of water supply (e.g. Letter of confirmation from the municipality / water user associations, yield of borehole)

Refer to Appendix E5 – Email from Stellenbosch Municipality. There is currently a municipal line supplying potable water to the region. A single point tie in will be made to this line. Non- potable water for irrigation of garden areas and the sewer network may be provided either from boreholes, or trucked-in by the Local Municipality.

(b) If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	Unknown	m^3

(c) Does the development proposal require a water use permit / license from DWS?	YES✓	NO
If yes, please submit the necessary application to the DWS and attach proof thereof to this application as an Appendix.		

The possibility of using groundwater from the northern or north western part of the site exists but will need to be further investigated and would then trigger an additional water use under the National Water Act, No. 36 of 1998 (NWA). Any water use permit / license application (including the will be undertaken by an appropriate freshwater specialist.

(d) Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:
Non-potable water will be used for ablutions and watering saplings and water-wise garden areas.

4. POWER SUPPLY

(a) Describe the source of power *e.g.* municipality / Eskom / renewable energy source.

Power will be supplied from Eskom but it is also proposed that the development be off-grid as much as possible with the potentially small electricity requirement for possible entrance gate lighting, provided by a renewable energy means (e.g. solar panels). Refer to services report in Appendix G13.

(b) If power supply is not available, where will power be sourced?

Power will be supplied from Eskom but it is also proposed that the development be off-grid as much as possible with the potentially small electricity requirement for possible entrance gate lighting, provided by a renewable energy means (e.g. solar panels). Refer to services report in Appendix G13.

5. ENERGY EFFICIENCY

(a) Describe the design measures, if any, that have been taken to ensure that the development proposal will be energy efficient:

Power will be supplied from Eskom but it is also proposed that the development be off-grid as much as possible with the potentially small electricity requirement for possible entrance gate lighting, provided by a renewable energy means (e.g. solar panels). Energy efficient light bulbs and timer controls will also be utilised where possible. Refer to services report in Appendix G13.

(b) Describe how alternative energy sources have been taken into account or been built into the design of the project, if any:

Power will be supplied from Eskom but it is also proposed that the development be off-grid as much as possible with the potentially small electricity requirement for possible entrance gate lighting, provided by a renewable energy means (e.g. solar panels). Energy efficient light bulbs and timer controls will also be utilised where possible. Refer to services report in Appendix G13.

6. TRANSPORT, TRAFFIC AND ACCESS

Describe the impacts in terms of transport, traffic and access.

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at ±km50.58 will be required. The Final Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"
It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualling of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: ±12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Access control to the proposed development will most likely be facilitated via fencing/palisade fencing and a lockable gate with a security guard on duty. This also provides a local employment opportunity.

7. NUISANCE FACTOR (NOISE, ODOUR, etc.)

Describe the potential nuisance factor or impacts in terms of noise and odours.

Due to the rural locality of the proposed development site, nuisance factors will probably be negligible since no immediately adjacent residential/small business neighbours exist.

Note: Include impacts that the surrounding environment will have on the proposed development.

8. OTHER

Sewage during construction will be managed via a portable toilet contract.
Sewage during operation will be managed via an on-site sewage/effluent treatment plant.

SECTION G: IMPACT ASSESSMENT, IMPACT AVOIDANCE, MANAGEMENT, MITIGATION AND MONITORING MEASURES

1. METHODOLOGY USED IN DETERMINING AND RANKING ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

(a) Describe the **methodology** used in determining and ranking the nature, significance consequences, extent, duration and probability of potential environmental impacts and risks associated with the proposed development and alternatives.

Refer to Project Impact Assessment, Significance and Mitigation Measures Summary attached as Appendix I.

(b) Please describe any gaps in knowledge.

Refer to Project Impact Assessment, Significance and Mitigation Measures Summary attached as Appendix I.

(c) Please describe the underlying assumptions.

Refer to Project Impact Assessment, Significance and Mitigation Measures Summary attached as Appendix I.

(d) Please describe the uncertainties.

Refer to Project Impact Assessment, Significance and Mitigation Measures Summary attached as Appendix I.

(e) Describe adequacy of the assessment methods used.

Refer to Project Impact Assessment, Significance and Mitigation Measures Summary attached as Appendix I.

2. IDENTIFICATION, ASSESSMENT AND RANKING OF IMPACTS TO REACH THE PROPOSED ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE WITHIN THE SITE

Note: In this section the focus is on the identified issues, impacts and risks that influenced the identification of the alternatives. This includes how aspects of the receiving environment have influenced the selection.

Refer to Appendix I for Impact and Risk Assessment which remains the same for all the alternatives since only one site is proposed and minimum setbacks are adhered to for all layout alternatives. However, for completeness an attempt was also made to use the rating system guide as provided:

(a) List the identified impacts and risks for each alternative.

Alternative 1:	**for example, choose from: geology / geohydrological / ecological / socio-economic / heritage and cultural-historical / noise / visual / *etc*.**
Alternative 2:	**for example, choose from: geology / geohydrological / ecological / socio-economic / heritage and cultural-historical / noise / visual / *etc*.**
Alternative x:	**for example, choose from: geology / geohydrological / ecological / socio-economic / heritage and cultural-historical / noise / visual / *etc*.**
No-go Alternative:	

(b) Describe the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. (The EAP has to select the relevant impacts identified in blue in the table below for each alternative and repeat the table for each impact and risk).

Refer to Appendix I for Impact and Risk Assessment. However, for completeness an attempt was also made to use the rating system guide as provided:

Impacts that may result from the planning, design and construction phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the planning, design and construction phase.

Potential impacts on geographical and physical aspects:	
Nature of impact:	**Change in landscape/slope of property/site.**
Extent and duration of impact:	Entire site, during construction
Probability of occurrence:	Unlikely – site is relatively flat
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	Negligible
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible
Degree to which the impact can be mitigated:	Negligible
Proposed mitigation:	• Landscaping to be done
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential impact on biological aspects:	
Nature of impact:	**Loss of indigenous vegetation due to construction and operational activities**
Extent and duration of impact:	Entire site, during construction (but site is infested with alien vegetation)
Probability of occurrence:	Unlikely – not much indigenous vegetation on site
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	Negligible
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible
Degree to which the impact can be mitigated:	Negligible
Proposed mitigation:	• Landscaping to be done with locally indigenous “water-wise” vegetation
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential impacts on socio-economic aspects:	
Nature of impact:	**A number of job opportunities are expected to be created during the construction phase.**
Extent and duration of impact:	Local. During the construction phase of the activity
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	NA
Degree to which the impact may cause irreplaceable loss of resources:	NA
Cumulative impact prior to mitigation:	Low - positive
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	No mitigation measures required. Temporary jobs will be created during the construction phase.
Cumulative impact post mitigation:	Low - positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive

Potential impacts on cultural-historical aspects:	
Nature of impact:	**The loss of cultural or historic aspects during construction**
Extent and duration of impact:	Local, during construction phase
Probability of occurrence:	Unlikely, no cultural or historic aspects of significance were identified on site.
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Very Low - negative
Cumulative impact prior to mitigation:	Very Low – negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - Negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	• If any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during construction they must immediately be reported to HWC and must not be disturbed further until the necessary approval has been obtained from HWC. • Should any human remains/burial or archaeological material be disturbed, exposed or uncovered during construction, these should immediately be reported to the South African Heritage Resources Agency and Heritage Western Cape. The ECO and ER are also to be informed. An archaeologist will be required to remove the remains at the expense of the developer
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential noise impacts:	
Nature of impact:	**Noise impact from machinery and plant during construction.**
Extent and duration of impact:	Local. Duration of construction phase
Probability of occurrence:	High
Degree to which the impact can be reversed:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Negligible

Cumulative impact prior to mitigation:	Low - Negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - Negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	Noise mitigation measures will be dealt with in the EMP. The following measures will be implemented amongst others: • Working hours will be restricted to daily normal working hours. • All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas. • Construction activities are only to occur within the permitted construction hours. The Contractor shall ensure that noise levels are kept to a minimum and that they do not to exceed the permissible noise level of 85dB • All plant and machinery are to be fitted with adequate silencers. No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.
Cumulative impact post mitigation:	Very low - negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very low - negative

Potential visual impacts:	
Nature of impact:	**Unsightly views due to construction site.**
Extent and duration of impact:	Local, during duration of construction
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Cumulative impact prior to mitigation:	Medium - negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium - negative
Degree to which the impact can be mitigated:	Probable
Proposed mitigation:	Visual impact mitigation measures will be dealt with in the EMP The EMP must be enforced and monitored by the ECO. The site must be clean and tidy at all times. No stockpiles may exceed 2m in height. Appropriate hoarding to be erected between the site and the surrounding residential properties.
Cumulative impact post mitigation:	Low - negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - negative

Impacts that may result from the operational phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.

Potential impacts on the geographical and physical aspects:	**The activity is expected to have an impact on the groundwater quality**
Nature of impact:	Leachate from the cemetery polluting the groundwater
Extent and duration of impact:	Local, during the operational phase of the cemetery
Probability of occurrence:	Likely
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low - negative
Cumulative impact prior to mitigation:	Low - negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low

Proposed mitigation:	Two or more boreholes situated along each boundary of the envisaged development for ground water monitoring. It is recommended that this one bore hole be monitored at least twice a year, once in summer and once in winter, for the parameters as indicated in Table 1, page 13 of Appendix G3. The results are to be submitted to the DWA as soon as they become available, as well as to interested and affected parties.
Cumulative impact post mitigation:	Low - negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - negative

Potential impact biological aspects:	**No negative impact on biological aspects are expected since alien removal and potential conservation through periodic search and rescue of possible endangered/threatened indigenous plant species is proposed.**
Nature of impact:	Local. During entire operational phase of the development
Extent and duration of impact:	Alien plant removal -definite.
Probability of occurrence:	NA
Degree to which the impact can be reversed:	NA
Degree to which the impact may cause irreplaceable loss of resources:	Low - positive
Cumulative impact prior to mitigation:	Low - positive
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	NA
Degree to which the impact can be mitigated:	No mitigation measures required. This is a positive impact
Proposed mitigation:	Low - positive
Cumulative impact post mitigation:	Low - positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Local. During entire operational phase of the development

Potential impacts on the socio-economic aspects:	
Nature of impact:	**Additional burial opportunities will be provided.**
Extent and duration of impact:	Local. During entire operational phase of the development
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	NA
Degree to which the impact may cause irreplaceable loss of resources:	NA
Cumulative impact prior to mitigation:	Low - positive
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive
Degree to which the impact can be mitigated:	NA
Proposed mitigation:	No mitigation measures required. This is a positive impact
Cumulative impact post mitigation:	Low - positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive

Potential impacts on the cultural-historical aspects:	
Nature of impact:	**The loss of cultural or historic aspects during operational phase**
Extent and duration of impact:	Local, during construction phase
Probability of occurrence:	Unlikely, no cultural or historic aspects of significance were identified on site.
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Very Low - negative
Cumulative impact prior to mitigation:	Very Low – negative

Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - Negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	• If any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during construction they must immediately be reported to HWC and must not be disturbed further until the necessary approval has been obtained from HWC. • Should any human remains/burial or archaeological material be disturbed, exposed or uncovered during construction, these should immediately be reported to the South African Heritage Resources Agency and Heritage Western Cape. The ECO and ER are also to be informed. An archaeologist will be required to remove the remains at the expense of the developer
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential noise impacts:	
Nature of impact:	• **Normal traffic noise associated with motorcades to the cemetery will result.** • **Minimal noise during burial ceremonies is expected**
Extent and duration of impact:	Local, duration of operational phase
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	NA
Cumulative impact prior to mitigation:	Medium-low - negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium-low - negative
Degree to which the impact can be mitigated:	Very limited
Proposed mitigation:	- Landscaped buffer along the perimeter of the cemetery
Cumulative impact post mitigation:	Low – negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low – negative

Potential visual impacts:	
Nature of impact:	• **Normal visual impact associated with a cemetery will result.** • **No other detrimental visual impacts are envisaged with a development of this nature and size.**
Extent and duration of impact:	Local, permanent
Probability of occurrence:	Possible
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low - negative
Cumulative impact prior to mitigation:	Low - negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium - negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	- Landscaped buffer along the perimeter of the cemetery - The proposed site is layout and landscaping shields the development from visual impacting on the surrounds
Cumulative impact post mitigation:	Low - negative

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - negative

Impacts that may result from the decommissioning and closure phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase.

The project as proposed does not require 'decommissioning' or 'closure', as such the potential impacts thereof have not been rated.

Note: The EAP may decide to include this section as Appendix ~~J~~ I to the BAR.

(c) Provide a summary of the site selection matrix.

Refer to Appendices L & M attached

(d) Outcome of the site selection matrix.

Refer to Appendices L & M attached

3. SPECIALIST INPUTS/STUDIES, FINDINGS AND RECOMMENDATIONS

Note: Specialist inputs/studies must be attached to this report as **Appendix G** and must comply with the content requirements set out in Appendix 6 of the EIA Regulations, 2014 (as amended). Also take into account the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "*One Environmental Management System*" and the EIA Regulations, 2014, any subsequent Circulars, and guidelines available on the Department's website (**http://www.westerncape.gov.za/eadp**).

Provide a summary of the findings and impact management measures identified in any specialist report and an indication of how these findings and recommendations have been included in the BAR.

To be extracted from specialist reports as appended in Appendix G.

4. ENVIRONMENTAL IMPACT STATEMENT

Provide an environmental impact statement of the following:

(i) A summary of the key findings of the EIA.
Conclusion

Based on the specialist reports in Appendix G, the proposed Calcutta Public Cemetery and Memorial Park will provide a much-needed service to the regional community whilst also facilitating the rehabilitation and protection of the property in terms of biodiversity and existing water courses.

In addition, the cultural/heritage aspects of the property which have been somewhat neglected and lost, will be rehabilitated and preserved through the proposed development.

The aesthetic impact of the proposed public cemetery and memorial park will improve since the current property is infested with alien plants and is often used as a dumping ground.

Each specialist assessment further highlights the environmental benefits of the proposed development, as indicated below:

i. **Biodiversity** – the site currently has a low biodiversity significance but can be rehabilitated provided the requirements as detailed in the botanical statement/scan reports (attached as Appendices G1 and G2) are taken into account.

ii. **Freshwate**r – the proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, as long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated and the freshwater rehabilitation, maintenance and management plan (FRMMP) attached as Appendix G5, are adhered to.

iii. **Geohydrology** – the majority of the site is classified as having a 'low/medium' groundwater vulnerability rating. The southern portion of the site has been classified as 'medium', grading into a 'very high' venerability classification.

iv. **Geotechnical** – provided the cemetery is sited as recommended in the geotechnical report, the site is considered satisfactory for development of a cemetery.

v. **Heritage** – The potential impact of the proposed cemetery site on the old outspan is significant in that it is a wholesale change of land use from woodlot to cemetery. However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone. Were the outspan site and surrounds carefully conserved and landscaped, this would retain a memory of its core purpose and allow for local associations to be retained of the site's outspan purpose and character thus mitigating associative impact and retaining landmark value.

a. Archaeology – Archaeological visibility is extremely low due to dense vegetation cover, but indications are that the receiving environment is not a sensitive archaeological landscape.

b. Palaeontological – No fossil remains were recorded on Farm Calcutta RE/29 during the short palaeontological site visit. It is concluded that the palaeontological sensitivity of the Memorial Park study area is very low.

c. Visual – The proposed development will have a moderate impact on the landscape causing some change to the visual environment. The development's visual impact has site-

related to local extent, long term duration, medium intensity, definite probability, and medium significance on the landscape.

vi. **Socio-economic** – socio-economic costs and benefits were listed in section five of the report. Eleven potentially positive impacts (job and skill levels increase; the creation of a social space; continuation of social networks; equality and exclusivity; employment equity of vulnerable groups; use of social amenities; positive change in the sense of place; preservation of social history; access to leisure opportunities; access to natural resources; sales and GGP) versus three (crime/neglect; individual and family changes; dust and noise levels) potentially negative impacts were listed related to the proposed development.

According to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity or ecological support areas *viz.* CBA 2– degraded areas but with potential for rehabilitation and ESA 2 – ecological support areas (associated with watercourses or plantations).

Refer to Appendix D for Biodiversity sensitivity maps.

A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.

The proposed development will positively impact and improve the ESA, CBA condition, as well as eliminate the dense infestation of alien trees on the property.

In addition to preserving and promoting the introduction of indigenous vegetation in the area, the proposed public cemetery and memorial park will preserve the cultural heritage of the regions Outspan site and provide employment for local individuals, while meeting the need for the essential service of a contextualised public cemetery and memorial park.

Considering all the information, it is not envisaged that this will have a significant overall negative impact on the environment.

<u>It is therefore recommended that this application be authorised with the necessary conditions of approval as described throughout this BAR.</u>

(ii) Has a map of appropriate scale been provided, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers?	YES ✔	NO
(iii) A summary of the positive and negative impacts that the proposed development and alternatives will cause in the environment and community.		

See Appendix I attached

5. IMPACT MANAGEMENT, MITIGATION AND MONITORING MEASURES

(a) Based on the assessment, describe the impact management, mitigation and monitoring measures as well as the impact management objectives and impact management outcomes included in the EMPr. The EMPr must be attached to this report as Appendix O.

i. **Biodiversity** – The site and its immediate surroundings are considered transformed with no natural veld remaining. Only a few hardy indigenous species remain. However implementing the following recommendations can ensure a potential positive environmental impact:

- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
- All alien plants and all waste must be removed from the site and its immediate surroundings.
- The small seasonal stream must be demarcated with a suitable buffer zone
- The buffer zone (ecological support area) should be replanted with suitable indigenous vegetation (riparian vegetation).
- The seasonal stream and its buffer zone should be incorporated as a feature within the lay-out of the memorial park.
- Only indigenous plants should be used for any landscaping within the memorial park.
- All areas impacted as a result of construction must be rehabilitated on completion of the project.
- Once alien plantation on the proposed site is removed, a Spring (August/September) botanical scan must be undertaken to confirm that there are no indigenous flora which may need to be search out and rescued (to be relocated into the development's indigenous garden areas).

ii. **Freshwate**r – It is proposed that it be made a condition of any approval granted based on the findings of the freshwater assessment attached as Appendix G-3 of the BAR, that the site be revisited for verification of the wetland delineation during the wet season (Jul/August) after site clearing is completed, so that reports can be updated and plans adjusted to accommodate post clearing wetland boundaries. The proposed layout must avoid infilling of wetlands A and D as indicated in the Freshwater Assessment (Appendix G-3 of the BAR), along with a 15m buffer for each, then the project would represent a significant net positive impact over present conditions.
The Freshwater Rehabilitation, Maintenance and Management Plan, attached as Appendix 13.3 of this EMPr (Appendix G-5 of the BAR), must be implemented as specified to ensure successful rehabilitation of the watercourses/wetlands on site.

iii. **Geohydrology** – The majority of the site is classified as having a "low/medium" groundwater vulnerability rating. The southern portion of the site has been classified as "medium" grading into a "very high" vulnerability classification.

The likelihood of groundwater contamination is low in the area and is based on the following:

- the nine test pits, the deepest being 3.40m below ground level (bgl), did not intersect groundwater;

- permeability evaluations indicate that majority of the site had semi- to impervious layers with the exception of TP7 which had a porous layer at 0.2m (not a real concern for groundwater);
- the closest neighbours' borehole is located approximately 140m north of the northern boundary. However, the water bearing fractures were reported to be located a depth of 120m to 125m bgl. With a thick clay layer above the granite bedrock it can be assumed that the aquifer is semi-confined in nature. The likelihood of migration to the lower fractured aquifer is low due the clay layer.

However, since the site is in close proximity to a number of groundwater users that depend on groundwater as a source, it is recommended that three to four monitoring boreholes (110 OD/100 ID mm) be drilled to a depth of at least 12m. If the water table is intersected before 12m, then drilling must continue for 1m past the water table intersect - this should account for season fluctuations.

iv. **Geotechnical** – Sidewall collapse was not observed in any of the trial pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible. Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken
as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

Allowance must always be made for the subsidence of the grave backfill and subsequent relevelling before any memorial structure of tombstone is constructed over the grave.

v. **Heritage:**

a. Archaeology – With regard to the proposed Calcutta Municipal Cemetery on Farm No. 29 near
Stellenbosch, the following recommendations are made:

- No mitigation is required prior to construction activities commencing.
- As a precaution, the site should be scanned for artefactual remains dating from the time of the Calcutta Bos Outspan, once vegetation has been cleared and removed from the site.

b. Palaeontological – It is recommended that, pending the exposure of significant new fossils (*e.g.* mammalian bones and teeth) during construction, exemption from further specialist palaeontological studies and mitigation be granted for this development.

If fossil material is discovered during construction, this should be safeguarded, preferably *in situ*, and the ECO should alert Heritage Western Cape (Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) can be taken by a professional palaeontologist. The tabulated 'Chance Fossil Finds Protocol' and associated recommendations, appended to the Heritage Impact Assessment report (Appendix G-8 of the BAR) must be implemented.

c. Visual – Implementation of a sound visual management and monitoring plan, as per Section 6 of the Visual Impact Assessment (VIA) report attached as Appendix G8 of the BAR, is required.

A summary of the type and frequency of monitoring is further summarised in terms of inspection, observation and review, in Figure 5 (Visual Monitoring Plan, under section 6.3.3. of the VIA.

(b) Describe any provisions for the adherence to requirements that are prescribed in a Specific Environmental Management Act relevant to the listed activity or specified activity in question.

per EMPr detailed regarding possible botanical search and rescue and heritage which will be appended as Appendix O.

(c) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

The Applicant, Stellenbosch Municipality, will have a dedicated team from the Community Services Department to service and maintain the proposed development.
In addition, Stellenbosch Municipality already has various plans in place e.g. annual alien plant removal planned operation which will complement the proposed developments objectives.

(d) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

N/A

(e) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

N/A

(f) Describe any assumptions, uncertainties, and gaps in knowledge which relate to the impact management, mitigation and monitoring measures proposed.

Unknown

SECTION H: RECOMMENDATIONS OF THE EAP AND SPECIALISTS

(a) In my view as the appointed EAP, the information contained in this BAR and the documentation attached hereto is sufficient to make a decision in respect of the listed activity(ies) applied for.	YES ✓	NO

(b) If the documentation attached hereto is sufficient to make a decision, please indicate below whether, in your opinion, the listed activity(ies) should or should not be authorised:		
Listed activity(ies) should be authorised:	YES ✓	NO

Provide reasons for your opinion

Preliminary geohydrological assessments indicate that attenuation of any biological pathogens or contaminants before groundwater is reached is very likely - Fractured aquifer lies at a depth greater that the minimum depth required for attenuation of contaminants.

The positive impacts on biodiversity, heritage, aesthetics and job-creation are likely to be realised (although the management of the site by the Municipality once the development is established is uncertain).

(c) Provide a description of any aspects that were conditional to the findings of the assessment by the EAP and Specialists which are to be included as conditions of authorisation.

Wetland assessment to take place once alien trees/Eucalyptus have been removed from site to verify delineation.

Archaeological assessment required during construction when dense tree growth has been removed.

Memorial garden/park aspect which involves the indigenous forest/tree planting area must be established in conjunction with the alien tree removal programme for the region so that the planned removal of alien vegetation is systematically replaced with indigenous trees/flora. Botanical survey to be taken once alien trees/Eucalyptus have been removed from site to verify if there are any indigenous species requiring search and rescue (to the memorial park landscaped areas.

Preferably and wall structure (not just a fence must be erected on the northern boundary of the actual public cemetery and memorial park.

(d) If you are of the opinion that the activity should be authorised, please provide any conditions, including mitigation measures that should in your view be considered for inclusion in an environmental authorisation.

Due to I&APs concerns and beliefs regarding residing near a cemetery, it was requested and is recommended that a walled boundary (even a pre-fab/'vibacrete' type wall) be erected instead of a perimeter fence on the northern boundary of the development site.

(e) Please indicate the recommended periods in terms of the following periods that should be specified in the environmental authorisation:

i.	the period within which commencement must occur;	5 years from date of issue
ii.	the period for which the environmental authorisation is granted and the date on which the development proposal will have been concluded, where the environmental authorisation does not include operational aspects;	Development boundary and subsurface infrastructural establishment: 5-10 years from date of issue. (Due to the nature of the amenity, the development 'grows' over the projected lifespan to eventually occupy the total footprint applied for. Development takes place in 'precincts' which are established approximately every 3 to 5 years within the proposed site boundary).
iii.	the period for which the portion of the environmental authorisation that deals with non-operational aspects is granted; and	Within the main boundary of the development, precincts will be established in 3 to 5 year phases over the expected 30 year lifespan
iv.	the period for which the portion of the environmental authorisation that deals with operational aspects is granted.	30 years

SECTION I: APPENDICES

The following appendices must be attached to this report:

APPENDIX			Confirm that Appendix is attached
Appendix A:	**Locality map**		Yes
Appendix B:	**Site development plan(s)**		Yes
	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;		Yes
Appendix C:	**Photographs**		Yes
Appendix D:	**Biodiversity overlay map**		Yes
Appendix E:	**Permit(s) / license(s) from any other Organ of State, including service letters from the municipality.**		No (Email)
	Appendix E3:	**Copy of comment from HWC.**	No – just initial email with reference number
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses report, proof of notices, advertisements and any other public participation information as is required in Section C above.**		Yes
Appendix G:	**Specialist Report(s)**		Yes
Appendix H:	**I&AP Lists**		Yes
	Additional information related to listed waste management activities (if applicable)		N/A
Appendix I:	**If applicable, description of the impact assessment process followed to reach the proposed preferred alternative within the site.**		Yes – as Appendix I
Appendix J:	**Rezoning information**		Yes
Appendix K:	Minutes of Stellenbosch Municipality Council Meeting (partial)		Yes
Appendix L:	*First Report, Final October 2016: Identification and Acquisition of Authorisations and Approvals for the Establishment of One or More Regional Cemeteries for Stellenbosch Municipality*		Yes
Appendix M:	*Motivation to obtain Stellenbosch Council's endorsement of Regional Cemetery Sites in fulfilment of tender B/SM No. 17/16: Acquisition of Authorisations and Approvals for the establishment of one or more regional cemeteries for Stellenbosch Municipality*		Yes
Appendix N:	Cemetery Feasibility Study, October 2006		Yes
Appendix O:	Environmental Management Plan/Programme (EMPr)		Yes

SECTION J: DECLARATIONS

THE APPLICANT

Note: Duplicate this section where there is more than one applicant.

I ……..……., in my personal capacity or duly authorised thereto, hereby declare/affirm all the information submitted as part of this Report is true and correct, and that I –

- am aware of and understand the content of this report;
- am fully aware of my responsibilities in terms of the NEMA, the EIA Regulations in terms of the NEMA (Government Notice No. R. 982, refers) (as amended) and any relevant specific environmental management Act and that failure to fulfil these requirements may constitute an offence in terms of relevant environmental legislation;
- have provided the EAP and Specialist, Review EAP (if applicable), and Review Specialist (if applicable), and the Competent Authority with access to all information at my disposal that is relevant to the application;
- will be responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority;
- will be responsible for the costs incurred in complying with the conditions that may be attached to any decision(s) issued by the Competent Authority;

Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.

Signature of the Applicant: _____

Name of Organisation: _____

Date: _____

THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I ……., as the appointed EAP hereby declare/affirm:

- the correctness of the information provided as part of this Report;
- that all the comments and inputs from stakeholders and I&APs have been included in this Report;
- that all the inputs and recommendations from the specialist reports, if specialist reports were produced, have been included in this Report;
- any information provided by me to I&APs and any responses by me to the comments or inputs made by I&APs;
- that I have maintained my independence throughout this EIA process, or if not independent, that the review EAP has reviewed my work (Note: a declaration by the review EAP must be submitted);
- that I have throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have throughout this EIA process disclosed to the applicant, the specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application;
- have ensured that information containing all relevant facts in respect of the application was distributed or was made available to I&APs and that participation by I&APs was facilitated in such a manner that all I&APs were provided with a reasonable opportunity to participate and to provide comments;
- have ensured that the comments of all I&APs were considered, recorded and submitted to the Department in respect of the application;
- have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, if specialist inputs and recommendations were produced;
- have kept a register of all I&APs that participated during the PPP; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the EAP: _____

Name of Company: _____

Date: _____

THE REVIEW ENVIRONMENTAL ASSESSMENT PRACTITIONER

I ……., as the appointed Review EAP hereby declare/affirm:

- that I have reviewed all the work produced by the EAP;
- the correctness of the information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Review EAP: _____

Name of Company: _____

Date: _____

THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I ……, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I :

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist: _____

Name of Company: _____

Date: _____

THE REVIEW SPECIALIST

I ……., as the appointed Review Specialist hereby declare/affirm:

- that I have reviewed all the work produced by the Specialist(s);
- the correctness of the specialist information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of specialists as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of Review Specialist: _____

Name of Company: _____

Date: _____

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36. SCHEDULE OF PLANT AND EQUIPMENT

The following are lists of major items of relevant equipment that I/we **presently** own or lease and will have available for this contract or will acquire or hire for this contract if my / our tender is accepted.

DETAILS OF MAJOR EQUIPMENT THAT IS OWNED BY AND IMMEDIATELY AVAILABLE FOR THIS CONTRACT.

QUANTITY	DESCRIPTION	SIZE	CAPACITY

Attach additional pages if mores space is required.

DETAIL OF MAJOR EQUIPMENT THAT WILL BE HIRED, ORE ACQUIRED FOR THIS CONTRACT IF MY / OUR TENDER IS ACCEPTED.

QUANTITY	DESCRIPTION,	SIZE	CAPACITY

Attach additional pages if mores space is required.

Number of sheets appended by the tenderer to this schedule *(If nil, enter **NIL**)*	

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

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37. SCHEDULE OF SUBCONTRACTORS

I/we the tenderer, notify the Stellenbosch Municipality that it is our intention to employ the following Subcontractors for work in this contract.

SUBCONTRACTORS				
Category / Type	**Subcontractor Name; Address; Contact Person; Tel. No.**		**Items of work (pay items) to be undertaken by the Subcontractor**	**Estimated cost of Work (Rand)**
1.	Name of firm			
	Contact person			
	Tel No			
	Address			
2.	Name of firm			
	Contact person			
	Tel No			
	Address			
3.	Name of firm			
	Contact person			
	Tel No			
	Address			
4.	Name of firm			
	Contact person			
	Tel No			
	Address			
Number of sheets appended by the tenderer to this schedule *(If nil, enter **NIL**)*				

Acceptance of this tender shall not be construed as approval of all or any of the listed subcontractors. Should any of the subcontractors not be approved subsequent to acceptance of the tender, this shall in no way invalidate this tender, and the tendered unit rates for the various items of work shall remain final and binding, even in the event of a subcontractor not listed above being approved by the Engineer.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

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38. SCHEDULE OF WORK EXPERIENCE OF THE TENDERER – CURRENT CONTRACTS

EMPLOYER (Name, Tel, Email)		NATURE OF WORK	VALUE OF WORK (INCL. VAT)	CONTRACT PERIOD
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Company				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				

Attach additional pages if mores space is required.

Number of sheets appended by the tenderer to this schedule (If nil, enter NIL)			
SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

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39. SCHEDULE OF WORK EXPERIENCE OF THE TENDERER – COMPLETED CONTRACTS

The following is a statement of similar work successfully executed by myself / ourselves:

EMPLOYER (Name, Tel, Fax, Email)		NATURE OF WORK	VALUE OF WORK (INCL. VAT)	CONTRACT PERIOD
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				
Company				From
Tel				
Contact Person				To
Email				

Attach additional pages if mores space is required.

Number of sheets appended by the tenderer to this schedule (If nil, enter NIL)	

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

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40. CERTIFICATE OF REGISTRATION WITH CIDB

CIDB Contractor Registration Certificate

A Certificate of Contractors Registration issued by the Construction Industry Development Board (CIDB) shall be attached to this schedule.

Where a tenderer satisfies CIDB Contractor Grading designation requirements through joint venture formation, such tenderers must submit the Certificates of Contractor Registration in respect of each partner.

Number of sheets appended by the tenderer to this schedule (If nil, enter NIL)	
CRS Number:	

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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41. FORM OF OFFER AND ACCEPTANCE

NOTE:

1. **This form must be completed in duplicate by both the successful bidder (Part 1) and the purchaser (Part 2). Both forms must be signed in the original so that the successful bidder and the purchaser will be in possession of originally signed contracts for their respective records.**
2. **NO correction fluid/tape may be used.**
   a. **In the event of a mistake having been made, it shall be crossed out in ink and be accompanied by an initial at each and every alteration.**
3. **The Bidder MUST indicate whether he/she/the entity is a registered VAT Vendor or not.**
   a. **In the case of the Bidder not being a registered VAT Vendor, both columns (amount/rate excluding AND including VAT) must reflect the same amount.**

	INDICATE WITH AN 'X'									
Are you/is the firm a registered VAT Vendor	**YES**						**NO**			
If "YES", please provide VAT number										

1. OFFER

1.1. The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works: **B/SM**: **17/26**

1.2. The tenderer, identified in the Offer signature block, has examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

1.3. By the representative of the Tenderer, deemed to be duly authorized, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the **Employer** under the contract, including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VAT IS:	
In figures:	**R**
In words:	

1.4. This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the **Contractor** in the conditions of contract identified in the Contract Data.

Signature(s)			
Name(s)			
Capacity			
Name of tenderer:			
Name of witness:	*(Insert name and address of organization)*	Date	
Signature of witness:			

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2. ACCEPTANCE

2.1. By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the conditions of contract identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

2.2. Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

2.3. It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this agreement.

Signature(s):			
Name(s):			
Capacity:			
For the Employer:	**Stellenbosch Municipality, Plein Street, Stellenbosch**		
Name of witness:		Date:	
Signature of witness:			

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42. PRICING INSTRUCTIONS

1 The JBCC, the Tender Data, the Specifications (including the Project Specifications) and the drawings shall be read in conjunction with the Bill of Quantities.

2 The Bill comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

Although the Tenderer is at liberty to insert a rate of his own choosing for each item in the Bill, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Employer Agent is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Bill.

3 Descriptions in the Bill of Quantities are abbreviated and may differ from those in the Standardized and Scope of Work. No consideration will be given to any claim by the Contractor submitted on such a basis. The Bill has been drawn up generally in accordance with the Standard System of Measuring Building Work – 6th Edition (Revised 2013). Should any requirement of the measurement and payment clause of the appropriate Standardized or Project Specification(s)be contrary to the terms of the Bill, the requirement of the appropriate Standardized, Project, or Particular Specification as the case may be, shall prevail.

4 Unless stated to the contrary, items are measured net in accordance with the drawings without any allowance having been made for waste.

5 The amounts and rates to be inserted in the Bill of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding value-added tax), liabilities and obligations set forth or implied in the documents on which the Tender is based.

6 An amount or rate shall be entered against each item in the Bill of Quantities, whether or not quantities are stated. An item against which no amount or rate is entered will be considered to be covered by the other amounts or rates in the Bill.

The Tenderer shall also fill in a rate against the items where the words "rate only" appear in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the tendered rates shall apply should work under these items actually be required.

---

6 South African Institution of Civil Engineers, *The Standard System of Measurement of Civil Engineering Quantities*

Should the Tenderer group a number of items together and tender one sum for such groupof items, the single tendered sum shall apply to that group of items and not to each individualitem, or should he indicate against any item that full compensation for such item has been included in another item, the rate for the item included in another item shall be deemed to be nil.

The tendered rates, prices and sums shall, subject only to the provisions of the Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of theContract.

7 The quantities of work as measured and accepted and certified for payment in accordance with the Conditions of Contract, and not the quantities stated in the Bill of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities certified for payment.

Ordering of materials are not to be based on the Bill of Quantities, but only on information issued for construction purposes.

8 For the purposes of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit	:	The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications
Quantity	:	The number of units of work for each item
Rate	:	The payment per unit of work at which the Tenderer tenders to do the work
Amount	:	The quantity of an item multiplied by the tendered rate of the (same)
Item Sum	:	An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units

9 The units of measurement indicated in the Bill of Quantities are metric units. The following abbreviations may appear in the Bill of Quantities:

mm	=	millimeter
m	=	meter
m²	=	square meter
m³	=	cubic meter
kW	=	kilowatt
kN	=	kilonewton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
PC Sum	=	prime cost sum
Prov Sum	=	provisional sum

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43. PRICING SCHEDULE

NOTE:

1. **Only firm prices will be accepted. Non-firm prices will not be considered.**
2. **All delivery costs MUST be included in the bid price, for delivery at the prescribed destination.**
3. **Document MUST be completed in non-erasable black ink.**
4. **NO correction fluid/tape may be used.**
   a. **In the event of a mistake having been made, it shall be crossed out in ink and be accompanied by an initial at each and every alteration.**
5. **The Bidder MUST indicate whether he/she/the entity is a registered VAT Vendor or not.**

I / We _____

(full name of Bidder) the undersigned in my capacity as _____

of the firm _____

hereby offer to Stellenbosch Municipality to render the services as described, in accordance with the specification and conditions of contract to the entire satisfaction of the Stellenbosch Municipality and subject to the conditions of tender, for the amounts indicated hereunder:

	INDICATE WITH AN 'X'									
Are you/is the firm a registered VAT Vendor	**YES**					**NO**				
If "YES", please provide VAT number										

Please note the following:

1. Stellenbosch Municipality reserves the right to adjust the scope of work/ quantity required to stay within its budget.

2. Only firm prices will be accepted and non-firm prices will not be considered.

3. CONTRACT PRICE ADJUSTMENT PROVISIONS

   This tender will be a fixed price tender and the tender price must allow for all contract price increases and escalations in labour and materials until the issue of the final certificate.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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4. BILLS OF QUANTITIES

These Bills of Quantities contain pages that are numbered consecutively as indicated in the index and the Tenderer is required to check the number of pages. Should any of the pages be missing or duplicated or if the writing is indistinct or should there be any doubt as to the meaning of any description or item or if there should be obvious errors in these Bills of Quantities, the Tenderer is to immediately notify the Quantity Surveyor thereof and have same rectified or explained. No claims as a result of non-compliance of the aforementioned resulting in errors in the tender amount will be entertained.

No alteration, erasure, deletion, omission or addition may be made to the text or conditions of these Bills of Quantities and should any alteration, amendment, note or addition be made, it will not be accepted.

5. DESCRIPTIONS

These Bills of Quantities contain pages that are numbered consecutively and the Tenderer is required to check the number of pages. Should any of the pages be missing or duplicated or if the writing is indistinct or should there be any doubt as to the meaning of any description or item or if there should be obvious errors in these Bills of Quantities, the Tenderer is to immediately notify the Quantity Surveyor thereof and have same rectified or explained. No claims as a result of non-compliance of the aforementioned resulting in errors in the tender amount will be entertained. No alteration, erasure, deletion, omission or addition may be made to the text or conditions of these Bills of Quantities and should any alteration, amendment, note or addition be made, it will not be accepted.

6. DELAYS

No claims for storage of any materials will be entertained if a delay occurs in the construction program, notwithstanding the cause of any such delays.

7. COMMUNICATION

All communication and dealing with the Contractor shall be through the Project Manager/Principal Agent.

Drawings and Samples, as and if required from time to time shall be submitted to the Project Manager/Principal Agent for onward submission to the Architect/Engineer.

Wherever referred to Architect in this document, it shall be deemed to mean Project Manager/Principal Agent

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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8. FINANCIAL

Payment

Applications for payment are to be submitted on the 20th day of each month. Payment against your application will not be made until we are in possession of an original Tax Invoice equivalent to the amount certified by the principal agent.

Payment for material off site

Materials and goods stored "off-site" will only be paid for under special circumstances. Payment will only be made if Contractor has made arrangements through the Quantity Surveyor prior to certification and an approved bank guarantee for the value of the materials is submitted together with the contractor's claim, including cession of rights and proof of insurance.

Construction Guarantee

The contractor is to note that the Construction Guarantee to remain in effect up to final completion.

9. WAIVER OF LIEN

The contractor is to note that he will be required to waive his lien on the contract. The employer will not provide a payment guarantee.

10. SPECIFIC REQUIREMENTS

The contractors are to take note of the following client / consultants / local authority requirements.

Site and access

The contractor should make all temporary connections to facilitate their site camp (and remove upon completion, at his own cost). Should the contractor need to relocate his site camp for any reason, the cost of this relocation will be in his own account.

All site preparation, site establishment, temporary access roads, etc. should be allowed by the contractor at his own cost and maintained for the duration of the contract. The contractor is to investigate the site conditions and geotechnical report when allowing the above. No additional claim in this regard will be entertained.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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Diversion of traffic

The contractor to allow for diversion of traffic during construction as acquired by the Local Authorities. The Contractor to ensure that his sub-contractors comply with this requirement as well.

Site cleanliness & Dust prevention

Site cleanliness & dust prevention is an utmost importance for the client. Detail requirements are described in preliminaries. Please study the environmental impact study for further information.

Study the geo-technical report

The contractor is to study the geo-technical report and allow accordingly in rates. No additional claim in this regard will be entertained.

Direct Contractors

The following contractors will be appointed as direct contractors and will occupy the site:

CCTV and Security
Fencing
Civil works
Landscaping

Changes made to JBCC documentation:

Details of changes made to the provision of JBCC standard documentation:

Refer to Clause 2, 7, 9, 11, 12, 15, 16, 19, 23, 25, 26, 27

11. LOCAL LABOUR PROCUREMENT REQUIREMENTS

Mandatory Use of Local Unskilled Labour

In alignment with municipal development objectives and social upliftment policies, it is a mandatory requirement of this contract that 100% of unskilled labour employed for the execution of the works must be sourced from within the local municipality where the project is located.

Definition of Local and Unskilled Labour

Local Labour refers to individuals who are residents of the municipality, preferably residing within the ward(s) or immediate vicinity of the project site. Proof of residence (such as municipal utility bills, signed affidavits, or letters from ward councillors) may be required to verify local status.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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Unskilled Labour includes roles that do not require formal training, certification, or trade qualifications. Examples include general labourers, cleaners, flag personnel, and site maintenance staff.

Contractor Responsibilities

The appointed contractor shall:

- Prepare and submit a Local Labour Procurement Plan for approval prior to commencement of works.
- Liaise with the local municipality, ward councillors, or community liaison officers (CLOs) to identify and recruit suitable candidates.
- Ensure fair and transparent selection and recruitment processes.
- Maintain accurate records of all locally employed unskilled labour, including identification and proof of residence.
- Include in monthly reports a breakdown of local labour usage, including hours worked, remuneration, and roles performed.

Non-Compliance

Failure to comply with this requirement will be deemed a material breach of contract. The municipality reserves the right to take corrective action, which may include but is not limited to:

- Issuing of warnings or instructions for immediate rectification;
- Withholding of progress payments;
- Termination of the contract in the event of persistent non-compliance.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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TENDERER'S SELECTION:

SECURITIES

Guarantee for construction: Select Option A or B ☐

Option A – Guarantee for construction(variable) by contractor

Option B – Guarantee for construction (fixed) by contractor

PAYMENT OF PRELIMINARIES

Select Option A or B ☐

Where the contractor does not select an option, Option A shall apply

Option A – Assessed by the principal agent, an amount prorated to the value of the works executed in the same ratio as the amount of the preliminaries to the contract sum which contract sum shall exclude the amount of preliminaries. Contingency sums and any provision for contract price adjustment (cost fluctuations) shall be excluded for the calculation of the aforesaid ration

Option B – An amount agreed by the principal agent and the contractor in terms of the bills of quantities or the priced document to identify an initial establishment charge, a time-based charge and a final disestablishment charge. Payment of the time-based charge shall be adjusted from time to time as may be necessary to take into account the progress of the works

ADJUSTMENT OF PRELIMINARIES

Select Option A or B ☐

Where the contractor does not select an option, Option A shall apply

The amount of preliminaries shall be adjusted to take account of the effect of changes in time and/or value on preliminaries. Such adjustment shall be based on the particulars provided by the contractor for this purpose in terms of Options A or B, shall preclude any further adjustment of the amount of preliminaries and shall apply notwithstanding the actual employment of resources by the contractor in the execution of the works.

For the adjustment of preliminaries both the contract sum and the contract value shall exclude the amount of preliminaries, contingency sum(s) and any provision for contract price adjustment (cost fluctuations).

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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Where the total amount of preliminaries is not identified (in a lump sum contract) it shall be taken as 7.5% (seven and a half per cent) of the contract sum, excluding contingency sums, and any provision for contract price adjustment (cost fluctuation).

Option A

The preliminaries shall be adjusted in accordance with an allocation of preliminaries amounts to be provided by the contractor within fifteen (15) working days of the date of acceptance of the tender as follows:

- An amount which shall not be varied;
- An amount varied in proportion to the contract value as compared to the contract sum;
- An amount varied in proportion to the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value as compared to the number of calendar days in the initial construction period.

Where the above-mentioned information is not provided the following allocation of preliminaries amounts shall apply:

- Ten per cent (10%) shall not be varied
- Fifteen per cent (15%) shall be varied in proportion to the contract value as compared to the contract sum
- Seventy-five per cent (75%) shall be varied in proportion to the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value as compared to the number of calendar days in the initial construction period

Where completion in sections is required the contractor shall provide an apportionment of preliminaries per section. Should the contractor fail to provide the apportionment of preliminaries per section the categorised amounts shall be prorated to the cost of each section within the contract sum as determined by the principal agent.

Option B

The preliminaries shall be adjusted in accordance with a detailed breakdown of preliminaries amounts for the works or of a section to be provided by the contractor within fifteen (15) working days of possession of the site. Such breakdown shall inter alia include administrative and supervisory staff charges and charges for the use of construction equipment, all in terms of the programme.

The adjustment of preliminaries shall be based on the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value as compared to the number of calendar days in the initial construction period (taking into account the resources planned for the period of construction during which the delay occurred (not for the period added to the initial or extended date for practical completion).

Where the contractor does not provide the detailed breakdown of preliminaries within the period stated, Option A shall apply.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

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44. BILL OF QUANTITIES

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

	Quantity	Rate	Amount

SECTION NO 1

BILL NO 1

STANDARD PRELIMINARIES

NOTES

LAW APPLICABLE

The law of the Republic of South Africa shall apply to this Contract.

PRINCIPAL BUILDING AGREEMENT

The JBCC Principal Building Agreement (Edition 6.2 – May 2018) prepared by the Joint Building Contracts Committee shall be the applicable building agreement, amended as hereinafter described

The JBCC Principal Building Agreement contract data form an integral part of this agreement

PRELIMINARIES

The JBCC General Preliminaries (May 2018) published by the Joint Building Contracts Committee for use with the JBCC Principal Building Agreement (Edition 6.2 – May 2018) shall be deemed to be incorporated in this project specific preliminaries amended as hereinafter described

FULL INTENT AND MEANING OF CLAUSES

Contractors are referred to the abovementioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by clause number and heading only) for which such allowance must be made as may be considered necessary

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

Where standard clauses or alternatives are not entirely applicable to this agreement such amendments, modifications, corrections, or supplements as will apply are given under each relevant clause heading and such amendments, modifications, corrections, or supplements shall take precedence notwithstanding anything to the contrary contained in the above mentioned documents

Where any item is not relevant to this specific contract such item is marked N/A (signifying "not applicable")

PREAMBLES FOR TRADES

The Standard Preambles to all Trades is deemed to be incorporated in these bills of quantities and no claim arising from brevity of description of items fully described in the said Standard Preambles to all Trades will be entertained

Where the word "Architect" appears in the Standard Preambles it shall be deemed to read "Principal Agent"

Supplementary preambles to the Standard Preambles covering clauses of a general nature, clauses pertaining to specific materials and amendments to clauses in the Standard Preambles are incorporated in these bills of quantities to satisfy the requirements of this project

The contractor's price for all items throughout these bills of quantities must take account of and include for all of the obligations, requirements and specifications given in the Model Preambles and in any supplementary preambles.

STANDARD SYSTEM OF MEASURING BUILDING WORK

The Bills of Quantities/Schedule of rates drawn up with in accordance with The Standard System of Measuring Building work including the latest revisions and addendums issued by the ASAQS.

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

PRICING OF CLAUSES

Tenderers shall allow opposite each clause for any cost involved with complying with such clause. Any clauses left unpriced shall be deemed to be covered by rates and prices elsewhere incorporated throughout these bills of quantities.

Rates are to be priced gross including profit.

GENERAL

If option A as set out in clause 26.0 hereinafter is to be used for the adjustment of the preliminaries each item priced is to be allocated to one or more of the three categories, where "F", "T", or "V" as the case may be below such item, where:

F = An amount which shall not be varied

V = An amount which shall be varied in proportion to the contract value as compared with the contract sum

T = An amount which shall be varied in proportion to the construction period as compared to the initial construction period excluding revisions to the construction period for which the Contractor is not entitled to adjustment

BREAKDOWN

The contractor will be required to provide a detailed breakdown and cashflow of the complete Preliminaries and General to the satisfaction of the principal agent prior appointment

SECTION A: PRINCIPAL BUILDING AGREEMENT

INTERPRETATION

A	Clause 1.0 - Definitions and interpretation					
	F:	V:	T:	Item		
			Carried to Summary		R	

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

A	Clause 2.0 - Law, regulations and notices The following new sub clause is hereby added to this clause: 2.5 Without limiting the generality of the provisions of clause 2.0 of the agreement, the contractor's attention is drawn to the provisions of the Construction Regulations, 2014 issued in terms of the Occupational Health and Safety Act Number 85 of 1993. It is specifically stated that the employer shall prepare a documented health and safety specification for the works and that employer shall ensure that the contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor shall price opposite this item for compliance with the act and the regulations and the reasonable provisions of the aforementioned health and safety specification. F: V: T:			Item		
B	Clause 3.0 - Offer and acceptance F: V: T:			Item		
C	Clause 4.0 - Cession and assignment F: V: T:			Item		
D	Clause 5.0 - Documents F: V: T:			Item		
E	Clause 6.0 - Employer's agents F: V: T:			Item		
			Carried to Summary		R	

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

A Clause 7.0 - Design Responsibility

The following new sub clause is hereby added to this clause:

7.4 Notwithstanding the provisions of 7.2, the contractor shall ensure that every such nominated or selected subcontractor shall simultaneously with the signing of the relevant nominated or selected subcontract sign and deliver to the employer a Design Materials and Workmanship Warranty and Undertaking in favour of the employer or a Materials and Workmanship Undertaking strictly in accordance with the instructions or provisions contained in the tender documents for the nominated or selected subcontract works.

F: V: T: Item

INSURANCE AND SECURITY

B Clause 8.0 - Works Risk

F: V: T: Item

C Clause 9.0 - Indemnities

Clause 9.2.7 - Shall be deemed to be deleted in its entirety

Clause 9.2.9 is amended to read as follows:

9.2.9 Physical loss or damage to the contents of the works where practical completion has been achieved [19.0], unless such damage result from negligence by the contractor or his sub-contractors.

F: V: T: Item

D Clause 10.0 - Insurances

F: V: T: Item

E Clause 11.0 - Security

Clause 11.10 - Shall be deemed to be deleted in its entirety

F: V: T: Item

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

EXECUTION

A Clause 12.0 - Obligations of the parties

Sub clause 12.2.6 is hereby deleted and substituted by the following:

12.2.6 Prepare and submit to the principal agent within (15) working days of receipt of construction information a programme for the works, including allowances for the execution of work as set out in the provisional sums and budgetary allowances, in sufficient detail to enable the principle agent to monitor the progress of the works

F: V: T: Item

B Clause 13.0 - Setting Out

F: V: T: Item

C Clause 14.0 - Nominated Subcontractors

F: V: T: Item

D Clause 15.0 - Selected Subcontractors

The client reserves the right to commission any of the specialist contracts under Provisional Sums as direct contracts. The amounts will de deducted at the clients discretion in whole or in part under these circumstances.

It is the main contractor's duty to be involved in the selected subcontractor appointment process.

F: V: T: Item

Carried to Summary R

A	Clause 16.0 - Direct Contractors It is a specific condition to this contract that the contractor shall allow other independent contractors and their workmen, employed directly by the developer for the execution of part of the work not included in the provisional sums and occurring concurrently with this contract, to have the access to works. These contractors need to be inducted to site and need to comply to the OHS Act at all times. The principle contractor to make allowance for associated costs. Sufficient PPE should be stored on site to cater for the above and visitors the client may bring to site. F: V: T:			Item		
B	Clause 17.0 - Contract Instructions F: V: T:			Item		
	COMPLETION					
C	Clause 18.0 - Interim completion F: V: T:			Item		
			Carried to Summary		R	

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A	Clause 19.0 - Practical completion The following notes is hereby added to this clause: Should the contractor not have achieved practical completion of any section of the works, the employer may, notwithstanding the contractors ongoing responsibilities of achieving practical completion, take possession of any such area and such possession, in order to mitigate his exposure to any expense, without it being construed as the achievement of practical completion. Should such instances arise, the principal agent shall inform the contractor of the employer's intention in writing. Access by the contractor to such area/s and/or possession/s of the employer, practical completion being achieved shall be at the employer's convenience. F: V: T:		Item		
B	Clause 19.6 is hereby amended by the deletion "within a period agreed between the parties" and substituted with "within twenty (20) working days."		Item		
C	Clause 20.0 - Sectional completion F: V: T:		Item		
D	Clause 21.0 - Defects liability period and final completion F: V: T:		Item		
E	Clause 22.0 - Latent defects liability period F: V: T:		Item		
F	Clause 23.0 - Revision of date for practical completion Clause 23.1.1 shall be deleted and replaced by the addition of the following: 23.1.1 adverse effect of weather conditions which shall be defined as weather in excess of the average recorded for the past 10 (ten) years by the nearest commonly recognized weather bureau in the region of				
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the project

The contractor shall be deemed to have allowed in his programme for the works and opposite this item or in his rates, for the cost of all delays as a result of weather conditions which are average

Furthermore the contractor shall also have been deemed to have allowed in his programme for the works and opposite this item or in his rates, for the cost of the loss of 10 (ten) working days lost on the critical path of the programme due to delays as a result of the adverse weather conditions as defined above. The above float which is included in the contractors programme may also be used for any other critical path delays which the contractor may become entitled to, at the sole discretion of the principal agent.

Each claim for delays as a result of adverse weather conditions shall be made to the principal agent within 7 (seven) days of the occurrence thereof, failing which no delays shall be recorded

Clause 23.2.12 - Shall be deemed to be deleted in its entirety

Clause 23.4.2 is herby amended by the omission of "Within twenty (20) working days" and substituted with "Within ten (10) working days".

Clause 23.5 is herby deleted and substituted by the following:

"The contractor shall within twenty (20) working days of the delay ceasing, submit such a claim to the principal agent, failing which the contractor shall forfeit such a claim".

Extension of time shall only be considered when work is on critical path of the programme, which the contractor shall clearly identify, for the works affected.

Any delays to minor portions of the works which are not on the critical path will only attract extensions of time to those areas and not the entire project.

Clause 23.0 is herby amended by the addition of "Clause 23.9 Acceleration"

23.9.1 Irrespective of whether or not the principal agent rules that the contractor is entitled to an extension of

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time or a revision of the date of practical completion, the principal agent shall nevertheless, at any time, be entitled to instruct the contractor in writing to accelerate the progress of the remaining works as is reasonably practicable, and in considering practicability, week-ends, public holidays and possible over nights will be taken into account, to ensure that the works are completed by the original date for practical completion or revised date as the case may be.

23.9.2 Upon receipt of such instruction, the contractor shall take all necessary steps to ensure that the works are completed timeously including the provision by him of additional resources, plant, manpower, etc and the working of overtime or additional overtimes beyond that contemplated at the time of tender (at all times adhering to the regulations and requirements of all authorities) and by all other adequate and proper means and methods. The contractor shall prove that such steps are being called upon to do so. Provided always that the contractor cannot be instructed to cover the rain mentioned in clause 23.1.1 at his own cost.

23.9.3 Prior to commencing works to accelerate, the contractor is to present to the principal agent and his agents a detailed report indicating resources, etc. with costs to be implemented to achieve agreed target date.

23.9.4 Should the contractor finish before the date agreed in the latest EOT adjudication document by means of acceleration without notifying the principle agent, the contractor will not be entitled to claim the remaining time related P&G awarded.

F: V: T: Item

A Clause 24.0 - Penalty for late or non completion

F: V: T: Item

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PAYMENT

A Clause 25.0 - Payment

No payment shall be made for materials off-site. Materials and goods stored off site will be paid for only under special circumstances approved by the principal agent provided the Contractor has made arrangements through the Quantity Surveyor prior to the certification and an approved bank guarantee for the value of the materials is submitted together with the contractors claim.

Clause 25.7.4 and 25.7.5 shall be deemed to be deleted

F: V: T: Item

B Clause 26.0 - Adjustment to the contract value and final account

Clause 26.5 is herby amended by the omission of "Within twenty (20) working days" and substituted with "Within ten (10) working days".

Clause 26.6 is herby deleted and substituted by the following:

"The contractor shall within twenty (20) working days of the delay ceasing, submit such a claim to the principal agent, failing which the contractor shall forfeit such a claim".

F: V: T: Item

C Clause 27.0 - Recovery of expense and/or loss

Clause 27.1.4 and 27.1.5 shall be deemed to be deleted

F: V: T: Item

SUSPENSION AND TERMINATION

D Clause 28.0 - Suspension by the Contractor

F: V: T: Item

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A	Clause 29.0 - Termination						
	F:	V:	T:		Item		
	DISPUTE RESOLUTION						
B	Clause 30.0 - Dispute resolution						
	F:	V:	T:		Item		
	CONTRACT AGREEMENT						
C	Agreement						
	Refer to Tender Form				Item		
				Carried to Summary		R	

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PRINCIPAL BUILDING AGREEMENT: CONTRACT DATA

A - PROJECT INFORMATION

A1.0 WORKS

Project name:

The Construction of Calcutta Cementry and Memorial Park on the remainder Farm No. 29, Stellenbosch

Works description:

Construction work comprises the build of new offices and shed, columbarium, and boundary walls, including electrical and mechanical installations, plumbing, structural steel, etc. all as per the Architect's drawings.

A2.0 SITE

Farm No. 29, Stellenbosch

A3.0 EMPLOYER

STELLENBOSCH MUNICIPALITY -
Represented by the Engineering Department

POSTAL ADDRESS:

PO Box 17
Stellenbosch
7599

A4.0 PRINCIPAL AGENTS & ARCHITECTS

NUVORM

TEL: 021 300 1749
E-MAIL: warno@nuvorm.com

PHYSICAL ADDRESS:

3rd Floor, Oude Post Kantoor,
C/o Plein and Bird str
Stellenbosch
7580

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A5.0 QUANTITY SURVEYOR

iQS

TEL: 021 974 3560
E-MAIL: wilmar@qsint.co.za

PHYSICAL ADDRESS:

11 ALBERTO DRIVE
DEVONBOSCH LIFESTYLE ESTATE
KOELENHOF
7605

A6.0 STRUCTURAL ENGINEERS

STRUXIT STRUCTURAL & CIVIL & FACADE ENGINEERING

CEL: 079 344 1223
E-MAIL: jano@struxit.co.za

PHYSICAL ADDRESS:

112 DORP STREET
STELLENBOSCH
7600

A7.0 HEALTH AND SAFTEY

CAIRNMEAD

TEL: 012 346 5752
E-MAIL: lebanong@cairnmead.co.za

PHYSICAL ADDRESS:

La Gratitude Herehuis,
95 Dorp Street
Stellenbosch
7600

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B - CONTRACT INFORMATION

B1.0 DEFINITIONS

1.1 Bill of quantities : System/Method of measurement [1.1]

The Standard System of Measuring Building work including the latest revisions and addendums issued by the ASAQS.

B2.0 LAW, REGULATIONS AND NOTICES

2.1 Law of country applicable to the project [2.0]

The law of the Republic of South Africa

B3.0 OFFER AND ACCEPTANCE

3.1 Currency applicable to this agreement [3.2]

South African Rands

B4.0 DOCUMENTS

4.1 Signed contract documents held by Employer [5.2]

4.2 Number of construction document copies to be supplied to the contractor free of charge [5.6]

Number of : Three (3) hard copy set to be supplied to contractor

5.0 EMPLOYERS AGENTS

5.1 Authority is delegated to the following agents to issue contract instructions and perform duties for specific aspects of the work [6.2]

Principal Agent

5.2 Interest of agents in project [6.3]

No

B6.0 INSURANCES

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A	6.1	Insurances [10.0]			
		Insurance by employer			
		Contract works insurance [10.1.1]			
		Supplementary insurance [10.1.2]			
		Public Liability [10.1.3]			
		Lateral support insurance [10.1.4]			
		Other insurances [10.1.5]	Item		
B	6.2	Insurances [10.0]			
		Insurance by contractor			
		Contract works insurance [10.1.1]			
		For the amount of: Contract amount + 30% with a deductible of: As set out in the policy			
		Supplementary insurance [10.1.2]			
		For the amount of: Contract amount + 30% with a deductible of: As set out in the policy			
		Public Liability [10.1.3]			
		For the amount of: R10 000 000 with a deductible of: As set out in the policy			
		Lateral support insurance [10.1.4]			
		Other insurances [10.1.5]	Item		
		Carried to Summary		R	

B7.0 OBLIGATIONS OF THE EMPLOYER

7.1 Existing premises will be in use and occupied [12.1.2]

The premises will not be occupied, but direct contractors will be on site. The contractor must allow for coordination with these direct contractors.

7.2 Restriction of working hours [12.1.2]

08:00 to 18:00 weekdays

After hours work and work over weekends to be arranged with principal agent.

7.3 Natural features and known services to be preserved by the contractor [12.1.3]

Yes, existing trees to remain in place. Principal agent to issue plan indicating which trees are to be preserved.

7.4 Restrictions to the site or areas that the contractor may not occupy [12.1.4]

Yes, the contractor is restricted to the building site only and is not allowed to enter the Wetland area

7.5 Supply of free issue [12.1.10]

N/A

B8.0 NOMINATED SUBCONTRACTORS

8.1 Nominated subcontractors [14.0]

N/A

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B9.0 DIRECT CONTRACTORS

9.1 Extent of work [12.1.11]

CCTV and Security
Fencing
Civils
Landscaping

B10.0 DESCRIPTION OF SECTIONS

N/A

B11.0 POSSESSION OF SITE, PRACTICAL COMPLETION AND PENALTIES

11.1 Intended date of practical completion for the works as a whole and the penalty per calender day [12.1.5], [19.0] and [24.0]

Appointment:	November 2025
Possesion of site:	12 January 2026
Completion Date:	10 June 2026
Penalty:	R 5 000/calendar day

11.2 Intended date of practical completion in sections and the penalty per calender day for [12.1.5], [20.0] and [24.0]

N/A

11.3 Criteria to achieve practical completion:

All builders work, including finishes, electrical and mechanical installations have to be completed.

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B12.0 PAYMENT

12.1 Date of month for issue of regular payment certificates [25.2]

27th Of every month, contractors to submit their claims on the 20th

12.2 Cost fluctuations [25.3.4; 26.9.5]

No, fixed price contract

B13.0 DISPUTE RESOLUTION

13.1 Arbitration [30.7.4; 30.10]

Head of Arbitrators Association of South Africa

B14.0 JBCC GENERAL PRELIMINARIES

14.1 Provisional bills of quantities [P2.2]

No

14.2 Availability of construction information [P2.3]

Yes

14.3 Dimensional accuracy [P3.1]

N/A

14.4 Inspection of adjoining properties [P3.3]

N/A

14.5 Handover of site in sections [P4.1]

No

14.6 Geotechnical and other investigations [P4.3]

Refer to Geotechnical report included in the tender documents

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14.7 Existing premises occupied [P4.5]

The premises will not be occupied, but direct contractors will be on site. The contractor must allow for coordination with these direct contractors.

14.8 Known services to be retained/ relocated/ terminated [P4.6]

Existing roadways and civil services to be protected during construction. Temporary access roads and site establishment layouts will be pointed out on site.

14.9 Water [P8.1]

Option C - By Employer metered (contractors charge)

14.10 Electricity [P8.2]

Option C - By Employer metered (contractors charge)

14.11 Ablutions and welfare facilities [P8.3]

By Contractor

14.12 Communication facilities [P8.4]

All project information will be issued electronically. Main contractor will be responsible to distribute the drawings, etc. to subcontractors and suppliers in hard copies as per contract document requirements.

14.13 Protection of the works [P11.1]

Contractor to hoard off & screen off building site and in a safe manner to protect all non construction persons from any danger.

14.14 Protection / isolation of existing works and works occupied in sections [P11.2]

N/A

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14.15 Disturbance [P11.5]

The Contractor must allow for any additional cost during the construction period for any traffic diversion road widening, traffic control, temporary access, etc, and reinstatement on completion.

The **contractor** shall be responsible for and take all precautions in controlling all forms of pollution during the execution of the contract due to wind-blown sand, dust, etc in the dry season and deposits of mud etc in the wet season by whatever means necessary and daily removal of deposits etc, all to the satisfaction of the **principal agent** and any costs, claims, etc will be for the **contractor's** account.

After (1) one written notice from the **principal agent** to the **contractor** stating the contractors failure to comply with this clause, the **employer** reserves the right to employ others at the direction of the **principal agent** to ensure in particular that the adjacent and surrounding roads are kept reasonably clean at all times and to deduct cost thereof on certification by the **principal agent** from any amounts owing to the **contractor**.

14.16 Environmental disturbance [P11.6]

Refer to the Environmental Impact Assessment included in the tender document

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B15.0 CHANGES MADE TO JBCC DOCUMENTATION

Details of changes made to the provision of JBCC standard documentation:

Refer Clause 2
See amendments

Refer Clause 7
See amendments

Refer Clause 9
See amendments

Refer Clause 11
See amendments

Refer Clause 12
See amendments

Refer Clause 15
See amendments

Refer Clause 16
See amendments

Refer Clause 19
See amendments

Refer Clause 23
See amendments

Refer Clause 25
See amendments

Refer Clause 26
See amendments

Refer Clause 27
See amendments

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C - TENDER CLOSING

C: Tender closing Date:

27 October 2025

Tender closing place:

Sealed Tenders, with "B/SM 17/26 THE CONSTRUCTION OF CALCUTTA CEMETERY & MEMORIAL PARK ON REMAINDER FARM NO. 29, STELLENBOSCH - PHASE 2 clearly endorsed on the envelope, must be deposited in the Tender box at the offices of the Stellenbosch Municipality, Town House Complex (Main Building between Town Hall and Municipal Library), Plein Street, Stellenbosch. The Tender box is accessible 24 hours a day and Tenders must be accompanied by the completed Tender documents. Tenders not accompanied by a complete Tender document, will not be considered.

Delivered in electronic format:

No, only hard copies will be accepted

D - TENDERER'S SELECTION

D1.0 SECURITIES

A	D1.0:	Security for construction [11.0]			
		Variable construction guarantee			
		Fixed construction guarantee	Item		
	D2.0	Contractor's annual holiday periods during the construction period			
		13 December 2025 to 5 January 2026			
	D3.0	Payment of preliminaries [25.0]			
		Refer to tenderer selection and select Option A or B			

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D4.0 Adjustment of preliminaries [26.9.4]

Refer to tenderer selection and select Option A or B

SECTION B: ASAQS PRELIMINARIES

For Variables refer to the "Schedule of Variables"

1.0 DEFINITION AND INTERPRETATION

A Clause 1.1 - Definitions

F: V: T: Item

B Clause 1.2 - Interpretation

F: V: T: Item

2.0 DOCUMENTS

C Clause 2.1 - Checking of documents

These Bills of Quantities contain pages and annexures as indexed.

Items in these Bills of Quantities are to be read and priced in conjunction with and the descriptions regarded as amplified by the Preambles for Trades as bound in these Bills of Quantities, and no claim arising from brevity of description of items fully described in the said Preambles of Trades will be entertained.

F: V: T: Item

D Clause 2.2 - Provisional bills of quantities

F: V: T: Item

E Clause 2.3 - Availability of construction documentation

All the nescessary construction documentation was available when this document was prepared for tender purposes.

F: V: T: Item

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A | Clause 2.4 - Ordering of materials and goods

F: V: T: Item

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	3.0 PREVIOUS WORK AND ADJOINING PROPERTIES					
A	Clause 3.1 - Previous work - dimensional accuracy					
	F:	V:	T:	Item		
B	Clause 3.2 - Previous work - Defects					
	F:	V:	T:	Item		
C	Clause 3.3 - Inspection of adjoining properties					
	A full photographic survey must be done by the contractor of adjoining premises, this must be handed over to the principal agent prior to construction.					
	F:	V:	T:	Item		
	4.0 THE SITE					
D	Clause 4.1 - Handover of the site in stages					
	Refer to Contract Information Item 11.2					
	F:	V:	T:	Item		
E	Clause 4.2 - Enclosure of the works					
	F:	V:	T:	Item		
F	Clause 4.3 - Geotechnical and other investigations					
	F:	V:	T:	Item		
G	Clause 4.4 - Encrouchments					
	F:	V:	T:	Item		
H	Clause 4.5 - Existing premises occupied					
	F:	V:	T:	Item		
J	Clause 4.6 - Services - known					
	F:	V:	T:	Item		
			Carried to Summary		R	

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	5.0 MANAGEMENT OF CONTRACT					
A	Clause 5.1 - Management of the works					
	F:	V:	T:	Item		
B	Clause 5.2 - Progress meetings					
	External container office required for meetings					
	F:	V:	T:	Item		
C	Clause 5.3 - Technical meetings					
	External container office required for meetings					
	F:	V:	T:	Item		
	6.0 SAMPLES, SHOP DRAWINGS AND MANUFACTURER'S INSTRUCTIONS					
D	Clause 6.1 - Sample of materials					
	F:	V:	T:	Item		
E	Clause 6.2 - Workmanship samples					
	F:	V:	T:	Item		
F	Clause 6.3 - Shop drawings					
	F:	V:	T:	Item		
G	Clause 6.4 - Compliance with manufacturers' instructions					
	F:	V:	T:	Item		
	7.0 DEPOSITS AND FEES					
H	Clause 7.1 - Deposits and fees					
	F:	V:	T:	Item		
	8.0 TEMPORARY SERVICES					
			Carried to Summary		R	

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A	Clause 8.1 - Water				
	F:	V:	T:	Item	
B	Clause 8.2 - Electricity				
	Contractor to allow for temporary generator/s in case of load shedding. Cost to be included under this clause.				
	F:	V:	T:	Item	
C	Clause 8.3 - Ablation and welfare facilities				
	F:	V:	T:	Item	
D	Clause 8.4 - Communication facilities				
	F:	V:	T:	Item	
	9.0 PRIME COST AMOUNTS				
E	Clause 9.1 - Responsibility for prime cost amounts				
	F:	V:	T:	Item	
	10.0 ATTENDANCE ON SUBCONTRACTORS				
F	Clause 10.1 - General attendance				
	F:	V:	T:	Item	
G	Clause 10.2 - Special attendance				
	The main contractor will be required to provide all scaffolding to domestic and selected subcontractors				
	The contractor will be required to make an allowance for the provision of commissioning power, water, etc to all domestic and selected subcontractors				
	F:	V:	T:	Item	
			Carried to Summary		R

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11.0 GENERAL

A Clause 11.1 - Protection of the works

F: V: T: Item

B Clause 11.2 - Protection/isolation of existing/sectionally occupied works

F: V: T: Item

C Clause 11.3 - Security of the works

The contractor shall provide and maintain twenty-four hour site security and loss control systems all to the satisfaction of the principal agent. It is envisaged that these procedures will incorporate, inter alia, gate control for personnel and vehicles, individual entry permits, regular security patrols and the like.

F: V: T: Item

D Clause 11.4 - Notice before covering work

F: V: T: Item

E Clause 11.5 - Disturbance

F: V: T: Item

F Clause 11.6 - Environmental disturbance

F: V: T: Item

G Clause 11.7 - Works cleaning and clearing

F: V: T: Item

H Clause 11.8 - Vermin

F: V: T: Item

J Clause 11.9 - Overhand work

F: V: T: Item

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A	Clause 11.10 - Tenant installations					
	F:	V:	T:	Item		
B	Clause 11.11 - Advertising					
	F:	V:	T:	Item		
			Carried to Summary		R	

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SECTION C: SPECIFIC PRELIMINARIES

SUPPLEMENTARY DOCUMENTATION

A C1. **Proprietary branded products**

The contractor shall take delivery of, handle, store, use, apply and/or fix all proprietary branded products in strict accordance with the manufacturers' instructions after consultation with the manufacturer's authorised representative.

F: V: T: Item

B C2. **As built drawings**

The position of construction breaks and the extent of individual concrete pours are to be recorded by the contractor on the structural engineer's drawings and are to be submitted to the Architect/Project Manager and the structural engineer for their records.

F: V: T: Item

C C3. **Shop drawings**

The term "shop drawings" shall mean drawings, diagrams, illustrations, schedules, performance charts, brochures, operating manuals and other data which are prepared by the contractor or sub-contractor, manufacturer, supplier or distributor and which illustrated some portion of the works

The contractor shall, at his own expense, prepare and submit two prints of shop drawings of all fabricated work, working or setting out drawings, shop details and schedules to the architect for approval by the Principal Agent, the relative consulting engineer, and/or the employer as is appropriate and such work shall not be performed by the contractor until such approval has been given

The contractor shall present a complete schedule showing the sequence of submission of shop drawings, including submission dates, for all trades for approval of all drawings. This schedule takes into account that the Principal Agent and the relative consulting engineer and the employer each reserve a two week check period for each discipline from the date of the receipt of all shop drawings and/or catalogue data

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All submissions shall be on dates as indicated in the above schedule and sufficiently in advance to permit the contractor to meet fabrication deadlines, no claim for extensions to the contract time will be granted to the contractor by reason of his failure in this respect

The contractor shall submit four copies of catalogues and data for approval. The contractor shall check all submissions for conformity with the contract drawings and specifications and correct any errors, omissions or deviations before their transmission to the Principal Agent

All submissions shall bear the contractor's dated stamp of approval as evidence that they have been checked and corrected by the contractor. Any drawings, schedules or catalogues submitted without this stamp will not be considered by the Principal Agent and will be returned

When the Principal Agent advises the contractor that shop drawings have been approved, he shall immediately submit to the Principal Agent the original transparencies of such drawings so that the Principal Agent's stamp of approval may be appended thereto. Thereafter the contractor shall furnish to the Principal Agent four prints of the approved shop drawings, setting out drawings and schedules. The contractor shall furnish to the works as many prints of the shop drawings and schedules as may be required. No work shall be performed from any shop drawings and/or catalogues not stamped with the Principal Agent's approval

The contractor shall be responsible for ensuring that all dimensions conform to the dimensions of built work

The Principal Agent's approval of any document or drawing shall not in any way vary his contractual or delictual obligations and liabilities to the employer or any other party, nor does it vary the contractual or delictual obligations and liabilities of the party submitting such document or drawing for approval

If the submission differs from the requirements of the contract, the contractor shall make specific mention of each difference in his letter of transmission with a request for substitution, together with his reasons for same, in order that, if acceptable, suitable action may be taken by the Principal Agent. Otherwise the contractor will not be relieved of the responsibility of

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executing the work in accordance with the requirements of the contract

Corrections of shop drawings by the Principal Agent shall not change the scope of the work. Should any such correction be considered to constitute a change of scope of work, the contractor shall notify the architect in writing within not more than seven calendar days of such change and shall not proceed with the fabrication until so authorised by the Principal Agent. Claims for change of scope made after performance of the work constituting the claimed change of scope will not be considered

Unless otherwise agreed with the Principal Agent, shop drawings shall be prepared to show all details of installation, including reticulation, fixing, etc of all components and assemblies, or if the contractor desires to deviate from the design and these drawings shall be all in accordance with the above procedures and at the contractor's expense

F: V: T: Item

A C4. **Site instructions**

Site instructions issued on site are to be recorded in triplicate in an instruction book which is to be maintained on site by the contractor

F: V: T: Item

B C5. **Labour record**

At the end of each week the contractor shall provide the principal agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all sub-contractors on the works each day.

F: V: T: Item

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A C6. **Plant Record**

At the end of each week the contractor shall provide the principal agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works.

F: V: T: Item

B C7. **Taxes, Duties, fees, etc**

All applicable taxes and duties must be included in the pricing of the Bills of Quantities.

F: V: T: Item

C C8. **Caretakers on Site**

Under no circumstances is anybody except caretakers, allowed to sleep or leave equipment on site during construction.

F: V: T: Item

D C9. **List of sub-contractor and suppliers**

The Contractor must, if requested, provide the Principal Agent with a list of sub-contractors and suppliers for approval before signing the contract, which approval is at the discretion of the Principal Agent.

F: V: T: Item

E C10. **Non Waiver of Contract**

The Contractor is not allowed to waive or transfer his rights or claims regarding outstanding monies or monies that might become due to him under this contract.

F: V: T: Item

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

A C11. **Advanced Payment Guarantee**

Tenderers requesting any advanced payments are to secure an Advanced Payment Guarantee from an approved financial institution and to the satisfaction of the Employer.

F: V: T: Item

MATERIALS AND WORKMANSHIP

B C12. **Testing of windows to ensure watertightness**

As the windows are fixed they shall be glazed and prepared so that each window can be tested for watertightness with water sprayed on by means of a 20mm hosepipe using adequate pressure. If the pressure proves to be inadequate, in the opinion of the Principal Agent, then the pressure in the hosepipe shall be boosted by means of compressed air or other approved means. Each window section shall be tested under the supervision of the clerk of works and approved before final acceptance of the fenestration.

F: V: T: Item

C C13. **Guarantees**

The contractor shall obtain written guarantees where called for, addressed to the employer, from the firms supplying the materials or doing the work and deliver such guarantees to the Principal Agent.

The guarantees shall state that workmanship, materials and installation are guaranteed for a specified period reckoned from the date of practical completion of the works and that any defects in the workmanship, materials and installation that may arise during that period shall be made good at the expense of the firm doing the work upon written notice from the Principal Agent or the employer to do so.

F: V: T: Item

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

TEMPORARY SERVICES

A C14. **Site Parking**

Parking to be made available on site.

F: V: T: Item

B C15. **Water and Electricity**

In the event of the employer commencing payment of the water and/or electricity accounts before completion of the works, the employer will take meter readings and invoice the contractor with the charges for water and/or electricity used by the contractor in the completion of the works based on the rates he, in turn, pays for the water and the contractor shall pay the employer such charges within 30 days of receipt of invoices.

Alternatively the employer may elect to deduct the charges from amounts due to the contractor as reflected in payment certificates.

F: V: T: Item

Carried to Summary R

FINANCIAL ASPECTS

A C16. **Final Account**

The Contractor shall be obliged to timeously do everything necessary and to timeously provide all information required by the Quantity Surveyor for the purpose of enabling the Quantity Surveyor to compile the Final Account. The Contractor shall be obliged within 30 days after receipt of the Final Account to signify his acceptance of same or to advance any claims he may have in respect thereof for the consideration of the Quantity Surveyor. Failing such further claims in writing within 30 days of receipt of the said Final Account by the Contractor, it shall be deemed that the Contractor has accepted the Final Account and no further claims in connection with the Works will be entertained.

The Contractor agrees that should he fail to dispute the Final Account prepared by the Quantity Surveyor within 30 days after presentation of the Final Account to the Contractor, the Contractor will be deemed to have accepted the Final Account in its entirety.

F: V: T: Item

B C17. **Dayworks**

Claims for dayworks will not be permitted.

F: V: T: Item

C C18. **Overtime**

The additional costs of overtime work shall be for the employer's account only when prior written agreement thereto is given by the Principal Agent and his agents

F: V: T: Item

Carried to Summary R

GENERAL

C19. **Contractor's Site Notice Board**

The contractor shall provide a contractor's site notice board, 2 400mm wide x 3 600mm high which will include the contractor's and all professionals' names

F: V: T:

A C20. **As Built information on Practical Completion**

Contractor to compile 3 hard copy sets of all handover documents required by the Client after Practical Completion. Contractor to allow for the cost thereof accordingly.

F: V: T: Item

B C21. **Copyright**

The ownership of the copyright in and to: all drawings, specifications, models and documentation of any nature delivered to the contractor or produced by or on behalf of the contractor in connection with the works; and, the artistic character and/or artistic design of the works, shall remain vested in and/or is hereby assigned to the employer by the contractor

F: V: T: Item

Carried to Summary R

SECTION NO. 1
BILL NO. 1
PRELIMINARIES

A C22. **Confidentiality**

As the project is of a highly confidential nature the contractors shall: treat all drawings, specifications, models and documents of any nature delivered to the contractor or produced by or on behalf of the contractor in connection with the works as being confidential; keep secret and not directly or indirectly disclose or divulge to any person (except insofar as may be necessary in connection with the project) any information contain in the contract documents without the previous written consent of the Principal Agent; not copy, photograph and/or repeat either wholly or in part any of the contract documents referred to above (except insofar as may be necessary in connection with the project); return to the Principal Agent all contract documents issued herewith upon submission of the tender; and, upon completion of the works deliver to the Principal Agent all contract documents of any nature pertaining to the project

F: V: T: Item

Carried to Summary R

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BILL NO. 1
PRELIMINARIES

SECTION NO. 1

BILL NO. 1

PRELIMINARIES

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PRELIMINARIES

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	Quantity	Rate	Amount

SECTION 2

BILL NO 1

FOUNDATIONS (PROVISIONAL)

NOTE

Descriptions of excavations shall be deemed to include all ground conditions classifiable as "earth" and where conditions of a more difficult character are indicated, these are measured separately.

Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.

SUPPLEMENTARY PREAMBLES

Formwork necessitated by irregularity or collapse of excavated faces will not be measured (unless otherwise described) and the cost thereof shall be deemed to have been included in the allowance for taking the risk of collapse of the sides of the excavations, as provided for in "Earthworks"

All excavations will be measured under normal ground conditions and no extra excavations or compaction in trenches(unless described) will be measured due to irregularity, safety precautions, etc and the cost thereof shall be deemed to have been included in the allowance for excavations

Carried to Summary R

SECTION NO. 2
BILL NO. 1
FOUNDATIONS (PROVISIONAL)

	EARTHWORKS (WG 104)				
	NATURE OF GROUND				
	The tenderer is to visit the site to acquaint himself with the ground conditions.				

	All excavations and backfilling must be executed in accordance with the Engineer's instructions.				
	No claim in this regard will be entertained as a result of non-compliance with the above requirements.				

	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural, reduced ground or platform level, including the closing off and removal of any drains or pipes encountered in the excavated material on site and deposit remainder of excavated material on site (backfilling of trenches measured elsewhere)				
A	Strip footings	m3	435		
B	Reduce levels	m3	81		
C	Bases	m3	35		
	Sundries				
D	Extra over all excavations for carting away excavated material (Contractor must allow for bulking)	m3	550		
E	Allow for the risk of collapse of sides of excavations not exceeding 1,5m deep	m2	1,120		
F	Allow for baling, pumping or otherwise keeping the excavations free from water		Item		
G	Allow for a Dynamic cone penetrometer (Dcp) test 1,5m deep including printed results at each excavated column base	No	16		
	Carried to Summary			R	
	SECTION NO. 2 BILL NO. 1 FOUNDATIONS (PROVISIONAL)				

	FILLING, ETC				
	NOTE				
	Proof of compaction in surface trenches to be provided to the Engineer in the form of compaction test results done on both sides of each column in perimeter trenches.				
	The rates for filling described as such are to include for the abovementioned specification.				

	Clean earth filling of G7 material carted on by contractor, levelled, watered, rammed and consolidated in layers not exceeding 150mm thick to 98% Modified AASHTO density				
A	Backfilling to trenches, holes, etc.	m3	302		
	Clean earth filling of G6 material carted on by contractor, levelled, watered, rammed and consolidated in layers not exceeding 150mm thick to 97% Modified AASHTO density				
B	Under floors, steps, pavings etc	m3	80		
	20 - 25mm Clean crushed stone dressing free of pyrite or other contaminants				
C	Drainage layer in planter	m3	8		
	Compaction of surfaces				
D	Rip scarify in-situ ground under reduced levels for a depth of 150mm, grade to required falls, moisten to optimum moisture content and compact to 93% MOD AASHTO density	m2	312		
	SOIL POISONING				
	Approved brand of anti termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years				
E	To sides and bottoms of foundation excavations	m2	1,721		
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SECTION NO. 2
BILL NO. 1
FOUNDATIONS (PROVISIONAL)

A	Under solid floors, etc, including forming and poisoning shallow furrows against foundation walls, etc, filling in furrows and ramming	m2	312		
	CONCRETE (WG 110)				
	NOTE				
	Cement				
	All cement used is to be Ordinary Portland Cement.				

	Mass concrete (15MPa/19mm) at 28 days cast against excavated surfaces in				
B	Blinding under strip footings	m3	28		
C	Blinding under bases	m3	2		
	Reinforced concrete (25MPa/19mm) at 28 days cast against excavated surfaces in				
D	Strip footings	m3	154		
E	Bases	m3	12		
	Reinforced concrete (25MPa/19mm) at 28 days in				
F	Filling in cavity walls	m3	59		
	Reinforced concrete (30MPa/19mm) at 28 days in				
G	Stub columns	m3	1		
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	FORMWORK (WG 111)				
	NOTE				
	Refer to Bill No 2 - Concrete, Formwork and Reinforcement for additional preambles for Formwork.				

	CLOSE FORMWORK				
	Rough formwork to sides (Degree of accuracy III)				
A	Rectangular stub columns	m2	4		
B	Square stub columns	m2	10		
	REINFORCEMENT (WG 114)				
	Steel reinforcement for foundations is included with Superstructure.				

	EXPANSION JOINTS (WG 111)				
	Jointex or other approved closed cell expanded polyethylene pre-formed expansion joint filler including necessary blocking piece for tearing out later				
C	10mm Thick between brickwork and concrete not exceeding 300mm	m	18		
	FLOOR INSULATION				
	Floor insulation to be 25mm Isoboard or equal Architect approved high density 32-36kg/m3 rigid extruded polystyrene 100% closed cell insulation board in 600mm widths with tongue and groove joints all round laid tightly butted on plastic sheeting (measured elsewhere) all in accordance with the manufacturer's recommendations				
D	Under surface beds	m2	312		
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SECTION NO. 2
BILL NO. 1
FOUNDATIONS (PROVISIONAL)

	BRICKWORK (WG 116)				
	NOTE				
	All foundation brickwork and cavity filled brick retaining walls to be SABS approved NFX solid clay bricks with an strength of 14MPa suitable for foundations.				

	Brickwork in Class II mortar				
A	110mm Wall	m2	7		
B	280mm Cavity wall in two half brick skins with 50mm cavity	m2	34		
C	330mm Cavity wall in two half brick skins with 110mm cavity	m2	57		
D	370mm Cavity wall in two half brick skins with 150mm cavity	m2	131		
E	370mm Cavity wall in two half brick skins with 150mm cavity circular on plan	m2	13		
	Brickwork reinforcement				
F	75mm Wide reinforcement built in horizontally	m	3,457		
	Galvanised hoop iron cramps, ties, etc				
G	30 x 1,6mm wall tie 500mm long with one end twice shot pinned to concrete column and other end built into brickwork	No	105		
	Joint forming material in movement joints, etc				
H	10mm "Jointex" 330mm wide with one tear-off strip in walls	m	5		
J	10mm "Jointex" 370mm wide with one tear-off strip in walls	m	11		
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SECTION NO. 2
BILL NO. 1
FOUNDATIONS (PROVISIONAL)

	BLOCKWORK				
	Blockwork of blocks with compressive strength of not less than 7MPa				
A	800mm Walls of four 190mm skins	m2	56		
	WATERPROOFING				
	Approved polysulphide joint sealant dressed into joint, including protecting adjoining surfaces with masking tape				
B	10 x 10mm Sealer in joint between brickwork and brickwork	m	32		
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SECTION NO. 2
BILL NO. 1
FOUNDATIONS (PROVISIONAL)

SECTION NO. 2

BILL NO. 1

FOUNDATIONS (PROVISIONAL)

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BILL NO. 1
FOUNDATIONS (PROVISIONAL)

	Quantity	Rate	Amount

SECTION 2

BILL NO 2

CONCRETE, FORMWORK AND REINFORCEMENT

WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 110

SUPPLEMENTARY PREAMBLES

COST OF TESTS

The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for this purpose, for testing costs and for submitting reports on the tests to the Architect. The testing shall be undertaken by an independent firm or institution nominated by the Contractor to the approval of the Architect. (Test cubes are measured separately).

FORMWORK

Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for re-conditioning as necessary before re-use.

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

Carried to Summary R

SECTION NO. 2
BILL NO. 2
CONCRETE, FORMWORK AND REINFORCEMENT

	Formwork to soffits of solid slabs, etc, shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described. Formwork to sides of bases, ground beams, etc, will only be measured where it is prescribed by the Engineer for design reasons. Bearing level will be defined as top of surface bed, all concrete and formwork below surface bed measured under foundations, all measurements will be done accordingly. --- GENERAL NOTES Refer to surfacebed layout drawings with regards pouring and finishing specifications, rates to include for relevant specifications. No claim as a result of non compliance with this clause will be entertained --- **TEST CUBES** NOTE A grading analysis for materials to be used in any other concrete mix than ready mix concrete must be submitted to Engineer for approval. ---				
A	Allow for preparing a set of three concrete strength test cubes, size 150x150x150mm, sending them to an approved laboratory for testing and paying all charges in connection (Provisional)	Sets	19		
	CONCRETE, ETC (WG 110) NOTE Cement All cement used is to be Ordinary Portland Cement. Reinforced concrete (25MPa/19mm) at 28 days in				
B	Filling in cavity walls	m3	76		
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SECTION NO. 2
BILL NO. 2
CONCRETE, FORMWORK AND REINFORCEMENT

	Reinforced concrete (30MPa/19mm) at 28 days in				
A	Surface bed cast in panels on waterproofing membrane/filling (membrane/filling elsewhere)	m3	44		
B	Isolated beams	m3	2		
C	Columns	m3	3		
	Sundries				
D	Finishing top of surfaces of concrete smooth with a power float finish	m2	312		
	"Sika 212" non-shrink grout				
E	Bedding approximately 30mm thick under 180 x 230mm base plate including chamfered edges all round	No	12		
	FORMWORK, ETC (WG 111)				
	SMOOTH FORMWORK (DEGREE OF ACCURACY II)				
	Close formwork to sides				
F	Isolated beams	m2	11		
G	Rectangular columns with total height exceeding 5m and not exceeding 6.5m high above bearing level	m2	31		
H	Piers	m2	55		
	Close formwork to soffits				
J	Isolated beams	m2	3		
	CAST IN ITEMS				
	Supply and casting in of hot dipped galvanised cast-in angles				
K	50 x 50 x 4mm Thick angle section cast-in angle with 40 x 100 x 4mm fishtail lugs at 500mm centres to roller shutter openings	kg	64		
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SECTION NO. 2
BILL NO. 2
CONCRETE, FORMWORK AND REINFORCEMENT

	EXPANSION JOINTS (WG 111)				
	Jointex or other approved closed cell expanded polyethylene pre-formed expansion joint filler including necessary blocking piece for tearing out later				
A	10mm Thick between brickwork and concrete not exceeding 300mm	m	131		
B	10mm Thick between brickwork and brickwork exceeding 300mm wide	m2	87		
	Saw cut joints				
C	3 x 40mm Joints in top of concrete with the top 10mm increased to 10mm wide (Provisional)	m	104		
	STEEL REINFORCEMENT (WG 114) (PROVISIONAL)				
	Mild and high tensile steel reinforcement				
D	Various mild and high tensile steel reinforcement rods	t	12.39		
	Fabric reinforcement				
E	Steel mesh Type Ref. 245 fabric reinforcement in concrete surface beds	m2	232		
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SECTION NO. 2
BILL NO. 2
CONCRETE, FORMWORK AND REINFORCEMENT

SECTION NO. 2

BILL NO. 2

CONCRETE, FORMWORK AND REINFORCEMENT

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		Unit	Quantity	Rate	Amount
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	BILL NO 3				
	PRECAST CONCRETE				
	Sizes				
	Blocks, sills, etc measured linear shall be made in suitable lengths. Large size setting out drawings shall be prepared where necessary and submitted to the principal agent for approval before moulds are made				
	General				
	Where kerbstones, blocks, etc are laid in ground descriptions shall be deemed to include necessary excavation, filling in and ramming				
	PRECAST CONCRETE SIGNAGE				
	"Stonecast" custom made precast concrete units built into external brickwork facades, including letters to be recessed and including painting reval black in accordance with manufacturers recommendation, jointing, pointing with silicone sealing compound, cramps, straps, fixing anchors, ties etc				
	Main Site Entrance				
A	"CALCUTTA MEMORIAL PARK" 19.91 x 0.73m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 1)	No	1		
B	"STELLENBOSCH" 6.42 x 0.60m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 1)	No	1		
C	Stellenbosch Municipality Logo 1.65 x 3.17m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 1)	No	1		
D	"CALCUTTA" 2.35 x 0.32m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 2)	No	2		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

A	"MEMORIAL PARK" 3.16 x 0.20m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 2)	No	2		
B	Stellenbosch Municipality Logo 0.67 x 1.29m high (refer to drawing 23AK-1-AR-E-1002 - Rev A - Boundary Wall Type 2)	No	2		
	Sign Wall S-3				
C	"INFO" 0.48 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
D	"PARKING" 0.81 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
E	"COLUMBARIUM" 1.31 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
F	"CHAPEL" 0.71 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
G	"PARK" 0.50 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
H	Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
J	Up Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
K	Up Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
L	Up Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-3)	No	1		
	Sign Wall S-4				
M	"COLUMBARIUM" 1.31 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
N	"CHAPEL" 0.71 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
P	"PARK" 0.50 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

A	Up Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
B	Up Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
C	Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-4)	No	1		
	Sign Wall S-5				
D	"CALCUTTA" 0.95 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-5)	No	1		
E	"MEMORIAL" 0.95 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-5)	No	1		
F	"CHAPEL" 0.95 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-5)	No	1		
G	Up Arrow 0.20 x 0.22m high (refer to drawing 23AK-8012 - Sign Wall S-5)	No	1		
	Sign Wall S-6				
H	"INFO" 0.48 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	1		
J	"COLUMBARIUM" 1.31 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	1		
K	"CHAPEL" 0.71 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	1		
L	"PARK" 0.50 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	1		
M	Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	1		
N	Up Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-6)	No	3		
	Sign Wall S-7				
P	"ADMIN" 0.64 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	1		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

A	"INFO" 0.48 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	1		
B	"MAINTENANCE" 1.26 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	1		
C	"CARETAKERS COTTAGES" 1.97 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	1		
D	Up Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	3		
E	Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-7)	No	1		
	Sign Wall S-8				
F	"CARETAKERS COTTAGES" 1.97 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
G	"CHAPEL" 0.71 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
H	"COLUMBARIUM" 1.31 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
J	"PARK" 0.50 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
K	Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
L	Up Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
M	Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8013 - Sign Wall S-8)	No	1		
	Sign Wall S-9				
N	"INFO" 0.48 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
P	"PARKING" 0.81 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

A	"CARETAKERS COTTAGES" 1.97 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
B	"CHAPEL" 0.71 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
C	"COLUMBARIUM" 1.31 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
D	Left Arrow 0.20 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	2		
E	Up Arrow 0.20 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
F	Down Right Arrow 0.20 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
G	Down Arrow 0.20 x 0.22m high (refer to drawing 23AK-8014 - Sign Wall S-9)	No	1		
	Offices				
H	"CALCUTTA" 0.93 x 0.22m high (refer to drawing 23AK-8010 - Office Façade Signage Detail)	No	1		
J	"NURSERY + ADMINISTRATION" 2.88 x 0.25m high (refer to drawing 23AK-8010 - Office Façade Signage Detail)	No	1		
	"Stonecast" custom made precast concrete units built into external blockwork facades, including letters to be recessed and including painting reval black in accordance with manufacturers recommendation, jointing, pointing with silicone sealing compound, cramps, straps, fixing anchors, ties etc				
	Columbarium				
K	"A1" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
L	"A2" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
M	"A3" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

A	"A4" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
B	"A5" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
C	"A6" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
D	"A7" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
E	"A8" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
F	"A9" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
G	"A10" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
H	"A11" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
J	"A12" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
K	"A13" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
L	"A14" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
M	"A15" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
N	"A16" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	1		
P	"A17" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	2		
Q	"A18" 0.32 x 0.18m high (refer to drawing 23AK-1-AR-D-2002-B)	No	2		
R	"CALCUTTA COLUMBARIUM" 1.84 x 0.42m high (refer to drawing 23AK-1-AR-D-2002-B)	No	2		
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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

SECTION NO. 2

BILL NO. 3

PRECAST CONCRETE

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SECTION NO. 2
BILL NO. 3
PRECAST CONCRETE

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	BILL NO 4				
	BRICK- AND BLOCKWORK				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 116				

	SUPPLEMENTARY PREAMBLES				
	NOTE				
	All internal brickwork to be NFX bricks and all external brickwork to be NFP clay brickwork.				
	BRICKWORK IN CEMENT MORTAR				
	Brickwork in Class II mortar				
A	110mm Half brick wall	m2	52		
B	230mm One brick wall	m2	43		
C	230mm One brick wall in arches	m2	2		
D	280mm Cavity wall in two 110mm brick skins with 50mm cavity, including wire ties	m2	133		
E	280mm Cavity wall in two 110mm brick skins with 50mm cavity, including wire ties in beamfilling	m2	8		
F	330mm Cavity wall in two 110mm brick skins with 110mm cavity, including wire ties	m2	164		
G	330mm Cavity wall in two 110mm brick skins in soldier bond with 110mm cavity, including wire ties	m2	182		
H	370mm Cavity wall in two 110mm brick skins with 150mm cavity, including wire ties	m2	222		
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SECTION NO. 2
BILL NO. 4
BRICK- AND BLOCKWORK

A	400mm Cavity wall in two 110mm brick skins with 180mm cavity, including wire ties	m2	35		
B	400mm Cavity wall in two 110mm brick skins with 180mm cavity, including wire ties circular on plan	m2	19		
C	490mm Cavity wall in two 110mm brick skins with 270mm cavity, including wire ties	m2	37		
D	490mm Cavity wall in two 110mm brick skins with 270mm cavity, including wire ties in arches	m2	8		
	SUNDRIES				
E	Closing 50mm cavity horizontally with one course of brickwork	m	8		
F	Closing 110mm cavity horizontally with one course of brickwork	m	10		
G	Close 50mm wall cavity at reveal or end of wall with brickwork half brick wide	m	30		
H	Close 110mm wall cavity at reveal or end of wall with brickwork half brick wide	m	19		
J	Splayed mortar fillet one course high in 50mm cavity	m	86		
K	Splayed mortar fillet one course high in 110mm cavity	m	304		
L	Splayed mortar fillet one course high in 150mm cavity	m	134		
M	220mm Wide brick-on-edge header course sills set sloping and slightly projecting	m	8		
N	330mm Wide brick-on-edge header course sills set sloping and slightly projecting	m	2		
	Brickwork reinforcement				
P	75mm Brick reinforcement built in horizontally	m	12,400		
Q	150mm Ditto	m	183		
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SECTION NO. 2
BILL NO. 4
BRICK- AND BLOCKWORK

	Galvanised hoop iron cramps, ties, etc				
A	3mm Thick fibre cement sheet to close cavity to support concrete infill in 60mm cavities	m	33		
	Cladding to external walls with "200 x 50 x 50mm Thick "Cabrico Rustic Blend Piazza PB Smooth Slim Paver" bricks on masonry surfaces, including flush jointing with white cement, with mortar compacted evenly into joints, including rendering of pavers with white cement, with a smooth, uniform finish to match the aesthetic requirements				
B	Cladding in arches of approximately 460mm bands	m2	21		
	Prestressed concrete lintels				
C	75 x 110mm Prestressed lintel in lengths not exceeding 3m built into brickwork over opening, including temporary supports	m	48		
D	150 x 110mm Prestressed lintel in lengths not exceeding 3m built into brickwork over opening, including temporary supports	m	36		
	BUILD IN ITEM				
	Supply and building in of hot dipped galvanised angles				
E	70 x 70 x 6.0mm Thick angle 1.20m long, including 100 x 30 x 4mm flat bar welded to angle and built into bed joint every 6th brick course	No	10		
F	125 x 75 x 8.0mm Thick angle 3.10m long, including 100 x 30 x 4mm flat bar welded to angle and built into bed joint every 6th brick course	No	10		
	BLOCKWORK				
	Blockwork of blocks with compressive strength of not less than 7MPa				
G	800mm Walls of four 190mm skins	m2	337		
H	Extra over blockwork for "WB44 -300 Winvent Winblocks"	No	1,968		
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SECTION NO. 2
BILL NO. 4
BRICK- AND BLOCKWORK

	BAGGING				
	Bagging of masonry surfaces with 1:3 cement and sand mixture				
A	On walls	m2	363		
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SECTION NO. 2
BILL NO. 4
BRICK- AND BLOCKWORK

SECTION NO. 2

BILL NO. 4

BRICK- AND BLOCKWORK

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SECTION NO. 2
BILL NO. 4
BRICK- AND BLOCKWORK

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	BILL NO 5				
	WATERPROOFING				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 120				

	DAMPPROOFING OF WALLS AND FLOORS				
	One layer 375 micron "Gundle Brikgrip Blue" embossed damp proof course				
A	On walls, under cills, etc	m2	607		
	One layer 250 micron "USB Green" polyethylene damp proof membrane				
B	On filling under concrete surface beds	m2	312		
	Two coats "Flintkote Type 5" bitumen emulsion waterproof coating to				
C	Masonry walls	m2	57		
	WATERPROOFING TO PARAPET WALLS				
	Three coats resiflex including 30gm/m2 polypropylene reinforcement waterproofing fixed as per manufacturer's specification on				
D	Parapet walls dressed over turn-ups	m2	27		
	WATERPROOFING TO PLANTER BOXES				
	"Index Unigum P" 3mm thick waterproofing membrane fixed as per manufacturer's specification on				
E	Walls	m2	32		
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	SECTION NO. 2 BILL NO. 5 WATERPROOFING				

	"Index Defend H Anti Root" membrane fixed as per manufacturer's specification on				
A	Walls	m2	32		
	"Abedrain G" sheeting fixed as per manufacturer's specification on				
B	Walls	m2	32		
	JOINT SEALERS, ETC				
	Approved polysulphide joint sealant dressed into joint, including protecting adjoining surfaces with masking tape				
C	10 x 10mm Sealer in joint between concrete and concrete or brickwork	m	131		
D	10 x 10mm Sealer in joint between brickwork and brickwork	m	370		
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SECTION NO. 2
BILL NO. 5
WATERPROOFING

SECTION NO. 2

BILL NO. 5

WATERPROOFING

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	BILL NO 6				
	ROOF COVERINGS, ETC				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 124				

	RIBBED METAL SHEETING AND ACCESSORIES				
	0.50mm Thick SAFLOK 700 Zincal AZ150 concealed-fix interlocking roof sheeting (Colour: Colorplus Slate), including 0.80mm accessories fixed to timber or steel purlins with SL700 clips, all as per manufacturer's specification				
A	Roof covering with a 35 degree pitch	m2	360		
B	Ridge flashing 660mm girth and bent once along girth	m	34		
C	Side wall flashing 462mm girth and two times bent along girth.	m	52		
D	Counter flashing 185mm girth and three times bent along girth	m	52		
E	Poly closer, broad or narrow flute closer	m	67		
	0.50mm Thick SAFLOK 700 Zincal AZ150 concealed-fix interlocking roof sheeting (Colour: Colorplus Slate) finish of approved standard colour on one side and cool grey backing finish on reverse side including all 0.80mm accessories, fixed to steel purlins or rails (steel purlins/rails measured elsewhere), all as per manufacturer's specification				
F	Side cladding on sheeting rails at 1240mm centres	m2	62		
G	Drip flashing 231mm girth, three times bent along girth and notched on site to suit roof profile	m	22		
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SECTION NO. 2
BILL NO. 6
ROOF COVERING, ETC

A	Door jamb flashing 308mm girth, three times bent along girth and notched on site to suit roof profile	m	28		
B	Broad or narrow flute closer to suit sheeting profile	m	69		
	POLYCARBONATE SHEETING				
	1,00mm Thick Saflok 700 polycarbonate (Color: Clear) in Saflok 700 profile side cladding with co-extruded UV protective layers on the external side and anti condensation treatment applied to the internal side, including all accessories and fixed to steel purlins or rails (steel purlins/rails measured elsewhere)				
C	Roof covering with a 35 degree pitch on purlins at 800mm centres	m2	13		
	ROOF INSULATION				
	Supply and install 135mm thick Rockwool insulation (min. 24kg/m³) over purlins, on top of ceiling, including all overlaps, straining wires or mesh, fixings, cutting, and waste. Installed to manufacturer's specs and SANS 10400.				
D	135mm Thick on ceilings	m2	69		
	Sisalation 420 insulation				
E	Insulation sheeting laid taut over purlins at approximately 600mm centres and fixed concurrent with roof covering with minimum 150mm stapled laps including galvanised steel straining wires at not exceeding 400mm centres and double-sided tape at edges where required	m2	375		
	40mm Lamdaboard high density boards (White), fixed between rafter and under purlin with concealed clips grooved side facing down 1900mm c/c with 85mm Buildex screw fixed through cleat to purlins at 385mm centres with 5mm gap between butt-jointed below purlins or rails				
F	40mm Thick roof insulation fixed between timber rafters	m2	78		
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SECTION NO. 2
BILL NO. 6
ROOF COVERING, ETC

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BILL NO. 6

ROOF COVERING, ETC

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BILL NO. 6
ROOF COVERING, ETC

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SECTION 2

BILL NO 7

CARPENTRY AND JOINERY

WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 126

SUPPLEMENTARY PREAMBLES

Fixing

Items described as "nailed" shall be deemed to be fixed with hardened steel nails or shot pins to brickwork or concrete.

Joinery

Descriptions of frames shall be deemed to include frames, transomes, mullions, rails, etc.

Descriptions of hardwood joinery shall be deemed to include palleting of bolt holes.

ROOFS, ETC

PRE-FABRICATED ROOF TRUSSES

Pre-fabricated roof trusses shall comply with the design requirements of SABS Specification No 0160 and 0163 for coastal conditions and shall be designed by a registered Engineer and manufactured by Gangnail or other approved licenced manufacturer, all in strict accordance with the manufacturers instructions and to the approval of the Architect.

Rates are to include for the supply, erection and fixing into position and are to cover the cost of inspection and approval by an Engineer from the 'Institute for Timber Construction' and present an A19 certificate

Carried to Summary R

SECTION NO. 2
BILL NO. 7
CARPENTRY AND JOINERY

SHOP DRAWINGS

The truss fabricator must submit working drawings of the final truss design to the consulting Engineer for approval before fabrication. Rates must include for all working drawings as required.

STRUCTURAL TIMBER

Structural timber shall comply with the requirements of SABS specification 563 or 1245 and shall be marked accordingly.

A competent person with respect to the requirements of SANS10400 and the municipality must undertake the detail design and relevant site inspections to certify these elements. Signing of form 3 of the municipal appointment as prescribed by SANS10400 would be required at appointment. At completion a final certification (form 4) would be required. Relevant design calculations, drawings and final certification information must be submitted to the principal engineer for scrutiny. This will, however, not alleviate any design responsibility from the competent person undertaking the detail element design.

All structural timber shall be treated.

ROOFS, ETC

NOTE: Tenderers are referred to the architects drawings for tender purposes

The following is applicable in respect of roof trusses and should be read with the drawings: Trusses centres to be as set out on drawings. Roof covering is Safintra Saflok 700 roof sheets on purlins. Ceilings are tongued and grooved ceilings in timber or isoboard. Dimensions are to be obtained from the Engineer and/or the site before design or fabrication commences. The Contractor must visit the site and the buildings and acquaint himself with the existing roof constructions.

Rates are to include for the supply, erection and fixing and are to cover the cost of inspection and approval by an Engineer from the 'Institute for Timber Construction'

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SECTION NO. 2
BILL NO. 7
CARPENTRY AND JOINERY

	SAP Plate nailed timber roof truss construction				
A	Roof construction to double pitched roof 9.10 x 16.23m and 3.36m high overall including wall plates, ridge beam, trusses, rafters, purlins, permanent bracing and 38 x 76mm purlins/battens at 0.80m centres for roof sheeting (roof sheeting elsewhere)	No	1		
	PERGOLA				
	Meranti timber pergola structure				
B	Pergola construction 3.73 x 9.75m long and 2.70m high overall all in Meranti hardwood including posts, beams, brackets, support posts, footings, excavation, fixing accesories, poles, finishing treatment etc, all in accordance with the Architect drawing no 23AK-8000, complete	No	1		
	EAVES, VERGES, ETC				
	Wrought hardwood				
C	19 x 225mm Notched SA pine fascia	m	68		
	DOORS, FRAMES, ETC				
	Versa-Wood timber				
D	69 x 107mm Rebated frame for 0.81 x 2.09m high single door including Versawood jambliner (Door type F)	No	3		
E	69 x 107mm Rebated frame for 0.90 x 2.13m high single door including Versawood jambliner (Door type K)	No	1		
	SKIRTINGS				
	SA Pine				
F	15 x 94mm High skirtings sanded smooth and plugged to wall (painting elsewhere)	m	72		
	WINDOW CILLS				
	Fibre cement				
G	15 x 150mm Window cill	m	10		
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SECTION NO. 2
BILL NO. 7
CARPENTRY AND JOINERY

	DOORS, ETC				
	Semi-solid flush Supawood doors with commercial veneer on both sides hung to timber frames				
A	40mm Door 0.81 x 2.09m high with and including 0.52 x 0.52m weather louvre (Door type F)	No	3		
B	40mm Door 0.90 x 2.13m high (Door type K)	No	1		
	"Bitcon Industries" fire doors with commercial veneer				
C	"Rubidor" class B single fire door 0.90 x 2.09m high, with 190 x 290mm opening with clear fire rated glass, including pressed steel frame for 280mm wall and preparing frame for door closers (Door type G)	No	1		
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SECTION NO. 2
BILL NO. 7
CARPENTRY AND JOINERY

	JOINERY FITTINGS				
	The following joinery fittings are measured as complete units i.e. the components of the units are not separately measured. The descriptions, therefore, of such units shall be deemed to include all components, assembling, housing, notching, glueing, blocking, planting on and screwing with countersunk screws, edge strips, decorative laminates, silicone pointing against adjacent surfaces, ironmongery, metalwork, glass, paint or varnish finishes, counter tops etc				
	Kitchen cupboards				
A	Floor and wall cupboard 4.69m long x 600mm deep x 2.12mm high, complete including floating shelves (sink and tap elsewhere) (refer to architect drawing 23AK-8001)	No	1		
	Ablution cupboards				
B	Floor and wall cupboard 3.56m long x 600mm deep x 2.90mm high, complete including bin, vanity, locker (basin, mirror and tiles elsewhere) (refer to architect drawing 23AK-8002 - Ablutions Cabinets Elevation)	No	1		
C	Bench 1.90m long x 350mm deep x 450mm high, including steel legs bolted to floor, complete (hat and coat hooks elsewehere) (refer to architect drawing 23AK-8002 - Bench elevation detail)	No	1		
D	Vanity 1.39m long x 600mm deep x 820mm high, including bin, complete (basin elsewehere) (refer to architect drawing 23AK-8004 - Elevation 1- a)	No	1		
	Office cupboards				
E	Office cupboard 3.58m long x 600mm deep x 3.24m high complete (refer to architect drawing 23AK-8003 - Office cabinets detail)	No	1		
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SECTION NO. 2
BILL NO. 7
CARPENTRY AND JOINERY

SECTION NO. 2

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CARPENTRY AND JOINERY

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BILL NO. 7
CARPENTRY AND JOINERY

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	BILL NO 8				
	CEILINGS, PARTITIONS & ACCESS FLOORS				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 128				

	SUPPLEMENTARY PREAMBLES				
	DESCRIPTIONS				
	Items described as "nailed" shall be deemed to be fixed with hardened nails or pins or shot pinned to brickwork or concrete.				
	Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres, and where described as "bolted" the bolts have been given elsewhere.				
	NAILED-UP CEILINGS				
	9.5mm Thick Rhino gypsum plasterboard with 63mm wide strips of mesh scrim nailed over joints and the whole finished with gypsum skim plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer,				
A	Horizontal ceilings, including 38 x 38mm sawn softwood brandering at 400mm centres	m2	69		
B	Horizontal ceilings, including 38 x 76mm sawn softwood brandering at 400mm centres	m2	64		
	Sundries				
C	Extra over ceilings for access hatch 600 x 600mm	No	2		
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SECTION NO. 2
BILL NO. 8
CEILINGS, PARTITIONS, ACCESS FLOORING

	CORNICES				
	Polystyrene cornices				
A	"NMC GT" 117 x 50mm Extruded cornice, including waterbase paint	m	102		
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SECTION NO. 2
BILL NO. 8
CEILINGS, PARTITIONS, ACCESS FLOORING

SECTION NO. 2

BILL NO. 8

CEILINGS, PARTITIONS, ACCESS FLOORING

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	BILL NO 10				
	IRONMONGERY				
	SUPPLEMENTARY PREAMBLES				
	Finishes to ironmongery				
	Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS Satin bronze lacquered CH Chromium plated SC Satin chromium plated SE Silver enamelled GE Grey enamelled AS Anodised silver AB Anodised bronze AG Anodised gold ABL Anodised black PB Polished brass PL Polished and lacquered PT Epoxy coated SD Sanded				
	HINGES, BOLTS, ETC				
	Dormakaba				
A	102 x 75 x 3mm EN1935 Grade 13, Two ball bearing butt hinge (DBB-SS-009)	Pairs	9.0		
	LOCKS				
	Dormakaba				
B	Narrow Stile Sash Lock Operating with European Profile Cylinder 174 x 52mm (D02635 SS)	No	2		
C	Narrow Stile roller dead lock, operating with European Profile Cylinder 174 x 52mm (D02835 SS)	No	2		
D	Cylinder Sash Lock 116.5 x 78mm (D036S SS)	No	1		
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	SECTION NO. 2 BILL NO. 9 IRONMONGERY				

A	Bathroom Deadlock 38 x 76mm (DMWC-SS-008)	No	3		
B	60mm five pin Europrofile Double Cylinder (DDC056001 KD (60mm))	No	1		
C	63mm five pin Europrofile Double Cylinder (DDC056301 KD (63mm))	No	4		
D	Round Cylinder escutcheon (DCE-002 S.S)	Pairs	1.0		
E	Narrow Stile Cylinder escutcheon (DCE-105 S.S)	Pairs	2.0		
F	Bathroom WC indicator (Red and White) and turnknob (DWC-005)	Sets	2.0		
G	Disabled WC indicator (Red & White) and turnknob for physically impaired (DWC-006)	Sets	1.0		
	HANDLES				
	Dormakaba				
H	DPH301C Pull Handle BT fixed on a 75 x 170 x 1.2mm thick Grade 304 stainless steel plate with 4 countersunk holes with no cylinder cutout (DHP-304-BL-SF 75X170)	No	2		
J	382 x 32mm D Shaped Offset Tubular Pull Handle BTB (DPH215 BTB)	Pairs	2.0		
K	300 x 30mm Straight Tubular Pull Handle BT (DPH210 BT)	No	1		
L	325 x 25mm Straight Tubular Pull Handle Flange Fixing (DPH301B)	No	2		
M	Lever handle on 170x170 plate with Cylinder cutout (TH120 BP Cyl S.S)	Sets	1.0		
	Iseo				
N	218 x 28mm Slimline lever handle (H26SN)	Sets	2.0		
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SECTION NO. 2
BILL NO. 9
IRONMONGERY

	PUSH PLATES AND KICKING PLATES				
	Dormakaba				
A	75 x 170 x 1.2mm Thick Grade 304 stainless steel plate with 4 countersunk holes for screw fixing. (DPP-304-BL-SF 75x170)	No	2		
B	150 x 300 x 1.2mm Thick Grade 304 stainless steel plate with 6 countersunk holes for screw fixing (DPP-304-BL- F 150X300)	No	1		
C	600 x 960 x 1.2mm thick Grade 304 stainless steel kick plate with 18 countersunk holes for screw fixing (DKP-304-SF 600)	No	2		
	DOOR CLOSERS				
	Dormakaba				
D	EN 2/3/4 Rack and pinion door closer with standard non hold open scissor arm including EN1154 Hydraulic speed control and standard pull side fixing, transom push side fixing, fire rated (TS68 - SL)	No	1		
E	EN 1-4 Rack and pinion door closer with standard non hold open scissor arm including EN1154, Hydraulic speed control and backcheck. Standard pull side fixing, transom push side fixing, fire rated (TS73V - SL)	No	1		
F	EN 1-4 Rack and pinion door closer with standard non hold open scissor arm and paralllel arm bracket EN1154, including hydraulic speed control, backcheck and delayed action. Standard push side fixing, fire rated.(TS73V DC PA -SL)	Sets	1.0		
	LETTERS, NAMEPLATES, ETC				
	Dormakaba				
G	150 x 150mm Male/Female sign (DSS-132 MF)	No	1		
H	150 x 150mm Disabled persons sign (DSS-133 P)	No	1		
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SECTION NO. 2
BILL NO. 9
IRONMONGERY

	SUNDRIES				
	Dormakaba				
A	Dust Proof Strike (DPS-SS-032)	No	3		
B	Floor Mounted Door Stop (DDS-SS-017)	No	9		
C	Hat and Coat Hook with rubber buffer (DHC-SS-031B)	No	2		
D	800 x 80mm Flush valve back rail (DGR-SS-151)	No	1		
E	300 x 300 x 300mm Side grab rail (DGR-SS-152)	No	1		
	BATHROOM FITTINGS				
	Handles Inc				
F	Hat and coat hook black alu (Code: SKU: H058BLK)	No	12		
	Ticra				
G	Manual paper towel dispenser in Matt Black (Code: SKU: PHTIC30)	No	2		
H	Toilet Roll Holder for two rolls in Matt Black (Code: SKU: BLA04)	No	2		
	Brabantia				
J	Toilet Accessory Set 3-Piece in Matt Black (Code: SKU: B25B280603/1)	No	1		
	Sensea				
K	Studio shelf in forged black 20cm long (Code: SKU 81492428)	No	1		
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SECTION NO. 2
BILL NO. 9
IRONMONGERY

SECTION NO. 2

BILL NO. 9

IRONMONGERY

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SECTION 6

BILL NO 10

STRUCTURAL STEELWORK

WORKGROUPS: Unless otherwise stated the work group for this Bill to be WG 134

NOTE

The Tenderer is obliged to study the Engineers' drawings and specifications before pricing this Bill. **No claim in this regard will be entertained.**

SUPPLEMENTARY PREAMBLES

NOTE

All structural steel layouts, truss detail drawings, etc, are annexed to these Bills of Quantities. The Contractor should take into account the truss sizes, truss configuration, set-up heights, fixing details, etc, to ensure absolute clarity on scope of works as no claim in this regard will be considered.

General

Bolts to trusses shall be galvanised.

Descriptions

Descriptions of trusses, girders, etc, shall be deemed to include for transport, on-site assembly, field splices, bolts(Grade 8.8), etc, to the satisfaction of the Structural Engineer.

Descriptions of bolts shall be deemed to include nuts and washers.

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SECTION NO. 2
BILL NO. 10
STRUCTURAL STEELWORK

	Descriptions of U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete. Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete. --- **HOT DIPPED GALVANISED MILD STEEL (COMMERCIAL GRADE)** STEEL COLUMNS AND BEAMS Welded columns, rafters, beams, joists, etc, in single lengths with flat section base, top, bearer and connection plates bolted to lattice girders or trusses				
A	203 x 133 x 25.1kg/m I-section column	t	1.29		
B	203 x 133 x 25.1kg/m I-section rafter	t	1.95		
C	203 x 133 x 25.1kg/m I-section beam	t	0.38		
	PURLINS, GIRTS, BRACING, ETC. Welded bracing, etc. with flat section connection plates bolted to steel				
D	40 x 40 x 3.0 x 1.87kg/m Angles	t	0.10		
E	40 x 40 x 3.0 x 1.87kg/m Sag angles	t	0.07		
F	76.2 x 2.5 x 4.54kg/m Circular hollow section bracing	t	0.26		
	PRE-GALVANISED MILD STEEL PURLINS, GIRTS, BRACING, ETC. Welded bracing, etc. with flat section connection plates bolted to steel				
G	100 x 50 x 20 x 2.0 x 3.53kg/m Cold formed lip channel purlins	t	0.17		
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SECTION NO. 2
BILL NO. 10
STRUCTURAL STEELWORK

A	125 x 50 x 20 x 2.0 x 3.93kg/m Cold formed lip channel cladding rails	t	0.36		
B	150 x 75 x 20 x 2.0 x 5.13kg/m Cold formed lip channel purlins	t	1.23		
	GALVANISED BOLTS, FASTENERS, ETC				
C	M16 Hold down bolt 400mm girth	No	48		

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SECTION NO. 2
BILL NO. 10
STRUCTURAL STEELWORK

SECTION NO. 2

BILL NO. 10

STRUCTURAL STEELWORK

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SECTION 2

BILL NO 11

METALWORK

WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 136

SUPPLEMENTARY PREAMBLES

Descriptions

Descriptions of bolts shall be deemed to include nuts and washers.

Descriptions of expansion bolts and anchors and chemical bolts and anchors shall be deemed to include nuts, washers and mortices in brickwork or concrete.

Metalwork described as "holed for bolts" shall be deemed to exclude the bolts unless otherwise stated.

ALUMINIUM (WG 140)

NOTE

The Contractor must take note that all aluminium work is to be carried out in accordance with the AAMSA Standards.

Carried to Summary R

SECTION NO. 2
BILL NO. 11
METALWORK

SUPPLEMENTARY PREAMBLES

NOTE

The design and construction of aluminium window and door units have to comply with the minimum A2 (commercial) standards as laid down in the applicable selection guide as published by AAAMSA.

The Tenderer's attention is drawn to the following minimum specification which must be read in conjunction with the Performance Specification for Aluminium included in this Tender document.

Tenderers are referred to the drawings annexed to this Tender Document which indicate the broad scope of the works.

It is of the utmost importance that the Tenderer study the full window and shopfront drawings (available at the offices of the Architect and/or Quantity Surveyor) before pricing and should there be any doubt as to the extent of the work, have same clarified as no claim in this regard will be considered.

Where a type of shopfront is referred to, the Tenderer is to use the drawings as attached to this document, as a reference only.

SHOP DRAWINGS: Rates must include for a complete set of shop drawings and shall be submitted to the Architect for approval before manufacturing commences. The Contractor shall allow one week for checking and approval by the Architect and shall also allow for any possible changes to shop drawings.

All dimensions shall be checked on site before such shop drawings commence. Any discrepancies shall be brought to the attention of the Architect.

Carried to Summary R

SECTION NO. 2
BILL NO. 11
METALWORK

MINIMUM SPECIFICATION

TYPES

Framing generally shall be of extruded section in 36 SWP anodising quality alloy with grade AA15 (average coating thickness of 15 micron) anodic layer. Minimum sectional width shall be 36mm.

PROTECTION

All fixed framing shall be delivered to site wrapped with protective tape, which shall be removed within 30 days to prevent bonding to the applied finish (below).

GLASS

The Tenderer is to check the glass specified against required performance criteria and upgrade if necessary. Safety glazing shall be executed strictly in accordance with the glass manufacturer's specifications and all in accordance with the National Building Regulations, SABS D137, SABS 0400 and SABS 1263

SILICONE

Allowance should be made for periphery silicone sealing on the outside and inside of aluminium windows and doors.

GLAZING

Glass is to be of the type and thickness described and fitted with gaskets and sloping type aluminium clip-in glazing beads.

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SECTION NO. 2
BILL NO. 11
METALWORK

	POWDER COATED ROLLER SHUTTER DOORS				
	Chain operated roller shutter doors, powder coated (Colour: Dark Grey Umber)				
A	Roller garage door, size 3.80 x 2.25m high overall, including overhead fittings, side seals, etc. (Door type C)	No	1		
B	Roller garage door, size 4.08 x 2.55m high overall, including overhead fittings, side seals, etc. (Door type J)	No	3		
C	Roller garage door, size 4.88 x 2.55m high overall, including overhead fittings, side seals, etc. (Door type D)	No	1		
	EPOXY POWDER COATED WINDOWS AND DOORS				
	Purpose made powder coated (colour: Dark Grey Umber) aluminium framed windows, doors and sliding door units with single glazed clear safety glass in strict accordance with SANS 10137 and SANS 10400 Part N with square clip-on glazing beads and vinyl glazing gaskets. Plugged to brickwork or concrete including all flush bolts and hinges, stainless steel friction stays, necessary sealants both internally and externally, all in accordance with Architect's drawings				
D	Double door, size 1.61 x 2.13m high overall complete as per drawing 23AK-01-AR-A4000 (Door type B)	No	1		
E	Double door, size 1.62 x 2.13m high overall complete as per drawing 23AK-01-AR-A4000 (Door type H)	No	1		
F	Single door, size 1.02 x 2.13m high overall complete as per drawing 23AK-01-AR-A4000 (Door type E)	No	1		
	Purpose made powder coated (colour: Dark Grey Umber) aluminium framed windows with single glazed clear glass in strict accordance with SANS 10137 and SANS 10400 Part N with square clip-on glazing beads and vinyl glazing gaskets. Plugged to brickwork or concrete including all ironmongery, stainless steel friction stays, necessary sealants both internally and externally, all in accordance with Architect's drawings				
G	Window size 1.62 x 1.53m high overall complete as per drawing 23AK-01-AR-A4000 (Window type A)	No	2		
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BILL NO. 11
METALWORK

A	Window size 0.90 x 0.68m high overall complete as per drawing 23AK-01-AR-A4000 (Window type B)	No	3		
B	Window size 0.90 x 1.53m high overall complete as per drawing 23AK-01-AR-A4000 (Window type C)	No	3		
C	Window size 2.00 x 0.60m high overall complete as per drawing 23AK-01-AR-A4000 (Window type D)	No	1		
	EPOXY POWDER COATED SHOPFRONTS				
	Purpose made powder coated (colour: Dark Grey Umber) aluminium framed shopfronts with single glazed clear safety glass in strict accordance with SANS 10137 and SANS 10400 Part N with square clip-on glazing beads and vinyl glazing gaskets. Plugged to brickwork or concrete including hinges and flush bolts, stainless steel friction stays, necessary sealants both internally and externally, all in accordance with Architect's drawings				
D	Shopfront, size 2.00 x 3.10m high overall complete as per drawing 23AK-01-AR-A4000 (Door type A)	No	1		
	GALVANISED STEEL BALUSTRADING INCLUDING PAINTING				
	Welded and bolted balustrading, including paint				
E	Horizontal balustrading 1.00m high of 50mm diameter continuous top rail, fixed with 10mm pin rods to 40mm diameter posts at approximately 1.21m centers with two 18mm balustrade rods to connect posts, posts to be fixed to base plate and fixed with and including 4no anchor bolts, complete (refer to drawing 23AK-8014 - Railings detail)	m	5		
F	Horizontal balustrading 1.00m high of 50mm diameter continuous top rail, fixed with 10mm pin rods to 40mm diameter posts at approximately 1.05m centers with two 18mm balustrade rods to connect posts, posts to be fixed to base plate and fixed with and including 4no anchor bolts, complete (refer to drawing 23AK-8014 - Railings detail)	m	4		
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BILL NO. 11

METALWORK

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	PLASTERING (PROVISIONAL)				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 142				

	SCREEDS				
	Screeds on concrete				
A	40mm Screed	m2	312		
	INTERNAL PLASTER				
	One coat cement plaster to brickwork to				
B	Walls	m2	453		
C	Narrow widths not exceeding 300mm wide	m2	19		
	EXTERNAL PLASTER				
	One coat textured cement plaster to brickwork to				
D	Walls	m2	978		
E	Columns	m2	31		
F	Narrow widths not exceeding 300mm wide	m2	32		
G	220mm Wide brick-on-edge cills	m	10		
H	Copings 770mm girth with single sloping top, two edges and one projecting soffit with one groove in the side (Wall BTW1 & BTW2)	m	69		
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SECTION NO. 2
BILL NO. 12
PLASTERING (PROVISIONAL)

A	Copings 810mm girth with single sloping top, two edges and two projecting soffits with two drip grooves (Link planter)	m	20		
B	Copings 1030mm girth with single sloping top, two edges and two projecting soffits with two drip grooves (Low retainer werf wall - Columbarium)	m	88		
C	Copings 1030mm girth with single sloping top, two edges and two projecting soffits with two drip grooves, circular on plan (Low retainer werf wall - Columbarium)	m	46		
D	Copings 1030mm girth with single sloping top, two edges and two projecting soffits with two drip grooves (Wall type 02)	m	203		
	<u>One coat textured cement plaster to blockwork to</u>				
E	Narrow widths exceeding 300mm wide	m2	337		
F	Copings 1750mm girth with single sloping top, two edges and two projecting soffits with two drip grooves (Columbarium wall)	m	132		

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<u>SECTION NO. 2</u>
<u>BILL NO. 12</u>
<u>PLASTERING (PROVISIONAL)</u>

SECTION NO. 2

BILL NO. 12

PLASTERING (PROVISIONAL)

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BILL NO. 12
PLASTERING (PROVISIONAL)

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	SECTION 2				
	BILL NO 13				
	TILING				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 144				

	Note				
	Descriptions of tiling shall be deemed to include for cutting and fitting around all sanitary ware and pipes, etc not exceeding 150mm diameter				
	WALL TILES				
	300 x 600mm "Tropical Mist" Ceramic wall tiles on plaster (plaster elsewhere) fixed with Goldstar 6 tiling adhesive fully covering back of tile and joints filled in with an approved TAL filler including TAL fungicidal bond additive in 2,5mm wide straight joints in both directions including cleaning down on completion with soft soap and warm water, to:				
A	In splashbacks	m2	6		
B	Ditto, allowance for profit	m2	6		
C	Ditto, allowance for waste	m2	6		
D	Ditto, allowance for adhesive	m2	6		
E	Ditto, allowance for grouting	m2	6		
F	Ditto, allowance for labour	m2	6		
G	Ditto, allowance for attic stock	m2	6		
H	Narrow widths not exceeding 300mm wide	m2	1		
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SECTION NO. 2
BILL NO. 13
TILING

A	Ditto, allowance for profit	m2	1		
B	Ditto, allowance for waste	m2	1		
C	Ditto, allowance for adhesive	m2	1		
D	Ditto, allowance for grouting	m2	1		
E	Ditto, allowance for labour	m2	1		
	FLOOR TILES				
	600 x 1200mm "Polaris Rock Polished" porcelain floor tiles on screed (screeds elsewhere), fixed with Goldstar 6 tiling adhesive fully covering back of tile and joints filled in with an approved TAL filler including TAL bond fungicidal additive in 2,5mm wide straight joints in both directions including cleaning down on completion with soft soap and warm water, to:				
F	Floors	m2	71		
G	Ditto, allowance for profit	m2	71		
H	Ditto, allowance for waste	m2	71		
J	Ditto, allowance for adhesive	m2	71		
K	Ditto, allowance for grouting	m2	71		
L	Ditto, allowance for labour	m2	71		
	TILE TRIMS, PROTECTORS ETC				
	Promax				
M	3 x 10mm Ploished silver anodised straight edge trim (FTES0017)	m	25		

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BILL NO. 13
TILING

SECTION NO. 2

BILL NO. 13

TILING

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SECTION 2

BILL NO 14

PLUMBING AND DRAINAGE (PROVISIONAL)

WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 148

NOTE

All pipe diameters are internal pipe diameters.

SUPPLEMENTARY PREAMBLES

uPVC pipes and fittings

Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings.Soil, waste and vent pipes and fittings shall be solvent weld jointed.

Copper pipes

Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be Cobra Watertech type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground.

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SECTION NO. 2
BILL NO. 14
PLUMBING AND DRAINAGE (PROVISIONAL)

	Reducing Fittings Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch size is given. Should the Contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all sizes are given and no claim for extra bushes, reducers, etc, will be entertained. --- **RAINWATER DISPOSAL** OGEE aluminium gutters or similar approved				
A	150 x 140mm OGEE eaves gutter fixed to timber beams, etc including concealed fixing brackets	m	68		
B	Extra over 150 x 140mm OGEE gutter for stopped end	No	8		
C	Extra over 150 x 140mm OGEE gutter for outlet to 110mm diameter downpipe	No	12		
D	110mm Diameter rainwater pipes	m	35		
E	Extra over 110mm diameter rainwater downpipe for shoe	No	12		
	SANITARY FITTINGS NOTE Sealing and pointing between sanitary fitting and wall finish, timber fitting, etc, in an approved sealant will be deemed to be included in the description. --- Franke				
F	Nouveau double end bowl sink 1160 x 460 x 149mm including waste (Code: NVN621)	No	1		
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SECTION NO. 2
BILL NO. 14
PLUMBING AND DRAINAGE (PROVISIONAL)

	Sensea Studio				
A	Rectangular ceramic freestanding basin in matt white (Code: SKU 81492162)	No	2		
	Verdi Atlas				
B	White toilet with soft close seat and bottom water supply including trap (Code: SKU BE1WH9109)	No	2		
	Duravit				
C	White alphin wall hung toilet "Durastyle" rimless 370 x 700mm including "Durastyle" standard elongated toilet seat with extended hinged shaft and stainless steel hinges (Code: SKU: CHBH13)	No	1		
D	"Vero" wall mounted basin 600 x 470mm with 1no taphole in white alphine finish including wall hung brackets (Code: 045460)	No	1		
	TRAPS, ETC				
	Waste traps, etc, jointed to pipes as described including necessary adaptors, etc				
	Gio Plumbing				
E	32x32mm Round heavy duty bottle trap (Code: A186)	No	4		
F	Basin pop up waste, slotted 32 x 75mm (Code: BW202S)	No	2		
G	Basin bath waste, 40mm with plug chrome (Code: GIO-BTW101)	No	1		
	TAPS, VALVES, ETC				
	Delinia Loa				
H	Kitchen mixer tap in brushed nickel including flexi hose (Code: SKU 81479460)	No	1		
	Schell				
J	1/2 x 1/2mm angle valve, DZR brass (Code: 90610900C4)	No	10		
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SECTION NO. 2
BILL NO. 14
PLUMBING AND DRAINAGE (PROVISIONAL)

	Amalfi Zimbani				
A	Basin mixer tap in stainless steel including flexi hose (Code: TVZM1445/SS)	m	2		
	Geberit				
B	Kombifix element for wall-hung toilet, 109 cm, with Sigma concealed cistern 8 cm (Code: 110.798.00.1) with and including Mambo actuator plate for stopand-go flush, screwable (Code: 115.751.00.1) in brushed stainless steel finish	No	1		
	Hansgrohe				
C	"Decor" single lever basin mixer 70mm high with extra long handle (Code: 31910223)	No	1		
	ELECTRIC WATER HEATERS				
	Kwikot				
D	100 Litre "Superline 400 Dual" electric water heaters (Code: SKU: DSG-100-5)	No	1		
	SANITARY PLUMBING				
	Sanitary plumbing reticulation				
E	Design and supply sanitary plumbing reticulation including all pipe work, fittings, lagging, excavations, gulleys, rodding eyes, vent pipes, inspection eyes, bends, valves etc. complete with tie into civil inspection chamber 10m away from building (Number of sanitary fittings 7no)		Item		
	Testing				
F	Testing sanitary installation		Item		
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SECTION NO. 2
BILL NO. 14
PLUMBING AND DRAINAGE (PROVISIONAL)

	WATER SUPPLIES			
	Cold water supplies			
A	Design and supply cold water plumbing reticulation including all pipe work, fittings, lagging, excavations, valves etc. complete with tie into civil water meter 10m away from building (Number of sanitary fittings 8no)	Item		
	Hot water supplies			
B	Design and supply hot water plumbing reticulation including all pipe work, fittings, lagging, excavation etc. complete with tie into hot water geyser, valves etc (Number of sanitary fittings 4no)	Item		
	Testing			
C	Allow for the testing of water supply installation	Item		
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BILL NO. 14
PLUMBING AND DRAINAGE (PROVISIONAL)

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BILL NO. 14

PLUMBING AND DRAINAGE (PROVISIONAL)

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PLUMBING AND DRAINAGE (PROVISIONAL)

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	BILL NO 15				
	GLAZING				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 144				

	GLASS TOPS, SHELVES, DOORS, MIRRORS, ETC				
	5mm Mirrors with polished edges and 25mm anodised frame with black sprayed edge, plugged to wall				
A	Mirror 0.60 x 1.20m high	No	1		
B	Mirror 0.90 x 1.05m high	No	2		
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SECTION NO. 2
BILL NO. 15
GLAZING

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	BILL NO 16				
	PAINTING (PROVISIONAL)				
	WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 152				

	PAINTWORK TO NEW WORK				
	ON PLASTER, ETC				
	Prepare and apply one coat Professional Plaster Primer (PP700) and two coats Dulux Weatherguard Fine Textured paint (Colour: White) to				
A	External plastered walls and columns	m2	1,896		
	Prepare and apply one coat Dulux Universal Undercoat and two coats Dulux Luxurious Silk paint (Colour: Cottage White) to				
B	Internal plastered walls and columns	m2	473		
	ON BAGGED SURFACES				
	Prepare and apply one coat Professional Plaster Primer (PP700) and two coats Dulux Weatherguard Fine Textured paint (Colour: White) to				
C	External bagged walls and columns	m2	363		
	ON GYPSUM PLASTER BOARD				
	Prepare and apply one coat Primer and two coats Dulux Luxurious Silk (Colour: Cottage White) to				
D	Ceilings and cornices	m2	132		
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SECTION NO. 2
BILL NO. 16
PAINTING (PROVISIONAL)

	ON WOOD, ETC				
	Prepare and apply one coat Dulux Woodguard Pink Primer and two coats Dulux Luxurious Silk (Colour: Moon Grey) to				
A	General surfaces of doors	m2	21		
B	General surfaces of door frames, etc	m2	39		
C	Skirtings not exceeding 300mm high or wide	m	72		
D	Fascias	m2	33		
	ON STRUCTURAL STEEL				
	All structural steel must be thoroughly chipped and scraped free of millscale. Remove oil, grease and contaminants using Plascon Metalcare Aquasolv Degreaser (code GR 1) or similar approved followed by freshwater rinses. Prepare steel by wire brushing to remove all loose material. Apply one coat (35 micron) zinc phosphate primer in accordance with SANS 681. Apply one cost (35 micron) multi-purpose undercoat and one coat Alkyds base enamel (35 micron) to				
E	General surfaces of universal beams	m2	129		
F	General surfaces of bracing	m2	28		
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BILL NO. 16
PAINTING (PROVISIONAL)

SECTION NO. 2

BILL NO. 16

PAINTING (PROVISIONAL)

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SECTION 3

BILL NO 1

STORMWATER-, SOIL DRAINAGE, ETC (PROVISIONAL)

WORK GROUPS: Unless otherwise stated the work group for this Bill to be WG 146

SUPPLEMENTARY PREAMBLES

Excavations

No claim for rock excavation will be entertained unless the contractor has timeously notified the Quantity Surveyor thereof, prior to backfilling."Soft rock" and "hard rock" shall be defined in "Earthworks". Baling, pumping or keeping excavations free from water, etc, will be included in descriptions of manholes, catchpits, inspection chambers, etc.

Laying, backfilling, bedding, etc, of pipes

Pipes shall be laid and bedded and trenches shall be carefully backfilled in accordance with the manufacturer's instructions.

Where no manufacturer's instructions exist, pipes shall be laid in accordance with clauses 5.1 and clauses 5.2 of each of the following:

SABS 1200

L : Medium-pressure pipelines
LD : Sewers
LE : Stormwater drainage

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SECTION NO. 3
BILL NO. 1
STORMWATER-, SOIL DRAINAGE, ETC (PROVISIONA

Pipe trenches shall be backfilled in accordance with clauses 3, 5.5, 5.6, 5.7 and 7 of SABS 122 DB : Earthworks (Pipe trenches).

Pipes shall be bedded in accordance with clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SABS 1200 LB : Bedding (Pipes).

Unless otherwise described bedding of rigid pipes shall be class B bedding.

Concrete pipes

Pipes shall be jointed with ogee joints with rubber collars or socket and spigot joints with rubber rings.

uPVC pipes and fittings

Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings. Soil, waste and vent pipes and fittings shall be solvent weld and jointed.

uPVC pressure pipes and fittings

Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings. Pipes of 50mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints.

Reducing fittings

Where fittings have reducing ends or branches, they are described as "reducing". In the case of pipes with diameters not exceeding 60mm, only the largest end or branch size is given.Should the Contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm, all sizes are given and no claim for extra bushes, reducers, etc, will be entertained.

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	SUB-SOIL DRAIN (PROVISIONAL)				
	Sub-soil drain				
A	55mm Perforated PVC pipe laid in planter wrapped with Geotextile Grade A or similar approved geo-fabric filter blanket with 150mm end laps, including stitching etc. complete including 19mm aggregate filter material around pipe, size 150 x 150mm deep	m	18		
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BILL NO. 1
STORMWATER-, SOIL DRAINAGE, ETC (PROVISIONA

SECTION NO. 3

BILL NO. 1

STORMWATER-, SOIL DRAINAGE, ETC (PROVISIONAL)

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	SECTION 4					
	BILL NO 1					
	GENERAL SITEWORKS, ROADS, PARKING, ETC (PROVISIONAL)					
	NOTE					
	Descriptions of excavations shall be deemed to include all ground conditions classifiable as "earth" described in the above report and where conditions of a more difficult character are indicated, these are measured separately.					
	Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.					

	THE FOLLOWING IN TUNNELS POSITION					
	Earthworks					
A	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural ground level to reduce levels	m3	42			
B	300mm Thick selected G5 layer under road graded to required falls, moisten to optimum moisture content and compact to 95% Modified AASHTO maximum density	m3	42			
	Extra over all excavations for carting away					
C	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	42			
	Carried to Summary				R	

	THE FOLLOWING IN EXPOSED AGGREGATE RAMPS				
	Earthworks				
A	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural ground level to reduce levels	m3	9		
B	150mm Thick G5 sub-base course under walkways, grade to required falls, moisten to optimum moisture content and compact to 96% Modified AASHTO density	m3	9		
	Extra over all excavations for carting away				
C	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	9		
	Compaction of surfaces				
D	Compaction of ground surfaces under pavings etc, including scarifying for a depth of 200mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	57		
	Soil poisoning				
E	Approved brand of anti termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years	m2	57		
	Reinforced concrete (25MPa/19mm) at 28 days in				
F	Ramps cast in panels	m3	11		
	Exposed aggregate surface treatment to finished face of concrete, treated with and including surface retarder (Sika Rugasol C) and exposed by light water wash and brushing after set. Finish to be even, clean, and consistant, all as per manufacturers specifications				
G	Ramps	m2	57		
	Smooth formwork to sides (Degree of Accuracy II)				
H	Edges, risers, ends and reveals not exceeding 300mm wide	m	70		
	Carried to Summary			R	

SECTION NO. 4
BILL NO. 1
SITEWORKS, SECURITY FENCING AND GATES (PRO

	THE FOLLOWING IN PAVING				
	Earthworks				
A	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural ground level to reduce levels	m3	3		
B	150mm Thick G5 sub-base course under walkways, grade to required falls, moisten to optimum moisture content and compact to 96% Modified AASHTO density	m3	3		
	Extra over all excavations for carting away				
C	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	3		
	Compaction of surfaces				
D	Compaction of ground surfaces under pavings etc, including scarifying for a depth of 200mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	18		
	Soil poisoning				
E	Approved brand of anti termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years	m2	18		
	200 x 100 x 50mm Thick "Cabrico Rustic PB Smooth" block pavings with butt joints on and including 25mm thick sand bed with white cement joints				
F	Pavings to sidewalks, etc in herringbone pattern	m2	18		
	200 x 100 x 50mm Thick "Cabrico Rustic PB Smooth" block pavings on and including 200 x 150mm thick 20MPa concrete bedding, including excavation, formwork, etc				
G	200mm Edgings	m	52		
	Carried to Summary			R	

SECTION NO. 4
BILL NO. 1
SITEWORKS, SECURITY FENCING AND GATES (PRO

	THE FOLLOWING IN ENTRANCE AND COURTYARD LINK				
	Earthworks				
A	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural ground level to reduce levels	m3	2		
B	150mm Thick G5 sub-base course under walkways, grade to required falls, moisten to optimum moisture content and compact to 96% Modified AASHTO density	m3	2		
	Extra over all excavations for carting away				
C	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	2		
	Compaction of surfaces				
D	Compaction of ground surfaces under pavings etc, including scarifying for a depth of 200mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	11		
	Soil poisoning				
E	Approved brand of anti termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years	m2	11		
	200 x 50 x 50mm Thick "Cabrico Rustic Blend Piazza PB Smooth Slim Paver" block pavings with butt joints on and including 25mm thick sand bed with jointing of white cement in joints				
F	Pavings to sidewalks, etc in stack bond pattern	m2	11		
	200 x 50 x 50mm Thick "Cabrico Rustic Blend Piazza PB Smooth Slim Paver" block pavings on and including 200 x 150mm thick 20MPa concrete bedding, including excavation, formwork, etc				
G	200mm Edgings	m	15		
	Carried to Summary			R	

SECTION NO. 4
BILL NO. 1
SITEWORKS, SECURITY FENCING AND GATES (PRO

	THE FOLLOWING IN COURTYARD LINK PAVING				
	200 x 50 x 50mm Thick "Cabrico Rustic Blend Piazza PB Smooth Slim Paver" block pavings with butt joints on surfacebed (surfacebed measured elsewhere) with jointing of white cement in joints				
A	Pavings to sidewalks, etc in stack bond pattern	m2	20		
B	200mm Edgings	m	24		
	THE FOLLOWING IN COLUMBARIUM PAVING				
	Earthworks				
C	Excavate in pickable or compacted sub base material not exceeding 2m deep below natural ground level to reduce levels	m3	246		
D	150mm Thick G5 sub-base course under walkways, grade to required falls, moisten to optimum moisture content and compact to 96% Modified AASHTO density	m3	246		
	Extra over all excavations for carting away				
E	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	246		
	Compaction of surfaces				
F	Compaction of ground surfaces under pavings etc, including scarifying for a depth of 200mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	1,641		
	Soil poisoning				
G	Approved brand of anti termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years	m2	1,641		
	200 x 100 x 50mm Thick "Cabrico Rustic PB Smooth" block pavings with butt joints on and including 25mm thick sand bed with white cement joints				
H	Pavings to sidewalks, etc in herringbone pattern	m2	1,641		
	Carried to Summary			R	

SECTION NO. 4
BILL NO. 1
SITEWORKS, SECURITY FENCING AND GATES (PRO

	200 x 100 x 50mm Thick "Cabrico Rustic PB Smooth" block pavings on and including 200 x 150mm thick 20MPa concrete bedding, including excavation, formwork, etc				
A	200mm Edgings	m	564		
	Precast concrete kerbs, channels, etc, including excavation, backfilling, bases, haunching, bedding, jointing, pointing, etc				
B	150 x 170mm High U-shaped road channel kerbs	m	268		
C	Extra over for filling in U-channel with gravel chips	m	268		
	THE FOLLOWING IN PRECAST BENCHES				
	"White Terazzo" precast concrete garden furniture, including excavation, backfilling and concrete footings where applicable				
D	500 x 500 x 500mm High bench	No	16		
E	1500 x 500 x 500mm High bench	No	24		
	Carried to Summary			R	

SECTION NO. 4
BILL NO. 1
SITEWORKS, SECURITY FENCING AND GATES (PRO

SECTION NO. 4

BILL NO. 1

SITEWORKS, SECURITY FENCING AND GATES (PROVISIONAL)

SUMMARY

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		Quantity	Rate	Amount
	SECTION NO 5			
	BILL NO 1			
	ELECTRICAL INSTALLATION			
	Work executed by Specialists			
	ELECTRICAL INSTALLATION			
A	Design, supply and install electrical reticulation including wireways, distribution boards, supply and installation of light fittings and all electrical fixtures, complete	Item		
B	Add for profit	Item		
C	Allow for general attendance on above	Item		
	Carried Forward to Summary of Section No. 5		R	

SECTION NO. 5
BILL NO. 1
ELECTRICAL INSTALLATION

		Quantity	Rate	Amount
	SECTION NO 5			
	BILL NO 2			
	MECHANICAL INSTALLATION			
	Work executed by Specialists			
	MECHANICAL INSTALLATION			
A	Design, supply and installation of the mechanical installation, including fresh air supply to the offices, mid wall split unit to offices, ventilation to the ablutions, complete including the necessary ducts, fittings etc, complete	Item		
B	Add for profit	Item		
C	Allow for general attendance on above	Item		
	Carried Forward to Summary of Section No. 5		R	

SECTION NO. 5
BILL NO. 2
MECHANICAL INSTALLATION

	Quantity	Rate	Amount

SECTION 5

BILL NO 3

BUILDERSWORK IN CONNECTION WITH MECHANICAL AND ELECTRICAL INSTALLATION

SUPPLEMENTARY PREAMBLES

EARTHWORKS (WG 104)

NATURE OF GROUND

The tenderer is to visit the site to acquaint himself with the ground conditions.

The contractor to note that the accepted bulk earthworks platform is to be maintained during construction in order to avoid any stabilised platform repairs. In the event of damage and subsequent repairs required by the Engineer, the contractor will have to repair at his own expense.

All excavations and backfilling must be executed in accordance with the Civil Engineer's instructions. The Tenderer is to refer to the platform specifications and Engineering requirements. Sub-base material during excavation and backfilling to be kept separate. Rates to take this into consideration.

Excavations should happen in layers and should be stockpiled on site.

Backfill should happen in the specified layers and should be from allocated stockpiles.

No claim in this regard will be entertained as a result of non-compliance with the above requirements.

Carried to Summary R

SECTION NO. 5
BILL NO. 3
BUILDERSWORK IN CONNECTION WITH MECHANICA

	BUILDERSWORK, ETC (PROVISIONAL) (WG 146)				
	SLEEVES, HOLES, ETC				
	NOTE:				
	The installation of sleeves to include for all relevant items such as backfilling, carting away to dump site located by Contractor, warning tape, concrete slabs, blankets, etc. where applicable				
	Electrical sleeves				
A	Set of two 110mm diameter Kabelflex or similar approved sleeves including draw wires laid under hardstand, paving, etc including all necessary excavations, compaction, etc	m	10		
B	Set of four 160mm diameter Kabelflex or similar approved sleeves including draw wires laid under hardstand, paving, etc including all necessary excavations, compaction, etc	m	5		
	Irrigation sleeves				
C	110mm Diameter Class 34 uPVC pipe as sleeves including draw wires laid under hardstand, paving, etc including all necessary excavations and compaction	m	10		
D	160mm Diameter Class 34 uPVC pipe as sleeves including draw wires laid under hardstand, paving, etc including all necessary excavations and compaction	m	5		
	Core drilling of holes for pipes not exceeding 50mm diameter through				
E	300mm Thick reinforced concrete slab	No	6		
	Core drilling of holes for pipes exceeding 50mm and not exceeding 100mm diameter through				
F	300mm Thick concrete surface slab	No	3		
	Plastic sleeves for pipes not exceeding 100mm diameter				
G	Not exceeding 250mm long	No	15		
	Carried to Summary			R	

SECTION NO. 5
BILL NO. 3
BUILDERSWORK IN CONNECTION WITH MECHANICA

	Plastic sleeves for pipes exceeding 100mm and not exceeding 200mm diameter				
A	Not exceeding 250mm long	No	10		
	Carried to Summary			R	

SECTION NO. 5
BILL NO. 3
BUILDERSWORK IN CONNECTION WITH MECHANICA

SECTION NO. 5

BILL NO. 3

BUILDERSWORK IN CONNECTION WITH MECHANICAL AND ELECTRICAL INST

SUMMARY

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SECTION NO. 5
BILL NO. 3
BUILDERSWORK IN CONNECTION WITH MECHANICA

SECTION SUMMARY - SPECIALIST INSTALLATIONS

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2	MECHANICAL INSTALLATION	126		
3	BUILDERSWORK IN CONNECTION WITH MECHANICAL AND ELECTRICAL INSTALLATION	130		

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SECTION NO. 5

FINAL SUMMARY

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1	STANDARD PRELIMINARIES	41		
2	SHED, OFFICES & COLUMBARIUM	113		
3	STORMWATER-, SOIL DRAINAGE, ETC	117		
4	SITEWORKS, FENCING AND GATES (PROVISIONAL)	124		
5	SPECIALIST INSTALLATIONS	131		
	TOTAL OF BUILDING WORKS		R	
	CONTINGENCIES			
	Allow the sum of R 250,000.00 (Two Hundred and Fifty Thousand Rand) for contingencies to be expended as directed by the Principal agent or deducted in whole or in part from the Contract amount	Item		250,000.00
	TOTAL OF BUILDING WORK & CONTINGENCIES		R	
	CARRIED TO FORM OF TENDER		R	

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45. DECLARATION BY TENDERER

I / We acknowledge that I / we am / are fully acquainted with the contents of the conditions of tender of this tender document and that I / we accept the conditions in all respects.

I / We agree that the laws of the Republic of South Africa shall be applicable to the contract resulting from the acceptance of *my / our tender and that I / we elect *domicillium citandi et executandi* (physical address at which legal proceedings may be instituted) in the Republic at:

_____

_____

_____

I / We accept full responsibility for the proper execution and fulfillment of all obligations and conditions devolving in me / us under this agreement as the principal liable for the due fulfillment of this contract.

I / We furthermore confirm I / we satisfied myself / ourselves as to the corrections and validity of my / our tender; that the price quoted cover all the work / items specified in the tender documents and that the price(s) cover all my / our obligations under a resulting contract and that I / we accept that any mistake(s) regarding price and calculations will be at my / our risk.

I / We furthermore confirm that my / our offer remains binding upon me / us and open for acceptance by the Purchases / Employer during the validity period indicated and calculated from the closing date of the bid.

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			
WITNESS 1		WITNESS 2	