machoy

Mackenzie Hoy Consulting
Acoustics and Wind Engineers
if you have a problem that nobody else can solve....

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17th January 2022
Rev 1

Report on Noise Impact Assessment: Cableway Franschhoek: Erf 1466 and the Remainder of Erf 23 in Franschhoek.

1. Introduction

This report was commissioned by Mr Doug Jeffery PrSciNat of Doug Jeffery Environnemental Consultants.

a. For the Western Cape Provincial Administration a noise impact assessment is required of the proposed development in terms of the Western Cape Noise Control Regulations PN200, 2013.

b. This report examines the noise impact assessment of a proposed cable way in terms of NEMA protocols for both Scenario 1 and Scenario 2.

c. The first part of this report, "Part 1" deals with (a) while "Part 2" attached as "Appendix A" deals with (b).

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2. Background and Present Situation

2 Background:

2.1 The cableway will have two cable stations (i.e., bottom and top). The bottom cable station will be situated on Erf 1466 (Haute Cabrière) and the top cable station will be located on the mountain on the Remainder of Erf 23, within the Mont Rochelle Nature Reserve (Stellenbosch Municipality).

2.2 The exact positions of where the two stations will be located is still to be determined. The top cable station is proposed to be on the western side of the Middagkransberg, at an elevation of ± 990 metres, and the bottom station will be at the Haute Cabrière Wine Farm.

2.3 The size of the two stations' development footprints will be approximately 240 m2 and 350 m2. The length of the proposed cableway will be approximately 1.1 km.

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3. Measurements

3.1 Measurement Equipment:

The following instruments were used to conduct measurements at various locations, as per 3.2 below.

a. Norsonic Nor140 Type 1/Class 1 Precision Sound Analyser, Serial No. 1405478, 733598. Calibrated by M and N Acoustic Services cc in August 2021, SANAS Reg No 148 1302, Certificate Number 2021-AS-0839.

b. Norsonic Sound Calibrator, Serial No. 33748, Calibration by M and N Acoustic Services cc in October 2020, SANAS Reg No 148 1302, Certificate Number 2020-AS-0890.

See calibration certificates attached in Appendix A.

Note: Calibration of the above equipment is valid for 2 year from the date of calibration as per the requirements of the Western Cape Noise Control Regulations PN 200, 2013.

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3.2 Measurement Locations:

It was decided to take measurements at the proposed site and also of the noise from the existing Table Mountain Cableway. The latter has a bigger capacity than the proposed Franschhoek cableway and provides a "noise bench mark" for cable ways in the Western Cape. Measurements were taken at the following locations:

- M06: At Haute Cabrière and surrounds.

- M02: Table Mountain Cable Car as measured from the contour path.

Refer to Figure 1 below for an overview of the measurement locations.

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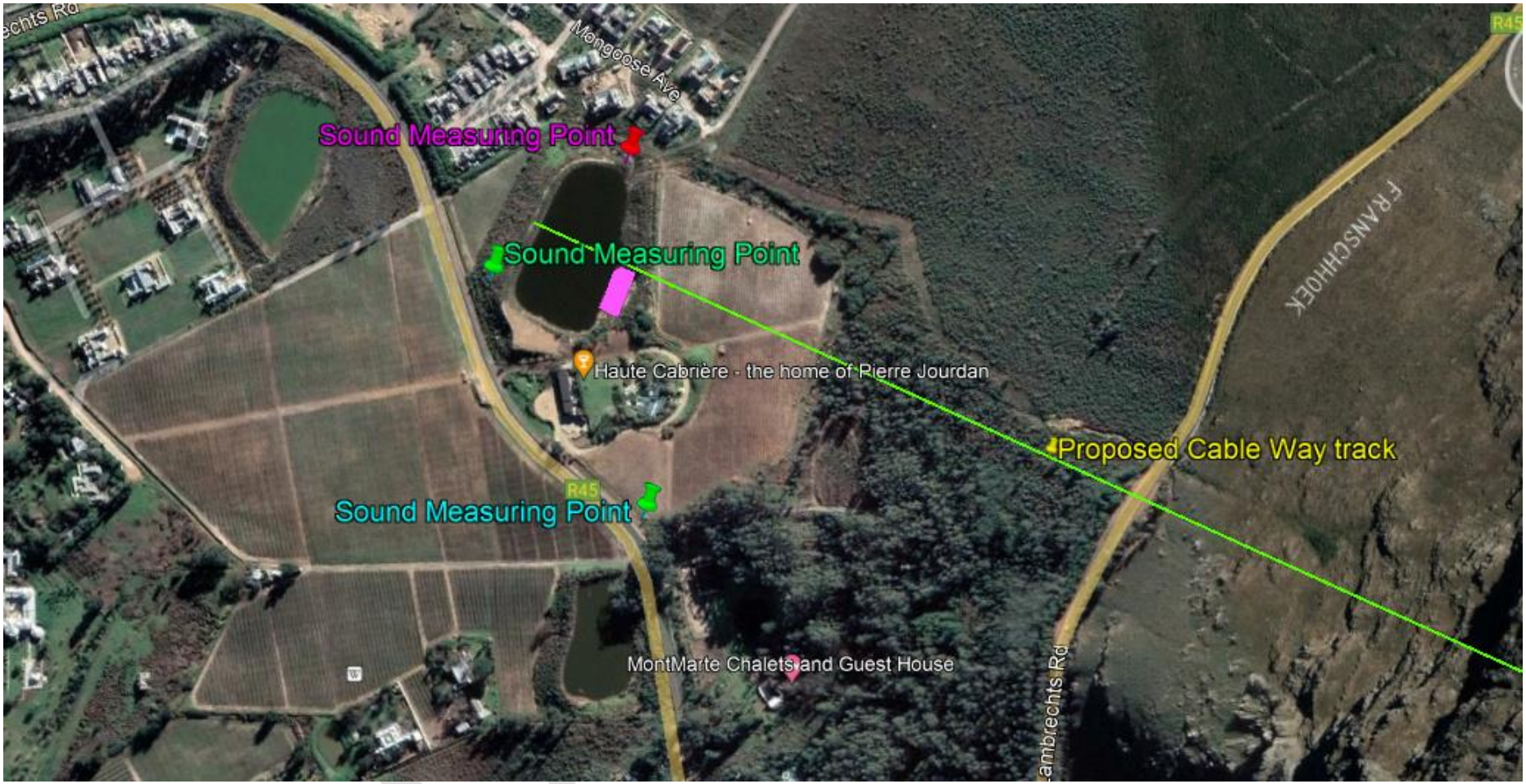

Figure 1: Measurement Location Haute Cabrière and surrounds

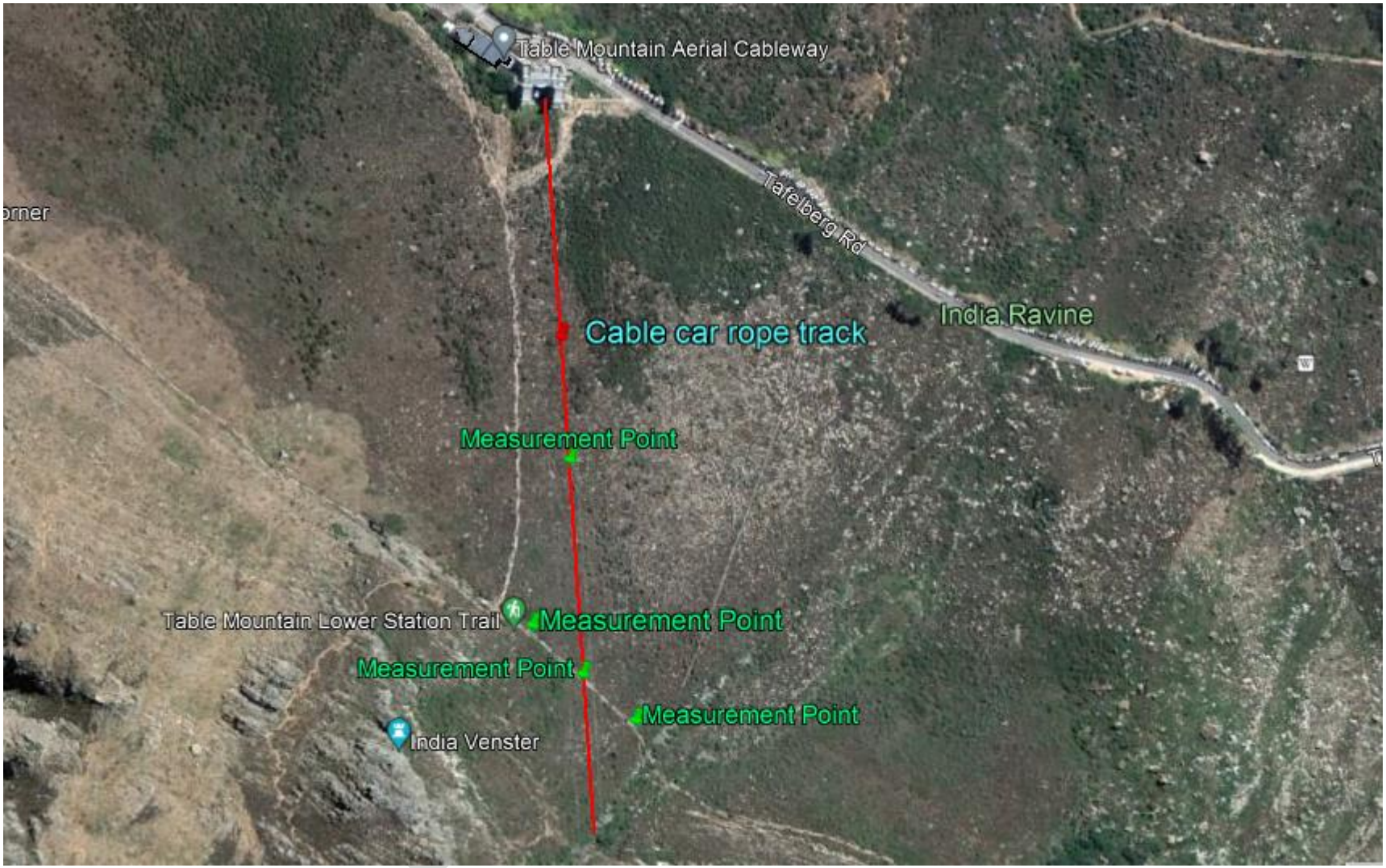

Figure 2: Table Mountain Cable Car Noise Measurement Locations

3.3 Measurement Results:

3.3.1 The results of the measurements are summarised in Table 1 of this report.

Note: The measurements taken are for design and evaluation purposes only. While they are in accordance with the Western Cape Noise Control Regulations PN200 2013, these measurements may not be used as the basis for legal action. If legal action is proposed, both parties must arrange for us to take further measurements.

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Table 1: Measurement Results

Measurement number	Measurement Location	Date, Time	Sound Pressure Level, residual	Sound Pressure Level, Table Mountain Cable Car Passing by (Leq 15 sec)	Comments
M01	Haute Cabrière	30th August 2021 14h00	44.0 dBA	-	Leq over three locations logarithmic average. See graph below
M02	Table mountain directly under cable rope on the contour path 50 m below cable car	14th October 2021	44.1 dBA	55.9 dBA	No rain, slight wind
M03	100m towards Devil's Peak side on contour path Approx. 102m to cable car	14th October 2021	44.1 dBA	46.9 dBA	No rain, slight wind
M04	100m towards Lion's Head side on contour path Approx. 98m to cable car	14th October 2021	44.1 dBA	44.1 dBA -	No rain, slight wind
M05	Directly below cables about halfway down from contour path to lower cable station Approx. 234m from lower station.	14th October 2021	44.1 dBA	49.4 dBA	No rain, slight wind

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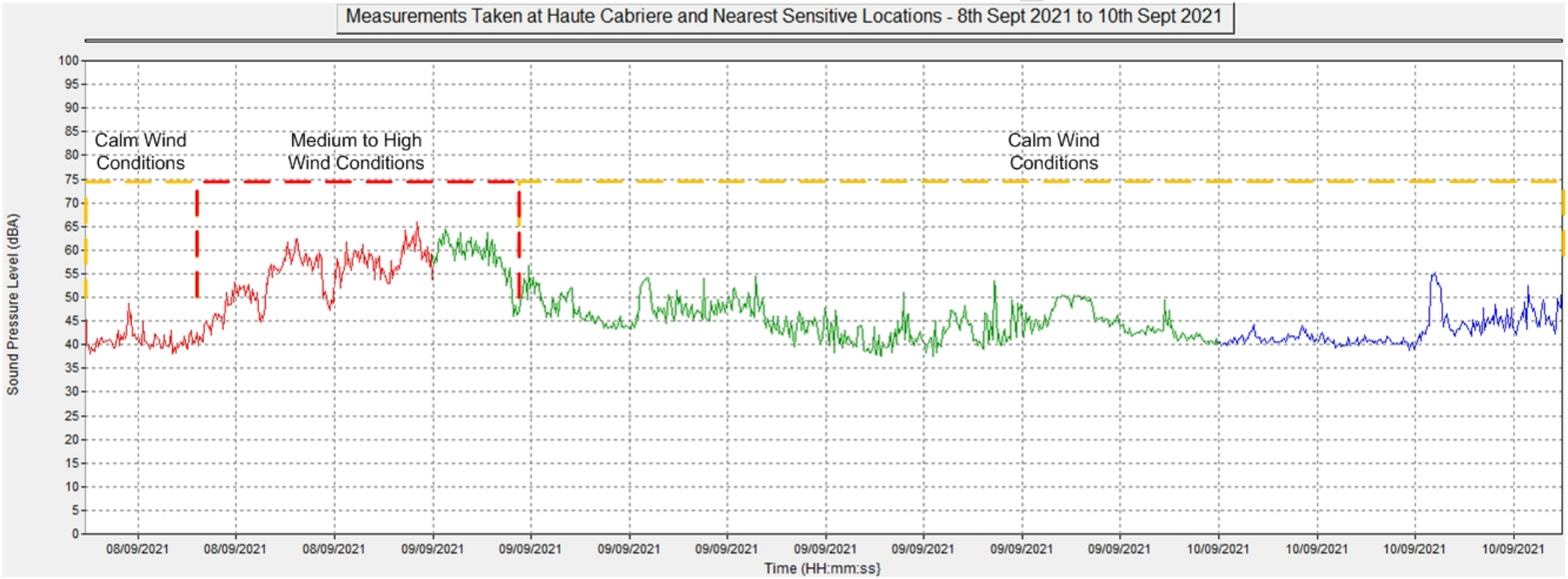

Figure 1: Sound Pressure Level of Residual Noise Levels at Haute Cabrière

3.3.2 The noise from the Table Mountain cable car shows a tonal component in the 160 Hz Octave band, being about 10 dBA above the residual noise level.

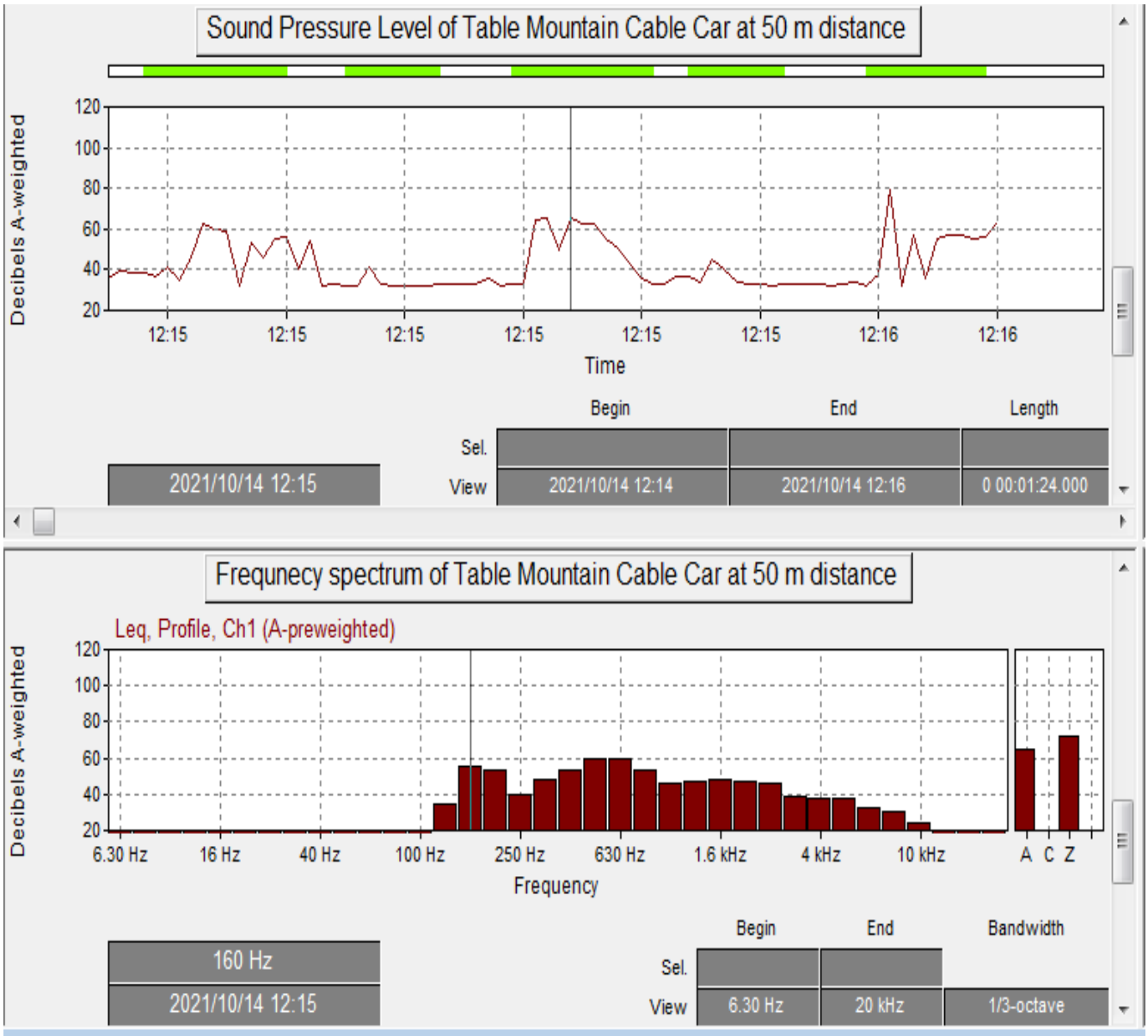

Figure 2: Frequency content of noise from Table Mountain Cable Car at 50 m distance.

Part 1: Evaluation in Terms of the Western Cape Noise Control Regulations

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4. Discussion

4.1 Noise impacts in the Western Cape are evaluated in terms of the Western Cape Noise Control Regulations PN 200, 2013. (WCNR). These regulations reference SABS Standard *SANS 10103 The measurement and rating of environmental noise with respect to annoyance and to speech communication* and SANS 10328 : *Methods for environmental noise impact assessments.*

4.2 It must be noted that the SANS standards are not laws or regulations; they are outlines of methods to be used in studies.

4.3 The WCNR specifies two items which would be in contravention of the WCNR; a **"disturbing noise"** and a **"noise nuisance".**

"**Disturbing noise**" means a noise, excluding the unamplified human voice, which;

4.3.1 exceeds the rating level by 7 dBA

4.3.2 exceeds the residual noise level where the residual noise level is higher than the rating level; or

4.3.3 exceeds the residual noise level by 3 dBA where the residual noise level is lower than the rating level.

4.3.4 in the case of a low-frequency noise, exceeds the level specified in Annex B of SANS 10103;

"Noise nuisance" means any sound which impairs or may impair the convenience or peace of a reasonable person.

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4.4 Further definitions are :

4.4.1 **"Ambient noise"** means the all-encompassing sound in a given situation at a given time, measured as the reading on an integrated impulse sound level meter for a total period of at least 10 minutes."

4.4.2 **"Rating level"** means the applicable outdoor equivalent continuous rating level indicated in Table 2 of SANS 10103:2008 "*The measurement and rating of environmental noise with respect to annoyance and to speech communication".*

4.4.3 **"Residual noise"** means the all-encompassing sound in a given situation at a given time, measured as the reading on an integrated impulse sound level meter for a total period of at least 10 minutes, excluding noise alleged to be causing a noise nuisance or disturbing noise.

4.5 The proposed development is located in a rural / agricultural area. This, from Table 2 of SANS 10103, the following typical outdoor rating levels as apply:

i. Day-time rating level (06h00 – 22h00): 45 dB(A)
ii. Night-time rating level (22h00 – 06h00): 35 dB(A)

4.6 WCNR defines a 'disturbing noise' as that which exceeds the rating level by 7 dBA or more.

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4.6.1 Determination of low frequency component:

i. From SANS 10103 *(SANS 10103: The measurement and rating of environmental noise with respect to annoyance and to speech communication),* "If any of the octave band sound pressure levels with centre frequencies below 125 Hz exceed the Low Frequency Noise Rating (LFNR) curve designated as indicated in B.2.1, the low frequency noise can be adjudicated as disturbing."

ii. The LFNR ratings and measured ratings are compared as follows:

Frequency, Hz	31	63	125
LFNR Values, dB	44	44	40
Measured Values, dB	<20	<20	38

Thus, the sound does not have a low frequency component.

4.6.2 Determination of tonal component.

From SANS 10103:

"A level difference between the one-third octave band that contains the tone frequency and the two adjacent one-third octave bands should exceed the limits given in table D.1 to indicate the presence of a tonal component."

Table D.1 — Level differences for the presence of a tonal component

1	2
Centre frequencies of one-third octave bands Hz	**Minimum one-third octave band sound pressure level difference** dB
25 to 125 160 to 400 500 to 10 000	15 8 5

The sound from the cable car does have a tonal component since the level differences in the 125 Hz/160 Hz/200 Hz bands do exceed the values in Table D.1

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Frequency, Hz	100	125	160	200
Measured values	38	58	57	40
Adjacent band difference		20	-1	-17

The maximum allowable noise level limit for the development is therefore as follows:

i. Day-time noise level limit (06h00 – 22h00): 45 dBA + 7 dBA
= 52 dBA
Adjust for tonal component: -5 dBA
= 47 dBA

ii. Night-time noise level limit (22h00 – 06h00) : 35 dBA + 7 dBA
= 42 dBA
Adjust for tonal component: -5 dBA
= 37 dBA

The proposed development comprises a moving noise source. The WCNR specify that noise measurements are to be taken as equivalent continuous sound level as measured over 10 minutes, known as LAeq10.

4.6.3 The WCNR defines a ‘measuring point’, as relating to a piece of land from which an alleged disturbing noise emanates, as a point outside the property projection plane where an alleged disturbing noise, in the opinion of a local authority, shall be measured.

4.6.4 Thus an adjustment must be made to the maximum allowable noise level limit based on the fact that the noise source is moving.

4.6.5 Additionally, an allowance must be made since the “measuring point” is dependant on the location of the cable car in its track and thus the sound pressure level will be a maximum when the cable car is closest to the measuring point.

4.6.6 The Table Mountain cable car generates a sound pressure level of 55.9 dBA for a period of 15 seconds at 50 m. After this period, as the cable car moves away, the sound from the cable car becomes inaudible and the sound pressure level drops to 46 dBA (cable car 102 m distant) and then to the residual level of 44 dBA.

4.6.7 From SANS 10103, paragraph 5.1.10 we may use an equation to determine the composite continuous rating level of the Table Mountain cable car:

5.1.10 Determination of the composite equivalent continuous rating level ($L_{Req,T}$)

Combination of the individual single event exposure levels during the reference time interval should be determined using the following equation:

$$L_{Req,T} = 10 \log\left[\frac{1}{T_{ref}} \sum 10^{L_{RE,Ti}/10}\right]$$

where

$L_{Req,T}$ is the composite equivalent continuous rating level, resulting from the individual exposure rating levels over the reference time interval;

T_{ref} is the total reference time interval, in seconds;

$L_{RE,Ti}$ is the i-th partial sound exposure level.

4.6.8 Applying the above equation results in an equivalent continious rating level of 44.8 dBA.

4.6.9 Thus, provided that the cable way does not operate after 10 pm at night (by definition of SANS 10103 07h00 – 22h00 is daytime) then the maximum permitted level 50 m from the cable car track is 47 dBA (as Leq 10minutes) and this will not be exceeded by the noise from the cable car.

4.6.10 In terms of rule 4 of WCNR:

3. *Where the results of an assessment undertaken in terms of subregulation (1) indicate that the applicable noise rating levels referred to in that subregulation will likely be exceeded, or will not be exceeded but will likely exceed the existing residual noise levels by 5 dBA or more—*

3(a). the applicant must provide a noise management plan, clearly specifying appropriate mitigation measures to the satisfaction of the local authority, before the application is decided; and

3(b) implementation of those mitigation measures may be imposed as a condition of approval of the application

It is submitted that the calculated value of 44.8 dBA does not exceed the rating level of 45 dBA and does not exceed the residual level by 5 dBA or more and thus 3(a) of rule 4 does not apply.

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4.7 Evaluation of possible Disturbing Noise:

4.7.1 From 4.6.9 above it is concluded that the cable way will not be a “disturbing noise” in terms of the Western Cape Noise Control Regulations PN200, 2013 (WCNR).

4.8 Evaluation of possible Noise Nuisance:

4.8.1 The WCNR defines a “noise nuisance” as “means any sound which impairs or may impair the convenience or peace of a reasonable person”. This is a vague definition as what constitutes a “reasonable person” is open to interpretation; a mother may be disturbed by a rock band but not by the sound of children playing; a bass guitar player conversely so.

4.8.2 Accordingly, noise contour maps are plotted of the noise from the proposed cable way and are presented below:

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Figure 1: Cable car departs base station. The maximum sound pressure level at 100 m from the car is 50 dBA.

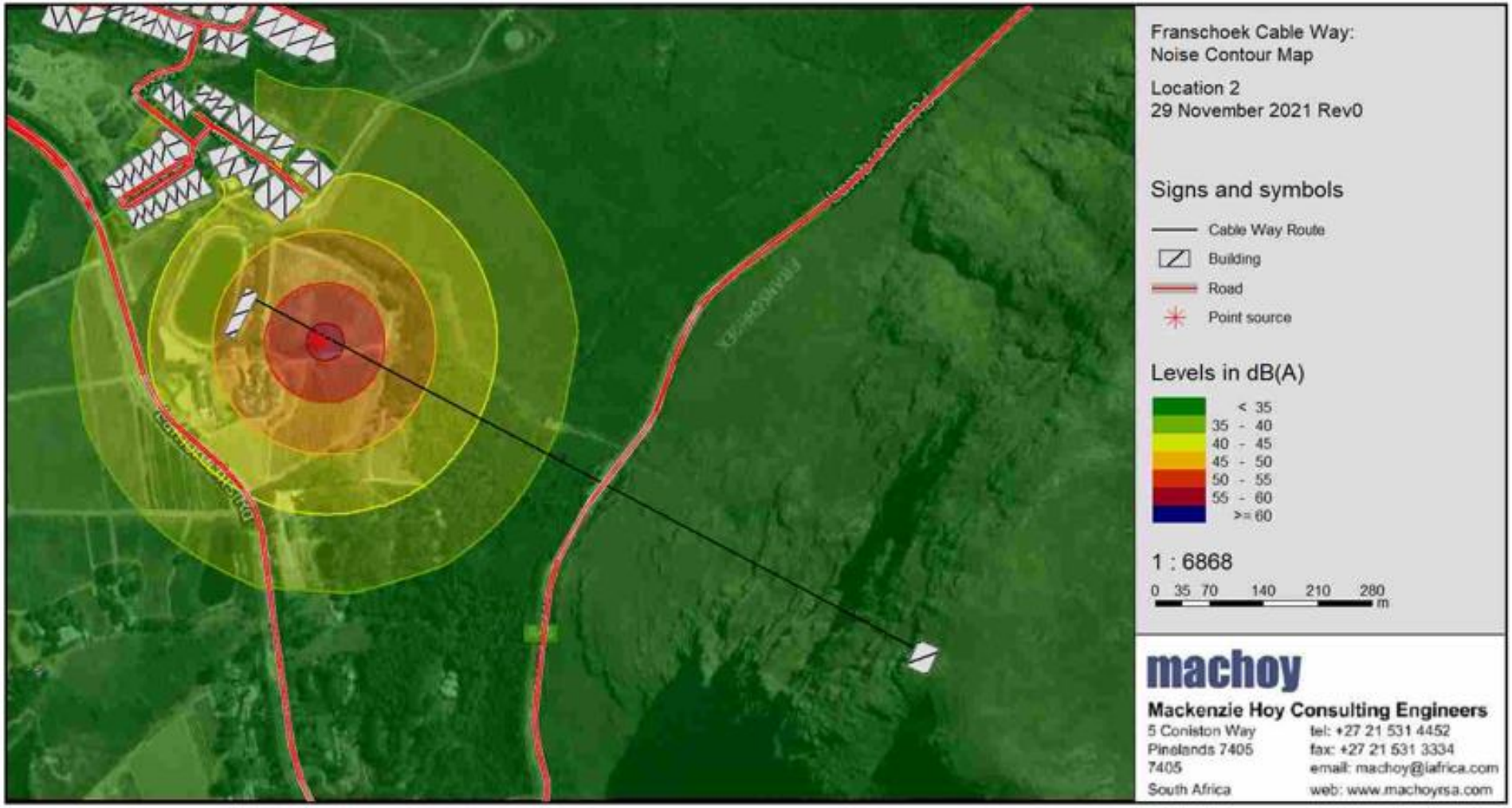

Figure 2: Cable car 100 m from base station. The maximum sound pressure level is 50 dBA at 100 m from the car.

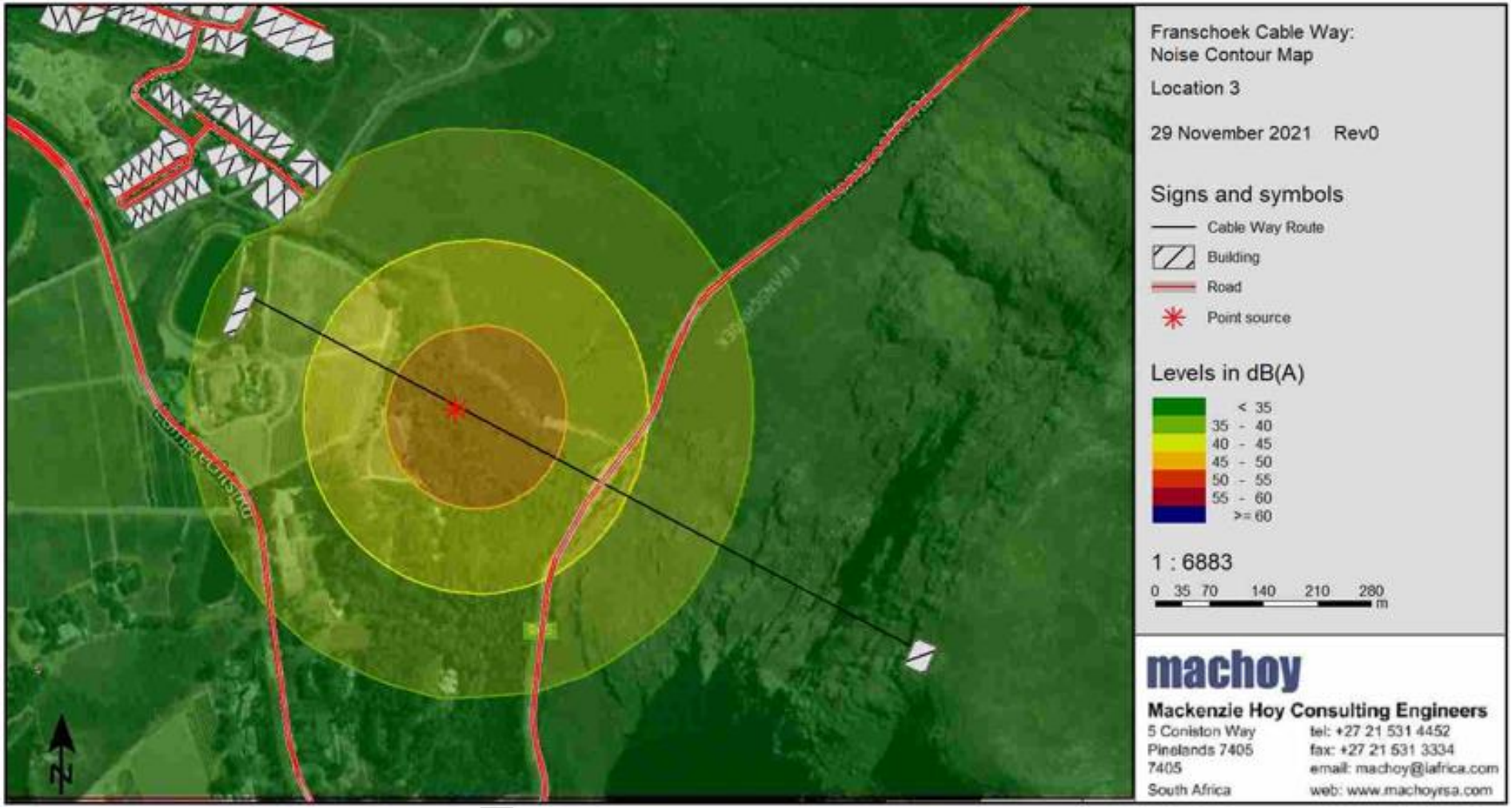

Figure 3: Cable car 200 m from base station. The maximum sound pressure level is 50 dBA at 100 m from the car.

Figure 3: Cable car 400 m from base station. The maximum sound pressure level is 45 dBA at 100 m from the car.

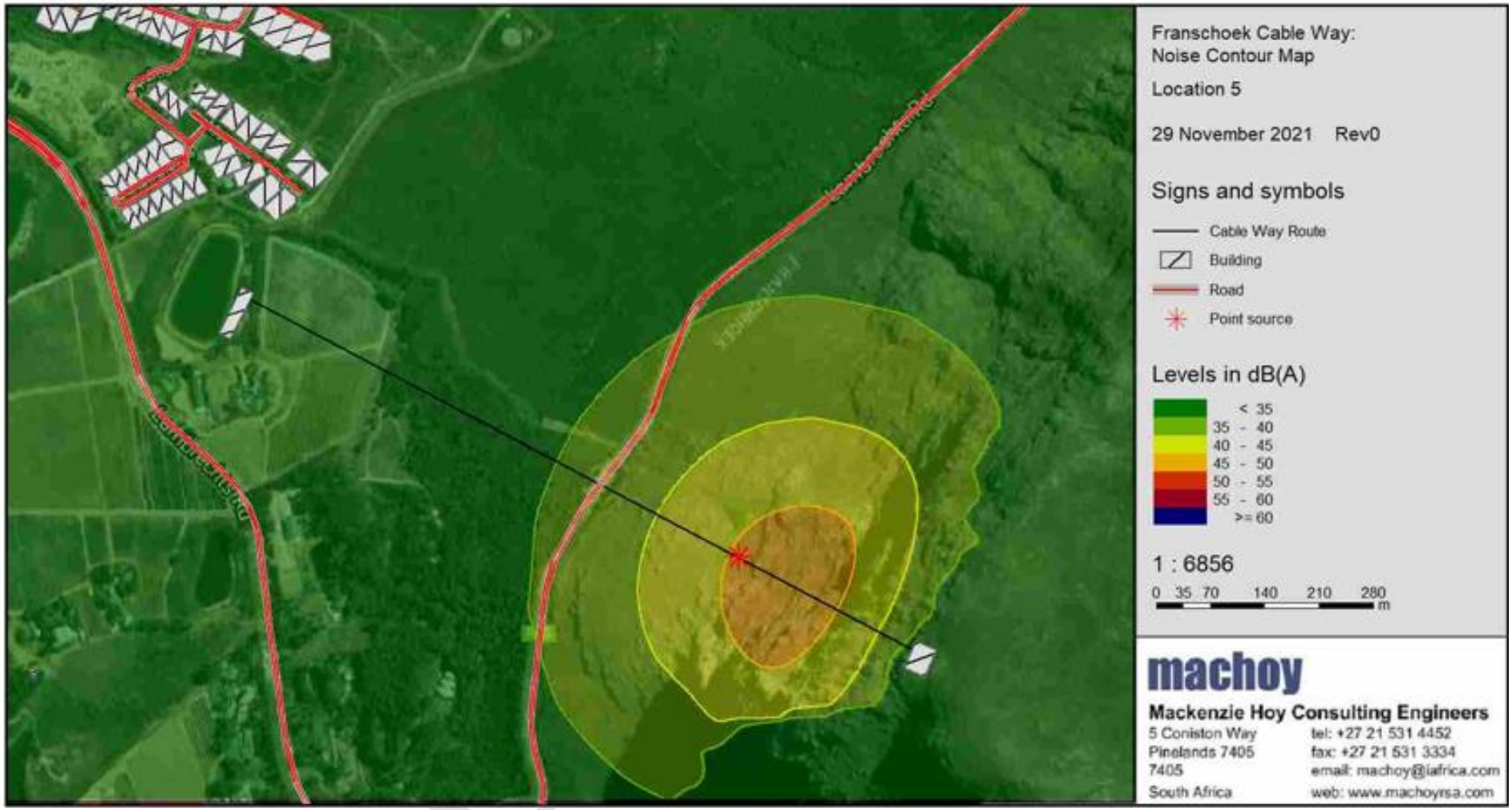

Figure 4: Cable car 200 m from upper station. The maximum sound pressure level is 45 dBA at 100 m from the car.

Figure 5: Cable car at upper station.

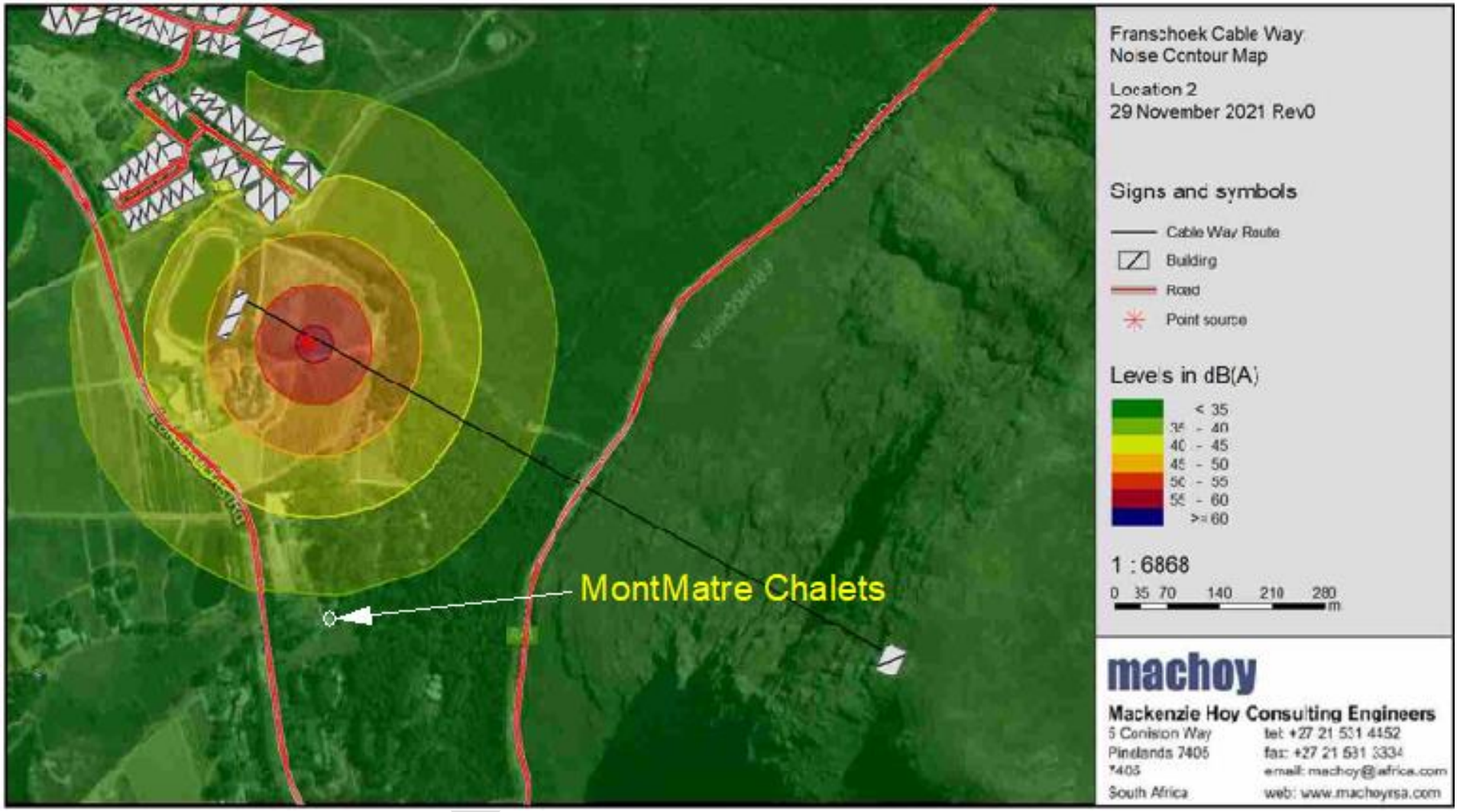

Figure 6: Nearest rented accomodation to the cable way is in an area where the cable way noise is not audible.

4.8.3 With reference to Figure 6 above the nearest rented accommodation to the cable way is not affected in any way by the noise of the cable way.

4.8.4 There may be other domestic dwellings where the cable way operation will be audible but the noise levels will be less than that of any passing traffic.

5. Recommendations and Conclusions

5.1 It is concluded that the noise of the proposed cable way will be neither a "disturbing noise" nor a "noise nuisance" in terms of the Western Cape Noise Control Regulations PN200, 2013.

5.2 It is recommended that a copy of this report be forwarded to the Environmental Noise Specialist for Cape Winelands District.

T.E. Mackenzie Hoy Pr. Eng Bsc(Elec)

Registered professional engineer number 840428

for: Mackenzie Hoy Consulting Engineers

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Appendix A: Part 2

Assessment in terms of National Environmental Management Act (1988)

Noise Protocols

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Executive Summary

1.1 Franschhoek Cableway wishes to apply for Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and the NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) for the proposed development and associated infrastructure.

1.2 On the basis of measurements, a site visit and calculations, it is concluded that the impact of the development is:

- Site specific
- Permanent
- Of no consequence to the environment
- Highly probable
- Irreversible
- Low cumulative effect

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2. Specialist Details, Expertise And Declaration

Specialist Details:

Name:	Terence Eric Mackenzie-Hoy
ID:	5505095202084
Profession:	Consulting Acoustics Engineer
Date of Birth:	9th May 1955
Parent Firm:	Mackenzie Hoy Consulting Engineers
Position in Firm:	Principal Engineer
Years with Firm:	35
Nationality:	South African

Education:

Date	Institution	Qualification Obtained
1971	St Stithians College	Matriculation
1978	University of Cape Town	BSc. Electrical Engineering

Professional Registration

Engineering Council of South Africa (ECSA) registration number 840428.

Member of SA Institute of Electrical Engineers

Registered Professional Engineer in Europe

Member of the South African Society of Professional Engineers

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Languages

Mother Tongue:		English	
Languages	**Speak**	**Read**	**Write**
English	Good	Good	Good
Afrikaans	Good	Good	Good
French	Fair	Poor	Poor

International Work Experience

South Africa, Bahrain, Botswana, Democratic Republic of the Congo, Germany, Kenya, Mali, Mauritania, Mauritius, Sudan, Suriname, Zambia, Uganda, Nigeria, Swaziland, Botswana

Major Projects with Mackenzie Hoy Consulting Engineers

As owner and Principal Engineer of Mackenzie Hoy Consulting Engineers, Terry Mackenzie-Hoy signs off on all Acoustics and Electrical Engineering projects conducted by the firm. Refer to Company Profile section of this document.

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DECLARATION OF INTEREST

	(For official use only)
Provincial Reference Number:	
NEAS Reference Number:	
Waste Management Licence Number (if applicable):	
Date Received by Department:	

Submitted in terms of section 24(2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or for a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

KINDLY NOTE:

1. This form is current as of **October 2019**. It is the responsibility of the Applicant / Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the form have been released by the Department.

PROJECT TITLE

Noise Impact Assessment For Cableway Franschhoek: Erf 1466 and the Remainder of Erf 23 in Franschhoek

DISTRICT MUNICIPALITY

Cape Winelands

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1. SPECIALIST INFORMATION

Specialist name:	MACHOY		
Contact person:	Terry Mackenzie-Hoy		
Postal address:	5 Coniston Way, Pinelands, Cape Town		
Postal code:	7405	Cell:	0825688924
Telephone:	0215314452	Fax:	0215313334
E-mail:	machoy@iafrica.com		
Professional affiliation(s) (if any)	MSAIEE, MSPE, PrEng		

Project Consultant / EAP:	EAP: Doug Jeffery Environmental Consultants
Contact person:	Adél Groenewald
Postal address:	P.O. Box 44, Klapmuts
Postal code:	7625
Telephone:	021 875 5272
E-mail:	adel@dougjeff.co.za

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2. DECLARATION BY THE SPECIALIST

I, Terry Mackenzie-Hoy declare that --

General declaration:

- I act as the independent specialist in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Pr.Eng.

Signature of the specialist:

MACHOY Mackenzie Hoy Consulting Engineers

Name of company:

9th November 2021

Date:

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3. Introduction

Franschhoek Cableway Development wishes to apply for Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and the NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) for the proposed residential development, non-residential and associated infrastructure.

3.1 Scope of Study

The scope of this study is confined to the following:

a. The noise impact assessment of the construction phase of the above development.

b. The noise impact assessment of the operational phase of the above development.

3.2 Gaps in Knowledge

a. The exact construction methodology and construction period is not known.

3.3 Assumptions

It is assumed that normal traffic speed restrictions for a suburban development will apply.

4.9 3.4. Uncertainties

None known.

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4. Methodology

4.1 A site visit was conducted and reading taken of existing residual noise levels. An evaluation of noise sensitive receivers (other domestic dwellings) was conducted in their proximity to the major components of the development.

5. Description of the site

5.1 The site is existing land located in Franschhoek, Cape Winelands. The site are currently in use as agricultural land, residential and open fields.

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6. Assessment of impacts (planning, design & development and operational phases) for each alternative

Alternative 1:	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	
Nature of impact:	Construction and Design
Extent and duration of impact:	Site Specific
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	No loss
Degree to which the impact can be reversed:	Irreversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Unavoidable
Degree to which the impact can be managed:	Moderate
Degree to which the impact can be mitigated:	Moderate
Proposed mitigation:	Adherence to working hours
Residual impacts:	None
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

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OPERATIONAL PHASE	
Potential impact and risk:	
Nature of impact:	Low
Extent and duration of impact:	Insignificant
Consequence of impact or risk:	Insignificant
Probability of occurrence:	Definate
Degree to which the impact may cause irreplaceable loss of resources:	None existent
Degree to which the impact can be reversed:	Irreversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	No operation after 10h00
Residual impacts:	Nil
Cumulative impact post mitigation:	Nil
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

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7. Findings of the Assessment

7.1 The development continues the character in nature of the surrounding developments being that of tourist in a rural / semi urban living. There is no indication that the premises will be a noise nuisance or a disturbing noise to neighbours.

8. Impact Management, Mitigation And Monitoring Measures (planning, design & development and operational phases) for each alternative

8.1 Apart from basic traffic control and adherence to existing noise control regulations little management and no monitoring is required.

9. Cumulative Impacts

9.1 None

10. Impact Assessment Tables

10.1 Not applicable.

11. Impact Management Actions And Impact Management Outcomes Proposed By The Specialist For Inclusion In The EMPr.

11.1 None

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12. Discussion

12.1 During the construction phase which should last about 48 months in various stages, there will be the noise of earth moving machinery and other construction equipment. It is not expected that that any of the proposed new construction will require pile driving as they will be restricted in height in keeping with the structures in the surrounding area. Consequently, the only noise impact will be of construction equipment during the construction phase which will be limited to operation during designated construction hours as per the SANS 10400, *The Application Of The National Building Regulations.*

13. Conclusion

13.1 The construction and operational phases of the project will have little effect on the environment.

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Appendix B: Calibration Certificates

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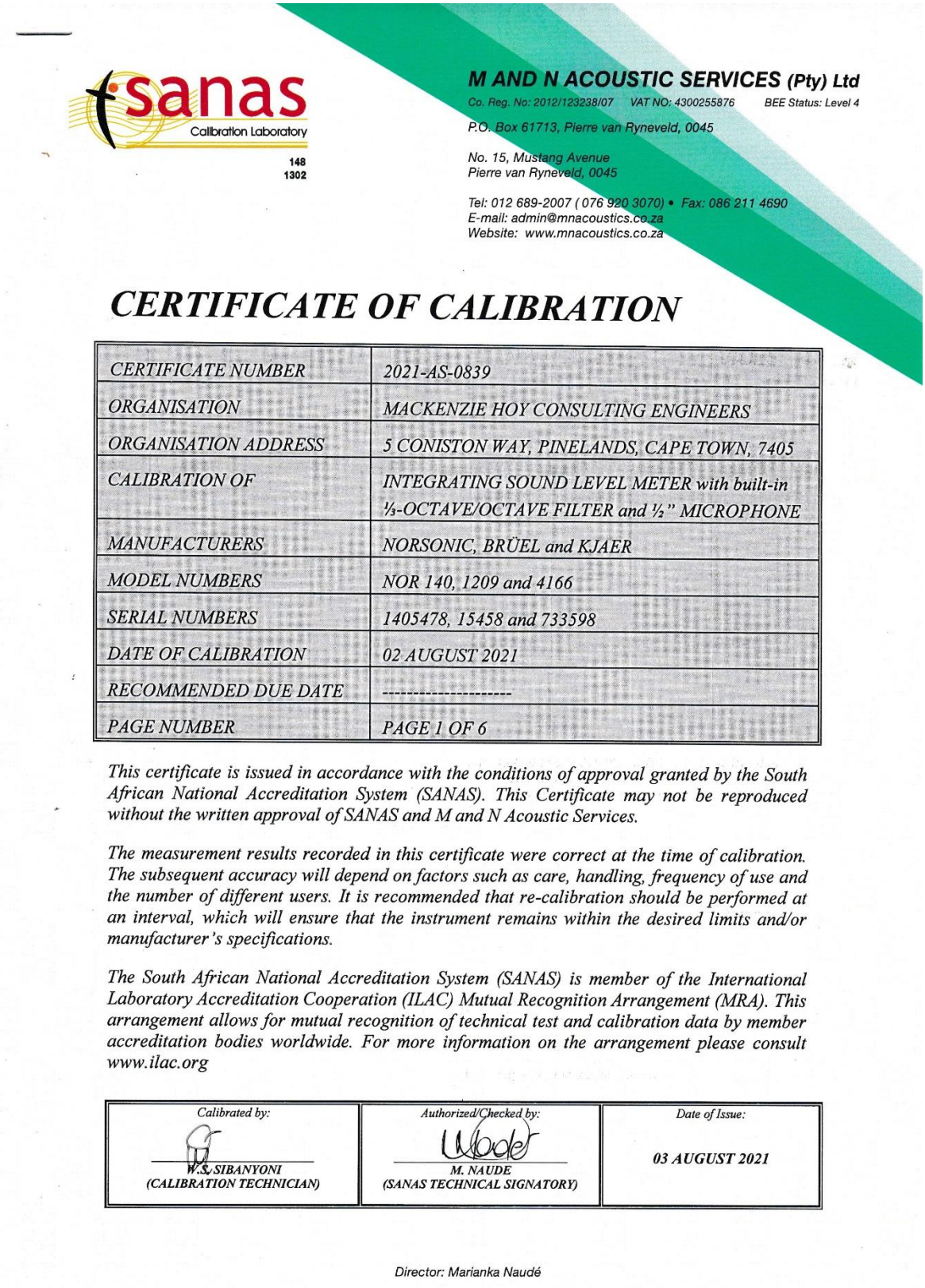


sanas
Calibration Laboratory
148
1302

M AND N ACOUSTIC SERVICES (Pty) Ltd
Co. Reg. No: 2012/123238/07 VAT NO: 4300255876 BEE Status: Level 4
P.O. Box 61713, Pierre van Ryneveld, 0045
No. 15, Mustang Avenue
Pierre van Ryneveld, 0045
Tel: 012 689-2007 (076 920 3070) • Fax: 086 211 4690
E-mail: admin@mnacoustics.co.za
Website: www.mnacoustics.co.za

CERTIFICATE OF CALIBRATION

CERTIFICATE NUMBER	2021-AS-0839
ORGANISATION	MACKENZIE HOY CONSULTING ENGINEERS
ORGANISATION ADDRESS	5 CONISTON WAY, PINELANDS, CAPE TOWN, 7405
CALIBRATION OF	INTEGRATING SOUND LEVEL METER with built-in ⅓-OCTAVE/OCTAVE FILTER and ½" MICROPHONE
MANUFACTURERS	NORSONIC, BRÜEL and KJAER
MODEL NUMBERS	NOR 140, 1209 and 4166
SERIAL NUMBERS	1405478, 15458 and 733598
DATE OF CALIBRATION	02 AUGUST 2021
RECOMMENDED DUE DATE	----------
PAGE NUMBER	PAGE 1 OF 6

This certificate is issued in accordance with the conditions of approval granted by the South African National Accreditation System (SANAS). This Certificate may not be reproduced without the written approval of SANAS and M and N Acoustic Services.

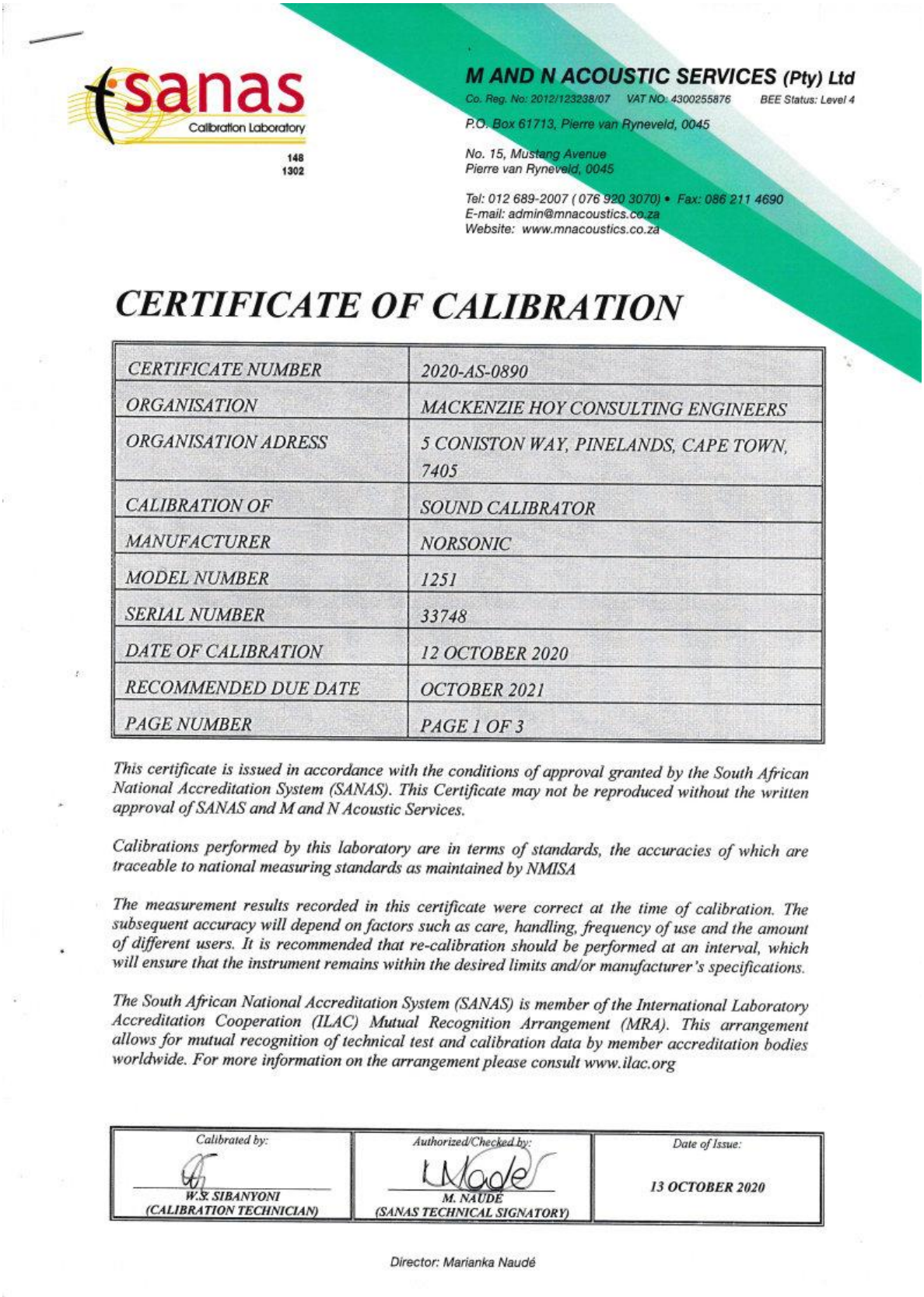
The measurement results recorded in this certificate were correct at the time of calibration. The subsequent accuracy will depend on factors such as care, handling, frequency of use and the number of different users. It is recommended that re-calibration should be performed at an interval, which will ensure that the instrument remains within the desired limits and/or manufacturer's specifications.

The South African National Accreditation System (SANAS) is member of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). This arrangement allows for mutual recognition of technical test and calibration data by member accreditation bodies worldwide. For more information on the arrangement please consult www.ilac.org

Calibrated by:	Authorized/Checked by:	Date of Issue:
W.S. SIBANYONI (CALIBRATION TECHNICIAN)	M. NAUDE (SANAS TECHNICAL SIGNATORY)	03 AUGUST 2021

Director: Marianka Naudé

Figure A.1: Calibration Certificate for Nor140 Sound Level Meter (Ser no: 1405478)



sanas
Calibration Laboratory
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M AND N ACOUSTIC SERVICES (Pty) Ltd
Co. Reg. No: 2012/123238/07 VAT NO: 4300255876 BEE Status: Level 4
P.O. Box 61713, Pierre van Ryneveld, 0045
No. 15, Mustang Avenue
Pierre van Ryneveld, 0045
Tel: 012 689-2007 (076 920 3070) • Fax: 086 211 4690
E-mail: admin@mnacoustics.co.za
Website: www.mnacoustics.co.za

CERTIFICATE OF CALIBRATION

CERTIFICATE NUMBER	2020-AS-0890
ORGANISATION	MACKENZIE HOY CONSULTING ENGINEERS
ORGANISATION ADRESS	5 CONISTON WAY, PINELANDS, CAPE TOWN, 7405
CALIBRATION OF	SOUND CALIBRATOR
MANUFACTURER	NORSONIC
MODEL NUMBER	1251
SERIAL NUMBER	33748
DATE OF CALIBRATION	12 OCTOBER 2020
RECOMMENDED DUE DATE	OCTOBER 2021
PAGE NUMBER	PAGE 1 OF 3

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Calibrations performed by this laboratory are in terms of standards, the accuracies of which are traceable to national measuring standards as maintained by NMISA

The measurement results recorded in this certificate were correct at the time of calibration. The subsequent accuracy will depend on factors such as care, handling, frequency of use and the amount of different users. It is recommended that re-calibration should be performed at an interval, which will ensure that the instrument remains within the desired limits and/or manufacturer's specifications.

The South African National Accreditation System (SANAS) is member of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). This arrangement allows for mutual recognition of technical test and calibration data by member accreditation bodies worldwide. For more information on the arrangement please consult www.ilac.org

Calibrated by:	Authorized/Checked by:	Date of Issue:
W.S. SIBANYONI (CALIBRATION TECHNICIAN)	M. NAUDÉ (SANAS TECHNICAL SIGNATORY)	13 OCTOBER 2020

Director: Marianka Naudé

Figure A.2: Calibration Certificate for Norsonic Calibrator 1251 (Ser no: 1405478)