

ARCHAEOLOGICAL IMPACT ASSESSMENT FOR PROPOSED DEVELOPMENT OF THE FRANSCHHOEK SKYTRAM ON REMAINDER FARM 23 AND ERF 1466, FRANSCHHOEK, WESTERN CAPE

(Assessment conducted under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999)

Prepared for

Doug Jeffery Environmental Consultants

On behalf of

Franschhoek Cableway Company (Pty) Ltd

Draft: 2 August 2023



ACO Associates cc
Archaeology and Heritage Specialists

Prepared by

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EXECUTIVE SUMMARY

ACO Associates cc was commissioned by Doug Jeffery Environmental Consultants, on behalf of Franschhoek Cableway Company (Pty) Ltd, to undertake an Archaeological Impact Assessment of Remainder Farm 23 and Erf 1466 outside Franschhoek in the Western Cape province as part of a Heritage Impact Assessment being carried out for the proposed Franschhoek Skytram.

The HIA is a requirement arising from the Heritage Western Cape response, dated 1 August 2023, to a Notification of Intent to Develop submitted for the proposed development of the property. This AIA report forms the required archaeological component of the HIA.

The development proposal is for the construction of an aerial cableway consisting of a lower base station located on the Haute Cabrière wine estate (Erf 1466), and an upper station located near the peak of Middagkransberg in the Mont Rochelle Nature Reserve (Re Farm 23).

An archaeological walkover survey of the property was undertaken by John Gribble and Gail Euston-Brown of ACO Associates on 7 October 2021 to determine if any pre-colonial or more recent, colonial period archaeological resources would be impacted by proposed development activities on the properties. Vegetation was thick on the upper cable station site, making access difficult and reducing ground visibility but the exposed, mountainous nature of the terrain and lack of shelter suggest that the presence of significant archaeological sites and material is unlikely. The lower cable station site has been disturbed by the construction of a farm dam.

Findings: Pre-colonial archaeological sites and materials are not common in the Franschhoek area, with most archaeological assessments in the area reporting little or no archaeology from these periods. In common with this theme, no pre-colonial archaeological sites or artefacts were noted on Erf 1466 and Re Farm 23 during the October 2021 survey.

Conclusions: Although no pre-colonial archaeological sites or materials have been recorded on Erf 1466 and Re Farm 23, it is possible that such material may be encountered in buried contexts during development activities.

Should either buried pre-colonial archaeological material be uncovered at any stage during the construction work on the site, work in the vicinity must cease immediately, the material must be left *in situ* but made secure and Heritage Western Cape must be notified immediately.

It is our reasoned opinion that the proposed development of the Franschhoek Skytram on Erf 1466 and Re Farm 23 will have no impacts on significant archaeologist sites and materials and may be authorised, provided the mitigation measure recommended above is complied with.

DECLARATION OF SPECIALIST INDEPENDENCE

I, John Gribble, as the appointed independent specialist hereby declare that I:

- Acted as the independent specialist in this application.
- Regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act.
- Have and will not have no vested interest in the proposed activity proceeding.
- Have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act.
- Am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification.
- Have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study.
- Have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application.
- Have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- Have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- Am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Signature of the specialist:



Name of company: ACO Associates cc

Date: 2 August 2023

THE AUTHOR

John Gribble has an MA (UCT, 1989), in archaeology and has been working in cultural resource management since the early 1990s. He has worked in both the regulatory and commercial heritage management fields: the former during 13 years at the National Monuments Council / South African Heritage Resources Agency (SAHRA), and the latter as both a terrestrial and maritime archaeological consultant in South Africa and the UK.

He holds archaeological accreditation with the Association of Southern African Professional Archaeologists CRM section (Member #43) as follows:

- Principal Investigator: Maritime Archaeology and Colonial Archaeology; and
- Field Director: Stone Age Archaeology.

A copy of the author's CV is attached as Appendix 1.

GLOSSARY

Archaeology: Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Early Stone Age: Period of the Stone Age extending between approximately 2 million and 200 000 years ago.

Heritage: That which is inherited and forms part of the National Estate, as defined by the National Heritage Resources Act 25 of 1999.

Later Stone Age: The archaeology of the last 20,000 years associated with fully modern people.

Middle Stone Age: The archaeology of the Stone Age between approximately 200,000 and 20,000 years ago, associated with early modern humans.

SAHRA: South African Heritage Resources Agency – the compliance authority which protects national heritage.

ABBREVIATIONS

ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Later Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act (No 25 of 1999)
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

1. INTRODUCTION

ACO Associates cc (ACO) was commissioned by Doug Jeffery Environmental Consultants, on behalf of Franschhoek Cableway Company (Pty) Ltd, to undertake an Archaeological Impact Assessment (AIA) of Remainder Farm 23 and Erf 1466 outside Franschhoek in the Western Cape province (Figure 1 and Figure 2) as part of a Heritage Impact Assessment being carried out for the proposed Franschhoek Skytram.

It its response, dated 1 August 2023, to a Notification of Intent to Develop (NID) for the proposed project, Heritage Western Cape (HWC) requested a Heritage Impact Assessment (HIA) that must address the requirements of Section 38(3) of the National Heritage Resources Act (NHRA), and include:

- An Archaeological Impact Assessment
- A desktop Paleontological Impact Assessment
- A Visual Impact Assessment including an assessment of the Cultural Landscape
- Broad Public Participation.

This AIA report forms the required archaeological component of the HIA.

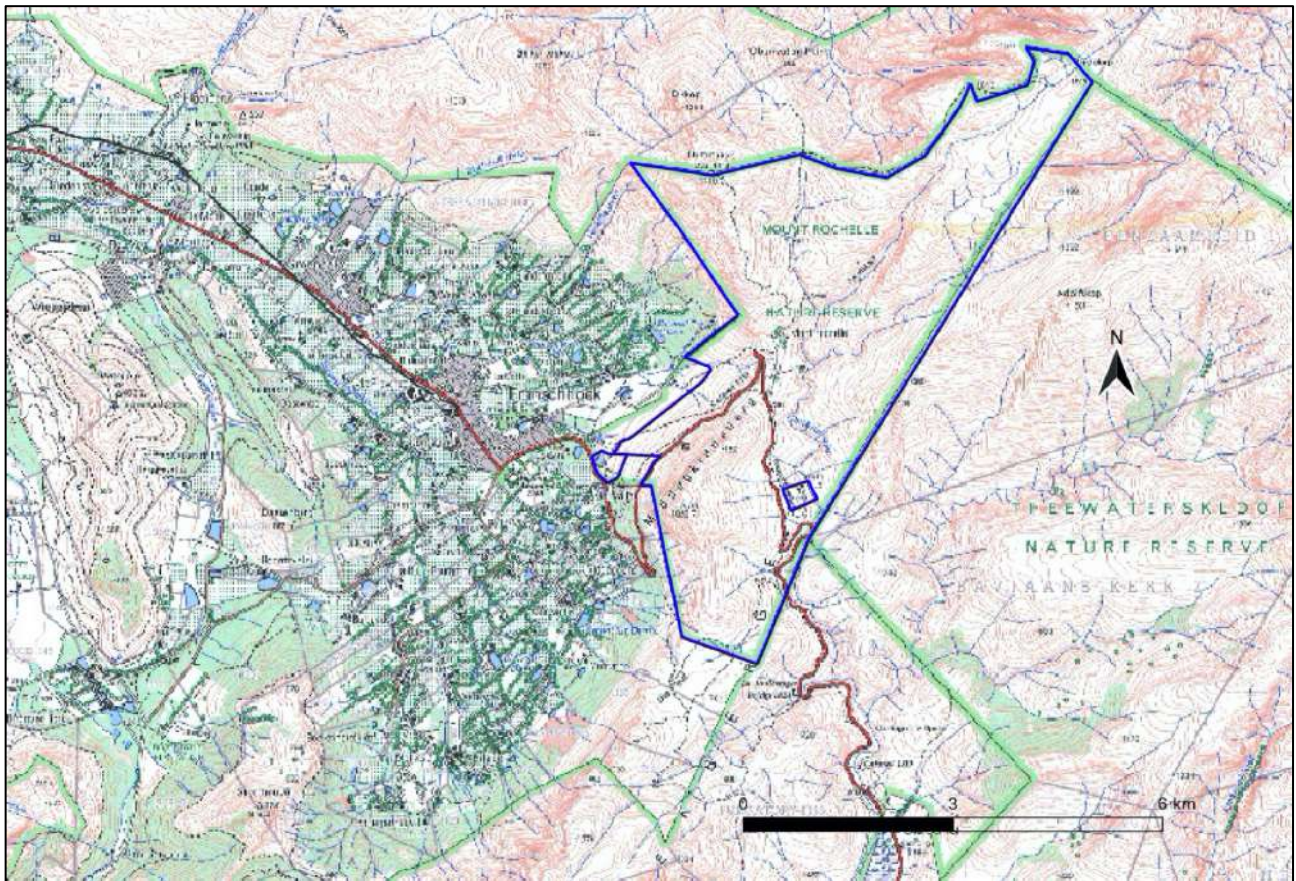


Figure 1: The location of Remainder Farm 23 and Erf 1466 (blue polygons) in relation to the town of Franschhoek and the local context (Source: 1:50 000 sheet 3319CC, Chief Directorate: National Geo-Spatial Information (www.ngi.gov.za) and Cape Farm Mapper (<https://gis.elsenburg.com/apps/cfm>)).

2. PROPOSED PROJECT

2.1. Project Description

The development proposal is for the construction of an aerial cableway consisting of a lower base station located on the Haute Cabrière wine estate (Erf 1466), and an upper station located near the peak of Middagkransberg in the Mont Rochelle Nature Reserve (Re Farm 23) which is owned by the Stellenbosch Municipality (Figure 3).

The proposed cableway will span across the neighbouring Monte Martre farm (Erf 1467), which will require the registration of an aerial servitude, and across Lambrechts Road/Franschhoek Pass (R45), but will not physically impact either of these properties.

The lower station and amenities will aim to promote and complement the existing wine tourism offerings at Haute Cabriere and will comprise:

Proposed Facilities – Lower Station	Footprint (m²)
Lower cable station / machine room	590 m ²
Parking forecourt for circulation, drop-off and collection	1972 m ²
Undercover parking structure	1820 m ²
Generator, wine dispatch, stores	124 m ²
Storeroom	74 m ²
Haute Cabriere office reception	81 m ²
Coffee shop	185 m ²
Outdoor seating area	177 m ²
Town square / arrival zone	160 m ²
Ticket office	81 m ²
Ablution facilities	162 m ²
Village green cellar roof landscaping	1950 m ²
Total:	7276 m²

The upper station on Middagkransberg will be situated on the landscape, not in it, to minimize the environmental impact and will consist of:

Proposed Facilities – Upper Station	Footprint (m²)
Top Cable Station Platform (incl. Control Room, Souvenir shop, WC's & Dry Store)	400 m ²
Restaurant / Multipurpose	835 m ²
Timber decking	1400 m ²
Adventure Bar	50 m ²
Pathways to beacon	895 m ²
Helipad for emergencies only. Brush-cut area.	
Total:	3580 m²

2.2. Aspects of the project relevant to the archaeological study

Excavations for foundations and/or services may impact on archaeological remains. Other heritage-related aspects of the project are dealt with in the HIA.

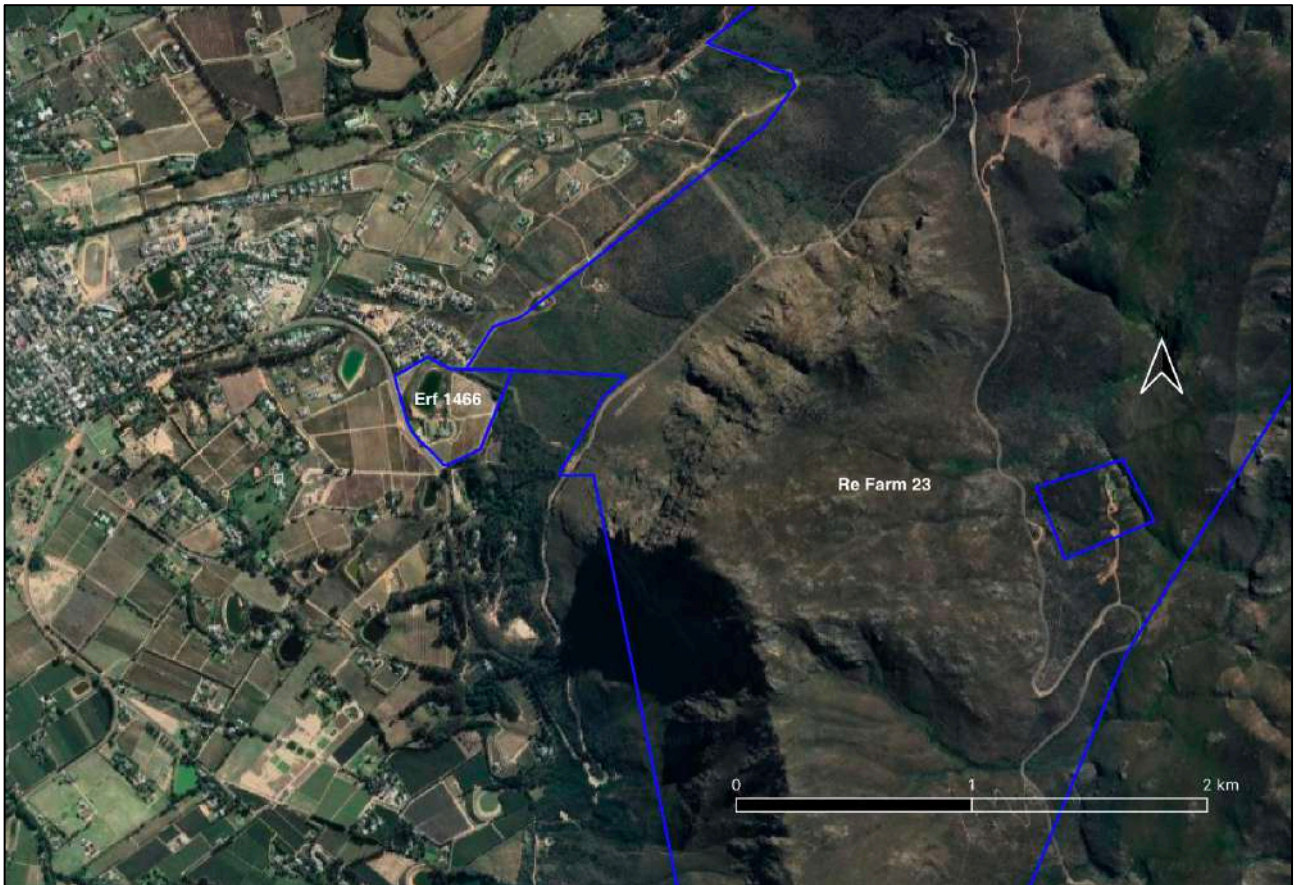


Figure 2: Detail of Remainder Farm 23 and Erf 1466 (marked blue polygons) (Source: Google Earth and Cape Farm Mapper (<https://gis.elsenburg.com/apps/cfm/>)).



Figure 3: Proposed footprints of the upper (right) and lower (left) cable stations, and route of the cables (yellow lines).

3. SITE HISTORY

The lower station of the proposed cableway will be located on the Haute Cabriere Wine Estate next to an existing farm dam.

The name Haute Cabriere in Franschhoek dates back to 1694 when a farm in the valley was granted to the French Huguenot Pierre Jourdan, who named the farm Cabrière after the town in France from which he had emigrated.

Almost three centuries later, the largely undeveloped farm was purchased by Achim von Arnim, at the time the winemaker at Boschendal. In 1991, Von Arnim bought a second farm alongside the Franschhoek Pass. This second farm is on the lower slopes of the mountain and is the portion of Haute Cabriere on which the lower cableway station is proposed to be located. There was no historical development on this property and the contemporarily styled restaurant and underground wine cellar on the site dated from 1994, 300 years after the original Cabrière grant.

The proposed cableway will span the Franschhoek Pass which was designed and constructed by the military engineer William Cuthbert Holloway on the order of the Governor at the Cape, Lord Charles Somerset. The pass replaced a very primitive and steep track at the head of the Franschhoek Valley which a built by a local farmer, S.J. Cats in 1818 on the path used by elephants on their annual migration to the Franschhoek valley.

Holloway's nine-kilometre pass was completed in 1825 and was the "first professionally, surveyed, designed and constructed piece of highway in southern Africa" (<https://www.theheritageportal.co.za/article/william-cuthbert-holloway-soldier-who-built-splendid-mountain-road>). The pass fell into into disrepair in the early 20th century and was rebuilt in 1933, and again in 1963 when the road was tarred (https://en.wikipedia.org/wiki/Franschhoek_Pass#:~:text=Governor%20of%20the%20Cape%20Colony,when%20the%20road%20was%20tarred).

4. SITE DESCRIPTION

The lower cable station will be situated on Erf 1466, directly adjacent to the Haute Cabriere restaurant and wine cellar on the lower slopes of the Middagkransberg (Figure 3 and Plate 1). The site is bounded in the west by a large modern farm dam, upslope by vineyards and in the south by the restaurant and wine cellar. The site has been extensively landscaped, is paved and currently serves as parking for Haute Cabriere.

The upper cable station is proposed on undeveloped mountain land at the summit of the Middagkransberg, directly upslope of the lower station (Plate 1 and Plate 2).



Plate 1: View across the dam at Haute Cabriere showing the lower cable station site and the approximate position of the upper cable station (red rectangles) (Photo: G Euston-Brown).



Plate 2: View west over Franschhoek from the site of the proposed upper cable station (Photo: J Gribble).

5. METHODOLOGY

5.1. Details of Base Data

The SAHRIS¹ database was examined prior to a site visit to determine if any previous archaeological assessments of the two properties were available.

Archaeological impact assessments by Hart (2001), Halkett (2002) and Kaplan (2001) in the vicinity of the current project were found and the results of these are discussed below.

SAHRIS and SAHRA's 2009 Report Mapping Project also both contained a number of previous archaeological assessments in the wider Franschhoek valley, and these have been used, where relevant, to provide context for the discussion below, as have more recent archaeological assessments in the area sourced from ACO's own report collection and other archaeological consultants.

5.2. Field Assessment

An archaeological walkover survey was undertaken to determine if any pre-colonial or more recent, colonial period archaeological resources would be impacted by proposed development activities on either property. The survey was undertaken by John Gribble and Gail Euston-Brown of ACO Associates on 7 October 2021 in the company of Graham Jacobs.

The archaeological team each carried a hand-held GPS receiver (using the WGS84 datum), pre-loaded with the footprint of the project elements and property boundaries. These were used to log the survey tracks and record the positions of any heritage resources identified (Figure 4).

Both archaeologists were suitably qualified and experienced to date and characterise any heritage resources encountered during the survey.

5.3. Impact Assessment

For consistency among specialist studies, the impact assessment was conducted through application of a set of criteria supplied by Doug Jeffery Environmental Consultants which is attached as Appendix 2.

5.4. Limitations and Restrictions

The site on which the upper cable station is to be located is steep, uncultivated mountain land with no paths or roadways to the area that needed to be visited. Vegetation was exceptionally thick in many places, making access very difficult and reducing ground visibility. The exposed mountainous nature of the terrain and lack of shelter, however, suggested that the presence of significant archaeological sites and material would be unlikely.

The site of the lower cable station on Erf 1466 has been disturbed and landscaped during the construction of a farm dam.

¹ A database maintained by the South African Heritage Resources Agency containing, inter alia, information about development-led heritage projects



Figure 4: ACO survey trackplots (pale blue and orange lines). The Haute Cabriere location of the lower cable station is inset.

6. ARCHAEOLOGY OF THE FRANSCHHOEK AREA

The earliest archaeologist material in the Franschhoek area and across the Western Cape are Early Stone Age (ESA) artefacts which are commonly and widely found in gravels exposed in eroded river banks, ploughed fields and other generally landscape scale contexts across the region. These artefacts are the evidence of the occupation of the Western Cape by our human ancestors since as early as 900,000-700,000 years ago (Malan 2018).

In the Franschhoek area Kaplan (1999, 2000) noted ESA artefacts in ploughed fields at La Cotte, in orchards at Mooiwater (Beaucoup de l'Eau) and in orchards at Domaine de la Cabriere, while Yates (1996) reported stone artefacts of Early or Middle Stone Age (MSA) character in the walls of a series of geological test pits at the location of the proposed northern Skuifraam dam wall.

An archaeological survey of two erven (23 and 580) owned by the Franschhoek Municipality and situated on the opposite side and just downslope of Erf 1466 where the lower cable station is proposed was conducted by the Agency for Cultural Resource Management (ACRM) ahead of a proposed group housing development (Kaplan 2001). Kaplan reports some ESA and MSA quartzite flakes in exposed gravels in the south-eastern corner of both erven, in severely disturbed contexts. This material was given a low significance rating by Kaplan and no archaeological mitigation was recommended.

In the cases above where artefacts were encountered, these have been in the secondary context typical of most ESA finds and thus of limited archaeological significance.

Hunter-gatherers continued to occupy the landscape throughout the Middle Stone Age (MSA) (c. 500,000 to between 50-25,000 years ago) and into the Later Stone Age (LSA) (from 30,000 years ago to the start of the colonial period in 1652) (Malan 2018).

In the Franschhoek area MSA artefacts have been reported in small numbers by Kaplan (2003) in an archaeological impact assessment for Berg Water Project Supplement Scheme and ESA and MSA tools were found on the farm Solms-Delta between Simondium and Franschhoek, near the confluence of the Dwars and Berg rivers (Malan 2018).

LSA archaeological material is not often encountered in this area, but a significant site which yielded many artefacts, including stone tools and pottery that date within the last 2000 years was found at Solms-Delta (Orton et al 2005), and Kaplan (2003) reported the occurrence of scattered LSA lithics in the Berg Water Project Supplement Scheme.

Closer to the Franschhoek Skytram project area, an archaeological assessment of the Franschhoek Pass Wine Farm (Farm 1545) for a proposed boutique hotel on the site by Orton (2020) found no archaeological resources on the site.

Erven 1467 and 1108/24, directly upslope of Haute Cabriere were subject to an archaeological impact assessment by Halkett in 2002. Parts of the site were covered by dense pine forest and elsewhere by lush fynbos. Halkett (2002:2) recorded a spring which had been channelled into a number of pools and part of the site had been “modified for several uses including roads, a small mineral water bottling plant, several houses, a tennis court, wine tasting and restaurant facilities, dams and agricultural terraces”. No archaeological or historical material was observed on the site.

In 2001 an archaeological impact assessment of a 36-hectare portion of land adjacent to the Franschhoek River on Portions of Farms 1142 and 1143 (Boekenhoudskloof) was conducted by the Archaeology Contracts Office (Hart 2001). The land comprised a cultivated field and a vineyard. Hart (2001) reported two pre-colonial quartz flakes of indeterminate age found in different parts of the proposed development site. These were not considered significant. No historical archaeological material was recorded.

More recently, an archaeological assessment conducted on the farm Klein Goederust (Farm 1054) found no evidence of pre-colonial archaeological material, despite access to open pipeline and foundation trenches and associated spoil heaps at places in the area surveyed (Gribble & Euston-Brown 2021).

Although no rock art has been reported within the Franschhoek Valley, five sites are known from the area around the Wemmershoek Dam to the west. Three of these sites were described by Manhire and Yates (1994) as containing paintings in the fine line tradition similar to rock art recorded in the Cederberg, as well as cruder finger dots believed to be a later, possibly Khoekhoen pastoralist painting tradition (Manhire & Yates 2004, Malan 2018).

Malan (2018) refers to historical VOC records of a number of Khoekhoen herder kraals in the Stellenbosch district, including one east of the Dwars Valley at Oliphantshoek, present day Franschhoek, but no evidence for the exact location of this kraal has ever been found.

The colonial period archaeology of the Franschhoek valley is represented for the most part by the remains of sites, infrastructure and structures associated with agricultural use of the valley from at least the early 18th century. For example, Malan (2018) refers to the site of a ruined longhouse at Driefontein

which was excavated before the Skuifraam Dam project started and appears to have been associated with stock farming during the (see ACO 1996, Patrick & Clift 2005).

7. ARCHAEOLOGY OF REMAINDER FARM 23 AND ERF 1466

Pre-colonial archaeological sites and materials are not common in the Franschhoek area, with most archaeological assessments in the area reporting little or no archaeology from these periods.

In common with this theme, no pre-colonial or colonial period archaeological sites or artefacts were noted during the October 2021 ACO site visit.

8. IMPACT ASSESSMENT

Impacts to archaeological resources arising from the proposed Franschhoek Skytram project would be direct impacts and would occur only during construction when earthmoving takes place. However, since no archaeological resources have been found in the study area no impacts are expected.

As such, the significance rating of impacts before and after mitigation is low negative.

Because no impacts will occur, there will also be no cumulative impacts.

No mitigation or management measures are required in relation archaeological resources.

Table 1: Assessment of archaeological impacts for the Franschhoek Skytram project

Criterion	Rating
Nature of impact	Negative
Extent of impact	Site specific
Duration of impact	Permanent
Consequence of impact	Potential destruction of archaeological materials during construction
Probability of occurrence	Improbable/Unlikely
Irreplaceable loss of resources	Marginal loss
Reversibility of impact	Irreversible
Indirect impacts	None expected
Cumulative impact prior to mitigation	None expected
Significance rating of impact prior to mitigation	Low negative
Degree to which the impact can be avoided	N/A – no impacts expected
Degree to which the impact can be managed	N/A – no impacts expected
Degree to which the impact can be mitigated	N/A – no impacts expected
Proposed mitigation	None required
Residual impacts	There may be rare, isolated archaeological artefacts that could be damaged or destroyed, but this is of no significance and there will be no residual impacts
Cumulative impact post-mitigation	None expected
Significance rating of impact after mitigation	Low negative

9. RECOMMENDATIONS AND CONCLUSION

This study has found that no impacts to archaeological resources are likely to occur. Provided the standard requirement to cease work and immediately report any finds made during construction to HWC, it is the reasoned opinion of this specialist that, from an archaeological point of view, the project may be authorised.

10. REFERENCES

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(<https://www.theheritageportal.co.za/article/william-cuthbert-holloway-soldier-who-built-splendid-mountain-road>) Accessed on 31 July 2023.

APPENDIX 1: SPECIALIST CV

Name: John Gribble
Profession: Archaeologist (Maritime)
Date of Birth: 15 November 1965
Parent Firm: ACO Associates cc
Position in Firm: Senior Archaeologist
Years with Firm: 5+
Years of experience: 33
Nationality: South African
HDI Status: n/a

Education:

1979-1983 Wynberg Boys' High School
1986 BA (Archaeology), University of Cape Town
1987 BA (Hons) (Archaeology), University of Cape Town
1990 Master of Arts, (Archaeology) University of Cape Town

Employment:

- September 2017 – present: ACO Associates, Senior Archaeologist and Consultant
- 2014-2017: South African Heritage Resources Agency, Manager: Maritime and Underwater Cultural Heritage Unit
- 2012-2018: Sea Change Heritage Consultants Limited, Director
- 2011-2012: TUV SUD PMSS (Romsey, United Kingdom), Principal Consultant: Maritime Archaeology
- 2009-2011: EMU Limited (Southampton, United Kingdom), Principal Consultant: Maritime Archaeology
- 2005-2009: Wessex Archaeology (Salisbury, United Kingdom), Project Manager: Coastal and Marine
- 1996-2005: National Monuments Council / South African Heritage Resources Agency, Maritime Archaeologist
- 1994-1996: National Monuments Council, Professional Officer: Boland and West Coast, Western Cape Office

Professional Qualifications and Accreditation:

- Member: Association of Southern African Professional Archaeologists (ASAPA) (No. 043)
- Principal Investigator: Maritime and Colonial Archaeology, ASAPA CRM Section
- Field Director: Stone Age Archaeology, ASAPA CRM Section
- Class III Diver (Surface Supply), Department of Labour (South Africa) / UK (HSE III)

Experience:

I have more than 30 years of professional archaeological and heritage management experience. After completing my postgraduate studies and a period of freelance archaeological work in South Africa and abroad, I joined the National Monuments Council (NMC) (now the South African Heritage Resources Agency (SAHRA)) in 1994. In 1996 I become the NMC's first full-time maritime archaeologist and in this regulatory role was responsible for the management and protection of underwater cultural heritage in South Africa under the National Monuments Act, and subsequently under the National Heritage Resources Act.

In 2005 I moved to the UK to join Wessex Archaeology, one of the UK's biggest archaeological consultancies, as a project manager in its Coastal and Marine Section. In 2009 I joined Fugro EMU Limited, a marine geosurvey company to set up their maritime archaeological section. I then spent a year at TUV SUD PMSS, an international renewable energy consultancy, where I again provided maritime archaeological consultancy services to principally the offshore renewable and marine aggregate industries.

In August 2012 I established Sea Change Heritage Consultants Limited, a maritime archaeological consultancy. Sea Change traded until 2018, providing archaeological services to a range of UK maritime sectors, including marine aggregates and offshore renewable energy.

In the UK I was also involved in strategic projects which developed guidance and best practice for the UK offshore industry with respect to the marine historic environment. This included the principal authorship of two historic environment guidance documents for COWRIE and the UK renewable energy sector (*Historical Environment Guidance for the Offshore Renewable Energy Sector* (2007) and *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (2010)). I was also manager and lead author in the development of the archaeological elements of the first Regional Environmental Assessments for the UK marine aggregates industry, and in the 2009 *UK Continental Shelf Offshore Oil and Gas and Wind Energy Strategic Environmental Assessment* for Department of Energy and Climate Change. In 2013-14 I was lead author and project co-ordinator on *The UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001: An Impact Review for the United Kingdom* and in 2016 I was co-author of a Historic England / Crown Estate / British Marine Aggregate Producers Association funded review of marine historic environment best practice guidance for the UK offshore aggregate industry.

I returned to South African in mid-2014 where I was re-appointed to my earlier post at SAHRA: Manager of the Maritime and Underwater Cultural Heritage Unit. In July 2016 I was appointed as Acting Manager of SAHRA's Archaeology, Palaeontology and Meteorites Unit.

I left SAHRA in September 2017 to join ACO Associates as Senior Archaeologist and Consultant. Since being at ACO I have carried out a wide range of terrestrial and maritime archaeological assessments, many of which are listed in the following section.

In 2018 of the potential impacts of marine mining on South Africa's palaeontological and archaeological heritage for the Council for Geoscience, on behalf of the Department of Mineral Resources.

I have been a member of the Association of Southern African Professional Archaeologists (No. 043) for more than thirty years and am accredited by ASAPA's Cultural Resource Management section.

I have been a member of the ICOMOS International Committee for Underwater Cultural Heritage since 2000 and served as a member of its Bureau between 2009 and 2018.

Since 2010 I have been a member of the UK's Joint Nautical Archaeology Policy Committee.

I am a member of the Advisory Board of the George Washington University / Iziko Museums of South Africa / South African Heritage Resources Agency / Smithsonian Institution 'Southern African Slave Wrecks Project'.

I have served on the Heritage Western Cape Archaeology, Palaeontology and Meteorites Committee since 2014.

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APPENDIX 2: IMPACT ASSESSMENT CRITERIA

These criteria are drawn from the EIA Regulations published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) and the latest basic assessment report template provided by the Department of Environmental Affairs and Development Planning (DEA&DP) and the DEA&DP Guidelines for involving Biodiversity Specialists in EIA Processes, 2005. These criteria include:

Nature of the impact

This is an appraisal of the type of effect (positive or negative) the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected.

Extent of the impact

Extent defines the physical extent or spatial scale of the impact. The impact could:

- Site specific: limited to the site.
- Local: limited to the site and the immediate surrounding area (1-10km).
- Regional: covers an area that includes an entire geographic region or extends beyond one region to another.
- National: across national boundaries and may have national implications.

Duration of the impact

The specialist should indicate whether the lifespan of the impact would be:

- Short term: 0-5 years.
- Medium term: 5-15 years.
- Long term: beyond the operational phase, but not permanently).
- Permanent: where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.

Consequence of Impact

Indicate how the activity will affect the environment.

Probability of occurrence

Probability describes the likelihood of the impact occurring. The likelihood can be described as:

- Improbable/unlikely: low likelihood of the impact occurring.
- Probable: distinct possibility the impact will occur.
- Highly probable: most likely that the impact will occur.
- Definite: impact will occur regardless of any prevention measures.

Irreplaceable loss of resources

Describes the degree to which resources will be irreplaceably lost due to the proposed activity. It can be no loss of resources, marginal loss, significant loss or complete loss of resources.

Reversibility

This refers to the degree to which an impact can be reversed.

- Fully reversible: where the impact can be completely reversed.
- Partly reversible: where the impact can be partially reversed.
- Irreversible: where the impact is permanent.

Indirect impacts

Indirect impacts are secondary impacts and usually occur at a different place or time. Specialists will need to elaborate on any indirect or secondary impacts of proposed activities. If there are no indirect impacts specialist will need to briefly explain so.

Cumulative impact

An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development. Cumulative impacts prior to and post mitigation must be assessed. The cumulative effect can be:

- Negligible: the impact would result in negligible to no cumulative effect.
- Low: the impact would result in insignificant cumulative effects.
- Medium: the impact would result in minor cumulative effects.
- High: the impact would result in significant cumulative effects.

Significance rating of impacts prior to and after mitigation

Based on a synthesis of the information contained in the above-described procedure, the significance of the potential impacts must be assessed using the following significance criteria:

- No impact
- Low negative: where it would have negligible effects and would require little or no mitigation.
- Low positive: the impact will have minor positive effects.
- Medium negative: the impact will have moderate negative effects and will require moderate mitigation.
- Medium positive: the impact will have moderate positive effects.
- High negative: the impact will have significant effects and will require significant mitigation measures to achieve an accepted level of impact.
- High positive: the impact will have significant positive effects.
- Very high negative: the impact will have highly significant effects and are unlikely to be able to be mitigated adequately.
- High positive: the impact will have highly significant positive effects.

Degree to which impact can be avoided

This indicates the degree to which an impact can be avoided. The degree of avoidance can either be

- High: impact is completely avoidable
- Moderate: impact is avoidable with moderate mitigation
- Low: the impact is difficult to avoid and will require significant mitigation measures
- Unavoidable: the impact cannot be avoided even with significant mitigation measures.

Can the impact be avoided and if so, how can it be avoided (example: demarcation of no-go areas)?

Degree to which impact can be managed

This indicates the degree to which an impact can be managed. The degree of management can be:

- High: impact is completely manageable
- Moderate: impact is manageable with moderate mitigation
- Low: the impact is difficult to manage and will require significant mitigation measures
- Unmanageable (the impact cannot be managed even with significant mitigation measures).

How can the impact be managed over time (example: clearance of alien vegetation)?

Degree to which an impact can be mitigated

This indicates the degree to which an impact can be reduced. The degree of mitigation can either be high (the impact can be fully mitigated), moderate (the impact can be partly mitigated) or not mitigated at all

Residual impacts

Residual impacts are those impacts that remain following the implementation of mitigation measures. Residual impacts must be identified, rated (i.e. low, medium or high) in accordance to the criteria in **Table 1** (taken from the Western Cape Guideline on Biodiversity Offsets, 2015) and discussed. If there are no residual impacts, the specialist will need to briefly explain that the activity will have no residual impacts.