APPENDIX C

Acoustic Assessment



MARSHALL DAY Acoustics

WHAKANUI STUD SAND QUARRY
ASSESSMENT OF NOISE EFFECTS

Rp 001 20260237 | 26 June 2026

Level 4, 24 Garden Place
PO Box 19039
Hamilton 3244
T: +64 7 834 3022
www.marshallday.com

Project: **WHAKANUI STUD SAND QUARRY**

Prepared for: **Shaws Quarries Limited**
c/- Mitchell Daysh Ltd
Email: madison.lawry@mitchelldaysh.co.nz

Attention: **Madison Lawry**

Report No.: **Rp 001 20260237**

Disclaimer

Reports produced by Marshall Day Acoustics Limited are based on a specific scope, conditions and limitations, as agreed between Marshall Day Acoustics and the Client. Information and/or report(s) prepared by Marshall Day Acoustics may not be suitable for uses other than the specific project. No parties other than the Client should use any information and/or report(s) without first conferring with Marshall Day Acoustics.

The advice given herein is for acoustic purposes only. Relevant authorities and experts should be consulted with regard to compliance with regulations or requirements governing areas other than acoustics.

Copyright

The concepts and information contained in this document are the property of Marshall Day Acoustics Limited. Use or copying of this document in whole or in part without the written permission of Marshall Day Acoustics constitutes an infringement of copyright. Information shall not be assigned to a third party without prior consent.

Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft		For client review	27 May 2026	C. Fenemore	M. Cottle
Issued	01	Incorporated client comments	9 June 2026	C. Fenemore	-
Issued	02	Updated quarry boundary	26 June 2026	C. Fenemore	M. Cottle

Cover Photo: Creative Agency 514-806-1644

TABLE OF CONTENTS

1.0 SUMMARY 4

2.0 SITE AND PROJECT DESCRIPTION 4

2.1 Site description and identified receivers 4

2.2 Project description 6

3.0 EXISTING AMBIENT NOISE ENVIRONMENT 6

4.0 ACOUSTIC PERFORMANCE STANDARDS AND LEGISLATION 7

4.1 Waipā District Plan 8

4.2 Waikato District Plan 8

4.3 Project noise limit discussion 8

4.4 Resource Management Act 1991 (RMA) 9

5.0 OPERATIONAL NOISE ASSESSMENT 9

5.1 Predicted operational noise levels 9

5.2 Modelling methodology 10

5.3 Bund construction assessment 11

5.4 Assessment of noise effects 11

6.0 RECOMMENDED CONDITIONS OF CONSENT 12

APPENDIX A GLOSSARY OF TERMINOLOGY

APPENDIX B LOCATION OF SENSITIVE RECEIVERS

APPENDIX C PORRITT SAND QUARRY CONSENTED SUBDIVISION

APPENDIX D NOISE PERFORMANCE STANDARDS

APPENDIX E PLANT SOUND POWER LEVELS

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

1.0 SUMMARY

Marshall Day Acoustics has been engaged by Shaws Quarries Limited to model and assess noise from a proposed sand quarry located in Cambridge.

We performed attended noise measurements at the site to quantify the existing ambient noise environment. This informs our assessment of operational noise effects.

We have developed an acoustic model of the quarry operations, which we used to predict noise at the neighbouring receivers. The model includes terrain data for the site and a library of noise sources.

Our noise modelling indicates that quarrying on the site can comply with the relevant noise limits, provided a 2 m high bund is constructed at the north-west boundary of the site.

We consider that no adverse noise effects will occur, given that:

- Operational noise levels are predicted to comply with the relevant noise limits
- Predicted noise levels are worst-case, and for most of the life of the quarry, noise levels will be less than predicted
- Operational noise levels are less than the measured ambient noise levels at receivers, and within the range of background noise levels
- Construction of the bund is predicted to comply with the relevant noise limits

Appendix A contains a glossary of terminology used in this report.

We have recommended a suite of noise conditions, should consent be granted.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site description and identified receivers

The Project site is located at 1466 Cambridge Road, Cambridge. We note that the site sits partially within the Waipā District and partially within the Waikato District.

Figure 1 shows the location of the site within the general context of the surrounding environment, as well as the extent of proposed quarrying within the site.

Table 1 lists the closest receivers and their distances to the closest site boundary. An aerial image showing the location of each receiver is attached in Appendix B.

Table 1: Identified potentially affected receivers

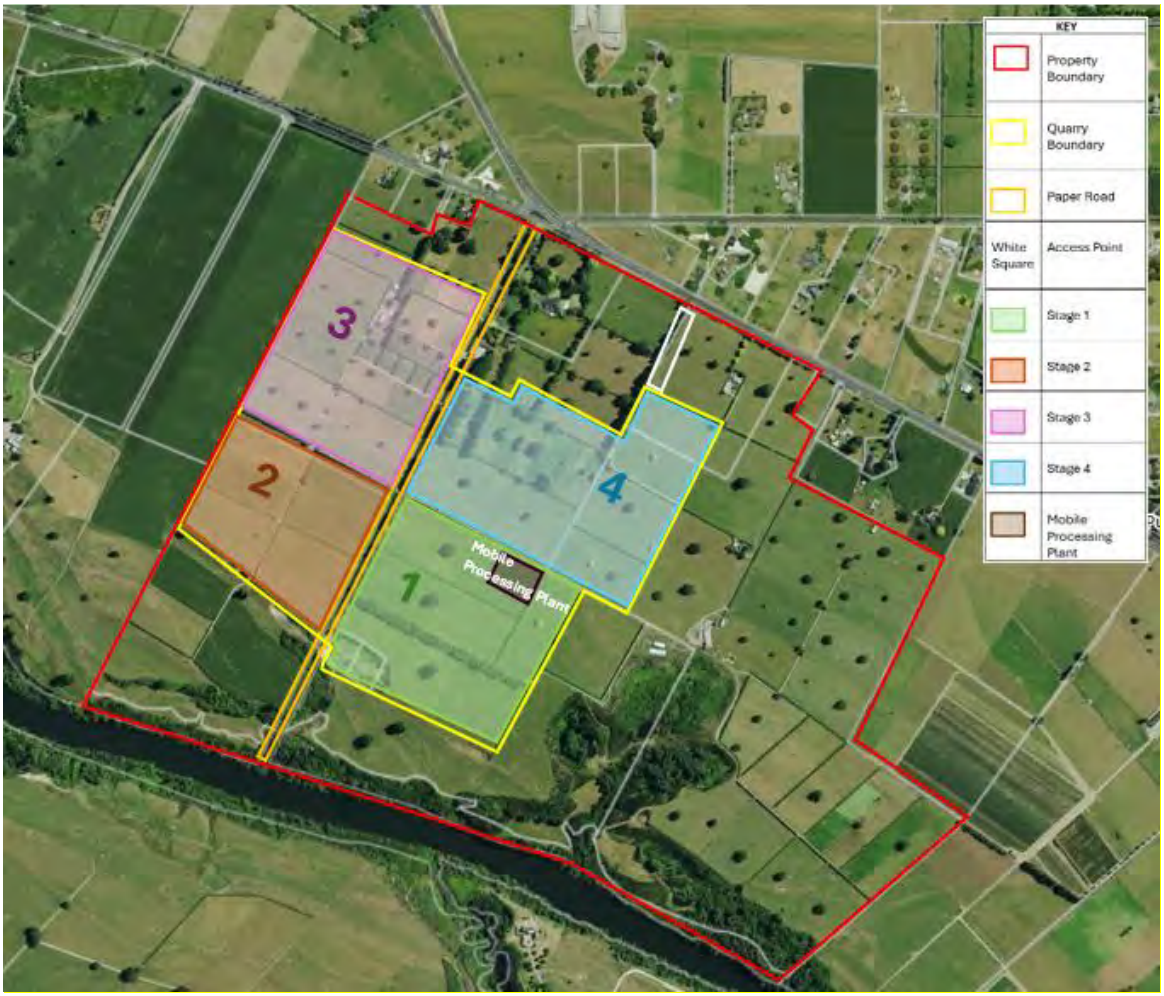
ID	Address	Zoning / usage	Min. distance to quarry boundary (m)
R1	256B/276A/276B/276C Hooker Road	Waikato / dwelling	420
R2	298 Hooker Road	Waikato / dwelling	90
R3	306 Hooker Road	Waikato / dwelling	50
R4	307 Hooker Road	Waikato / dwelling	160
R5	313 Hooker Road	Waikato / dwelling	160
R6	316 Hooker Road	Waikato / dwelling	90
R7	371 Racecourse Road	Waipā[2] / dwelling	240
R8	357 Racecourse Road	Waipā / dwelling	200
R9	347 Racecourse Road	Waipā / dwelling	220

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

ID	Address	Zoning / usage	Min. distance to quarry boundary (m)
R10	1/347 Racecourse Road	Waipā / dwelling	290
R11	331 Racecourse Road	Waipā / dwelling	330
R12	325 Racecourse Road	Waipā / dwelling	270
R13	1532 Cambridge Road	Waipā / vacant	130
R14	1534 Cambridge Road	Waipā / dwelling	190
R15	1544 Cambridge Road	Waipā / dwelling	270
R16	1560 Cambridge Road	Waipā / dwelling	420
R17	Porritt Sand Quarry Subdivision[3]	Consented	107

Notes to table:
(1) Waikato refers to the General Rural Zone in the Waikato District Plan.
(2) Waipā refers to the Rural Zone in the Waipā District Plan.
(3) Refer to Appendix C for the location of the consented lots.

Figure 1: Site and surrounding receivers



This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

2.2 Project description

A sand quarry operation is proposed for the site. The proposed operating hours will be 7am to 6pm Monday to Friday, and 7am to 1pm on Saturdays. No quarrying will occur on Sundays or public holidays.

Quarrying will occur in stages as outlined in Figure 1 above and no more than 3-4 hectares will be quarried at a time. Reinstatement will occur progressively i.e. Stage 1 will be reinstated as Stage 2 is quarried and so on.

Quarrying operations will involve the following plant:

- 2x excavators (Sany SY245 25T / Sany SY305 35T)
- 1x wheeled loader (20T)
- 1x bulldozer (35T)
- 1x tractor (John Deere 6920)
- 2x trucks
- 1x watercart
- 1x tipper truck (Hino FS)
- Mobile processing plant (Nordtrack S2.5 mobile scalping screen)

3.0 EXISTING AMBIENT NOISE ENVIRONMENT

We visited the site on 9 April 2026 between 12pm and 1pm to measure the existing ambient noise environment. The results form the basis for our assessment of noise effects. The measurements are summarised in Table 2 and measurement locations are shown in Figure 2.

Our observations indicate that the noise environment at the site is fairly typical of a rural environment with a busy road nearby. The ambient environment is dominated by traffic movements on Cambridge Road/Thermal Explorer Highway with farming noise and bird / insect noise as secondary sources.

Table 2: Measured ambient noise levels

Measurement position	Duration (mm:ss)	Measured noise levels				Noise sources and comments
		L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}	
MP1	15:01	60	54	57	48	90m setback from road, representative of dwellings at R10 and R11. Traffic on Cambridge Rd dominant, steady. Cicadas and birds secondary.
MP2	15:03	85	65	62	46	10m setback from road, representative of dwellings at R1 and R2. Traffic on Hooker Rd and Cambridge Rd dominant. Cicadas and birds secondary. Tractor/engine noise intermittent.

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

Figure 2: Ambient noise measurement locations



4.0 ACOUSTIC PERFORMANCE STANDARDS AND LEGISLATION

The site sits partially within the Waipā District and partially within the Waikato District as previously noted. Figure 3 shows the district boundaries of the site.

Figure 3: District boundaries of site and surroundings



This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

4.1 Waipā District Plan

The portion of the site within the Waipā District is located in the Rural Zone in the Waipā District Plan (Waipā DP).

Rule 4.4.2.15 states that noise from activities in the Rural Zone must not exceed 50 dB L_{Aeq} between 7am to 10pm at the notional boundary of any dwelling on any day.

Rule 4.4.2.19 states that construction noise shall meet the limits recommended in and be measured and assessed in accordance with New Zealand Standard NZS 6803:1999 "Acoustics – Construction noise".

The full suite of limits as they appear in the Waipā DP are attached in Appendix D.

4.2 Waikato District Plan

The portion of the site within the Waikato District is located in the General Rural Zone in the Waikato District Plan (Operative in Part) (Waikato DP).

Rule NOISE-R8 states that noise from activities in the General Rural Zone must not exceed 50 dB L_{Aeq} between 7am to 7pm at the notional boundary of any other site in the General Rural Zone, on any day.

Rule NOISE-R4 states that construction noise shall be measured, assessed and managed in accordance with the requirements of New Zealand Standard NZS 6803:1999 "Acoustics – Construction noise".

The full suite of limits as they appear in the Waikato DP are attached in Appendix D.

4.3 Project noise limit discussion

Comparing the rural zone noise performance standards between the Waipā DP and the Waikato DP we note:

- The numerical limit and descriptor – 50 dB L_{Aeq} – are consistent between the district plans
- The Waipā DP daytime prescribed timeframe is 7am to 10pm, totalling 15 hours
- The Waikato DP daytime prescribed timeframe is 7am to 7pm, totalling 12 hours
- Both district plans do not distinguish between weekdays and weekends
- Both district plans require construction noise to be measured and assessed in accordance with NZS 6803:1999

The Waipā DP daytime prescribed timeframe is three hours longer than in the Waikato DP. This would technically allow for -1 dB duration adjustment in accordance with NZS 6802:2008 to be applied during rating level derivation. In the interest of providing a conservative assessment we have used the Waikato DP prescribed timeframe of 7am to 7pm, resulting in no duration adjustment being applied to noise levels.

Bund construction is considered a construction activity as per NZS 6803:1999[1]. For construction work at any one location between 14 calendar days and 20 weeks' duration, the noise limits are 75 dB L_{Aeq} and 90 dB L_{AFmax} between 7:30am – 6pm, Monday to Saturday.

Based on the above, the following are our proposed noise performance standards:

- 50 dB L_{Aeq} 7am to 7pm Monday to Saturday (operational)
- 75 dB L_{Aeq} / 90 dB L_{AFmax} 7:30am to 6pm Monday to Saturday (construction)

[1] NZS 6803:1999 Clause 3.1 Definitions: Construction work (e)

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

Refer to Section 6 for recommended conditions of consent.

4.4 Resource Management Act 1991 (RMA)

Under the provisions of the RMA, there is a duty to adopt the best practicable option (BPO) to ensure that noise (including vibration) from any development does not exceed a reasonable level. Specifically, Sections 16 and 17 reference noise effects as follows.

Section 16 states that "every occupier of land (including any premises and ay coastal marine area), and every person carrying out and activity in, on, or under a water body or coastal marine area, shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level".

Section 17 states that "every person has a duty to avoid, remedy. Or mitigate any adverse effect on the environment arising from an activity carried on by or on behalf of the person, whether or not the activity is in accordance with –

(a) Any of section 10, 10A, 10B and 20A; or

(b) A national environmental standard, a rule, a resource consent, or a designation."

This report uses the guiding principles of Sections 16 and 17 of the RMA as noted in assessing effects and recommending mitigation measures.

5.0 OPERATIONAL NOISE ASSESSMENT

5.1 Predicted operational noise levels

Table 3 summarises modelled noise from quarrying activity at the closest receivers, using the methodology in Section 5.2. Results confirm compliance with the limits in Section 4.3 under worst-case conditions, where equipment is positioned closest to each receiver. Compliance is also confirmed at the consented Porritt-owned subdivision adjacent to the site.

Table 3: Predicted operational noise levels

ID	Receiver address	Project noise limit (dB L_{Aeq})	Noise Rating Level (dB L_R)
R1	256B/276A/276B/276C Hooker Road	50	45
R2	298 Hooker Road	50	50
R3	306 Hooker Road	50	50
R4	307 Hooker Road	50	46
R5	313 Hooker Road	50	46
R6	316 Hooker Road	50	47
R7	371 Racecourse Road	50	47
R8	357 Racecourse Road	50	50
R9	347 Racecourse Road	50	47
R10	1/347 Racecourse Road	50	46
R11	331 Racecourse Road	50	42
R12	325 Racecourse Road	50	44
R13	1532 Cambridge Road	50	47

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

ID	Receiver address	Project noise limit (dB L_{Aeq})	Noise Rating Level (dB L_R)
R14	1534 Cambridge Road	50	47
R15	1544 Cambridge Road	50	46
R16	1560 Cambridge Road	50	44
R17	Porritt Sand Quarry Subdivision	50	50

Note to table:
(1) Appendix A provides an explanation of technical terms.
(2) No duration adjustment applied to predicted noise levels.

5.2 Modelling methodology

We have modelled the worst-case scenario i.e., operational noise occurring during sand extraction at the closest position to each receiver. Our noise model uses the sound power levels listed in Appendix E and considers cumulative noise from truck movements, processing plant and quarrying plant.

We understand that the location of the processing plant (as shown in Figure 1) is not fixed. As the plant can be moved around the site as quarrying progresses, we have incorporated this mobility aspect into our noise model. We recommend the processing plant maintains a 500 m buffer from the closest receivers, i.e., it remains within quarry Stages 1 and 2 shown in Figure 1.

Quarrying activity will inherently occur well below the natural ground level (down to approximately 6 m below the current ground level) and will therefore receive some natural screening. Our model includes screening from terrain such as would occur when sand extraction occurs below the escarpment edge.

Our model also includes screening from a 2 m high bund as detailed in Section 5.3.

Truck movements have been modelled as follows:

- 135 trucks per day / 12 trucks per hour (peak)
- Access from Cambridge Road (as shown in Figure 1)

We have calculated operational sound levels in accordance with the algorithms detailed in ISO 9613-2:2024-01[2] and implemented in SoundPLAN® environmental noise modelling software. ISO 9613 considers a range of frequency dependent attenuation factors including atmospheric absorption, ground and barrier effects, directivity, as well as spherical spreading.

The ISO 9613 standard adopts the conservative approach of assuming that wind is always blowing from the noise source towards all receivers. The calculations also hold for average propagation under a well-developed moderate ground-based temperature inversion, such as what commonly occurs on clear, calm nights.

[2] ISO 9613-2:2024-01 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors."

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

5.3 Bund construction assessment

To comply with operational noise limits, a bund is needed and will be constructed at the north-west boundary of the site, as shown in Figure 4. The bund will be a minimum of 2 m high.

Figure 4: Bund location (shown in blue)



Table 4 shows predicted noise levels for bund construction. It identifies the plant, sound power level, the predicted noise level at the closest receivers and the minimum setback distance required to comply with the relevant noise limit.

The levels in Table 4 indicate that construction of the bund will comply with the construction noise limits outlined in Section 4.3.

Table 4: Predicted construction noise levels

Equipment	Sound power	Screening (dB)	Noise level (dB L_{Aeq})			Limit setback (m)
	(dB L_{WA})		50m	90m	160m	75 dB L_{Aeq}
Bulldozer (40T)	114	-	74	67	61	44
Excavator (40T)	105	-	65	58	52	18
Excavator (5T)	102	-	62	55	49	13
Small trucks	97	-	57	50	44	7
Truck and trailer	105	-	65	58	52	18

5.4 Assessment of noise effects

In performing an assessment of noise effects we note the following:

- Operational noise is predicted to comply with the relevant noise performance standards at all the nearby receivers
- The predicted noise levels in Table 3 are the worst-case noise levels; for the majority of the life of the quarry, noise levels will be less than predicted

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

- The predicted noise levels are below the measured ambient noise levels (54 – 65 dB L_{Aeq}) and within the range of measured background noise levels (46 – 48 dB L_{A90}) (refer to Table 2)
- Quarrying activities will be audible at some receivers some of the time but will comply with the relevant performance standards all of the time with the recommended mitigation measures in place and as such, will not be at intrusive levels.

On this basis, we conclude that noise will be reasonable with respect to s16 of the RMA.

6.0 RECOMMENDED CONDITIONS OF CONSENT

We recommend that the following noise conditions are imposed on any consent granted:

1. The noise level from all activities associated with the operation of the quarry shall not exceed the following limit when measured at any point within the notional boundary of any other site:
    a. 7am – 7pm Monday to Saturday 50 dB L_{Aeq}
2. Noise levels shall be measured in accordance with the provisions of New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of environmental sound" and assessed in accordance with the provisions of New Zealand Standard NZS 6802:2008 "Acoustics - Environmental Noise"
3. Construction noise shall be measured, assessed and managed in accordance with the requirements of New Zealand Standard NZS 6803:1999 "Acoustics – Construction noise".
4. At all times, the mobile processing plant shall maintain a minimum 500m buffer from neighbouring dwellings where there is clear line-of-site between the plant and dwellings.
5. The Quarry Management Plan shall include a section on operational noise management. The section shall identify the best practicable options for management and mitigation of all operational noise sources to ensure compliance with noise condition 1. It shall include but not be limited to the following information:
    a. Operational noise limits in the consent;
    b. Identification of the most affected premises where there exists the potential for noise effects;
    c. Description and duration of the events, anticipated equipment and the activities to be undertaken;
    d. Hours of operation, including times and days when activities causing noise are likely to occur;
    e. Training procedures for quarry personnel to make them aware of potential noise effects and how to manage them;
    f. Details of noise monitoring to be undertaken in the event of any complaints received. The results of such monitoring shall be submitted to Waikato District Council / Waipā District Council within two weeks of undertaking monitoring, and;
    g. Implementation of a complaints management system with contact numbers for key staff responsible for the implementation of the Quarry Management Plan and complaint investigation. This system should include procedures for maintaining contact with stakeholders and handling of noise complaints.

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

APPENDIX A GLOSSARY OF TERMINOLOGY

A-weighting	A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds. Sound levels using an "A" frequency weighting are expressed as dB LA. Alternative ways of expressing A-weighted decibels are dBA or dB(A).
dB	Decibel. The unit of sound level.
L_{Aeq}	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
L_{A10}	The A-weighted sound level exceeded for 10% of the measurement period, measured in dB. Commonly referred to as the average maximum noise level.
L_{A90}	The A-weighted sound level exceeded for 90 % of the measurement period, measured in dB. Commonly referred to as the background noise level.
L_{Amax}	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time–weighting i.e. L_{AFmax}
L_w	Sound Power Level. The calculated level of total sound power radiated by a sound source. Usually A-weighted i.e. LWA.
Noise	A subjective term used to describe sound that is unwanted by, or distracting to, the receiver.
Notional boundary	A line 20 metres from any side of a dwelling, or the legal boundary where this is closer to the dwelling. This definition is from NZS 6802:2008.

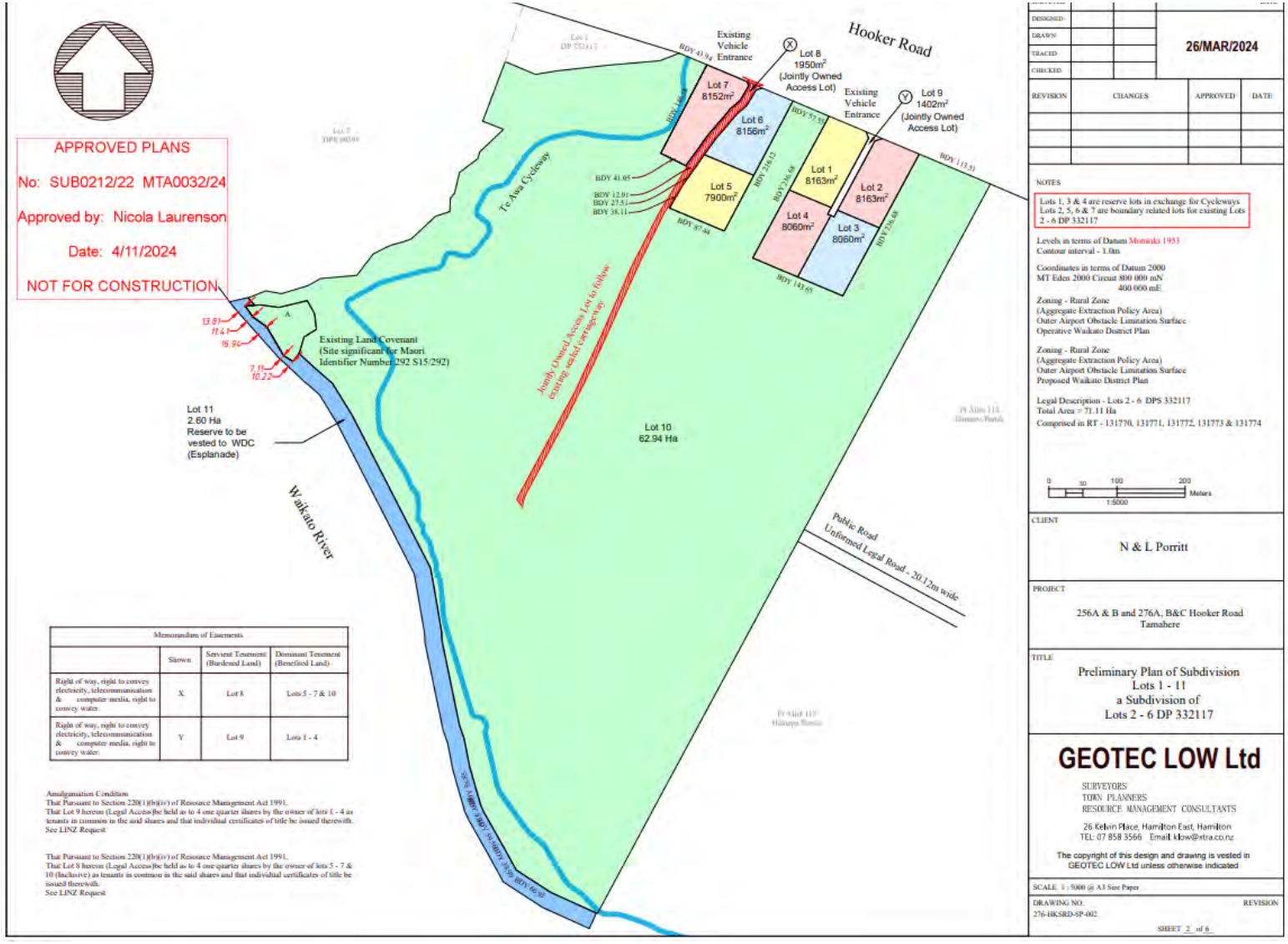
This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

APPENDIX B LOCATION OF SENSITIVE RECEIVERS



This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

APPENDIX C PORRITT SAND QUARRY CONSENTED SUBDIVISION



This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

APPENDIX D NOISE PERFORMANCE STANDARDS

Waipā DP

4.4.2.15 Noise generating activity other than that from farm animals including farm dogs, agricultural vehicles (when not being used for recreational purposes), agricultural machinery or equipment (including produce packing facilities where the only produce packed is grown on-site) operated and maintained in accordance with the manufacturer's specifications and in accordance with accepted management practices (e.g. for milking, spraying, harvesting, packing and the like, but not including frost fans) and provided that the best practicable option (including the option for the activity to take place at another time of the day), is adopted to ensure that the emission of noise does not exceed a reasonable level; shall be conducted and buildings located, designed and used to ensure that they do not exceed the following limits within the notional boundary of any dwelling (excluding dwellings within mineral extraction sites):

a. Day time - 7.00am to 10.00pm	50dBA (Leq)
b. Night time - 10.00pm to 7.00am	40dBA (Leq)
c. Night time single noise event	70dBA (Lmax)

The noise levels shall be measured and assessed in accordance with the requirements of **New Zealand Standard NZS 6801:2008 Acoustics – Measurement of environmental sound** and assessed in accordance with **New Zealand Standard NZS 6802:2008 Acoustics – Environmental noise**. Provided that this rule shall not apply to the use or testing of station and vehicle sirens or alarms used by emergency services.

Activities that fail to comply with this rule will require a resource consent for a discretionary activity.

4.4.2.19 Construction noise emanating from a site shall meet the limits recommended in and be measured and assessed in accordance with **New Zealand Standard NZS 6803:1999 Acoustics – Construction noise**.

Activities that fail to comply with this rule will require a resource consent for a restricted discretionary activity with the discretion being restricted over:

- Time and duration of effect; and
- Effects on surrounding properties.

These matters will be considered in accordance with the assessment criteria in Section 21.

Waikato DP

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

NOISE-R8	Noise - general	
GRUZ - General rural zone	**(1) Activity status: PER** **Where:** (a) Noise measured at the notional boundary on any other site in the GRUZ - General Rural Zone must not exceed: (i) 50dB L_{Aeq}, 7am to 7pm every day; (ii) 45dB L_{Aeq}, 7pm to 10pm every day; (iii) 40dB L_{Aeq} and 65dB L_{Amax}, 10pm to 7am the following day. (b) Noise measured within any site in any zone, other than the GRUZ - General rural zone, must meet the permitted noise levels for that zone. (c) Noise levels must be measured in accordance with the requirements of New Zealand Standard NZS 6801:2008 "Acoustics - Measurement of Environmental Sound". (d) Noise levels must be assessed in accordance with the requirements of New Zealand Standard NZS 6802:2008 "Acoustic - Environmental noise".	**(2) Activity status where compliance not achieved: DIS**

NOISE-R4	Noise - construction	
All zones	**(1) Activity status: PER** **Where:** (a) Noise from any construction, maintenance, or demolition activity that is measured, assessed and managed in accordance with the requirements of NZS6803:1999 'Acoustics - Construction Noise'.	**(2) Activity status where compliance not achieved: RDIS** (a) Effects on amenity values; (b) Hours and days of construction; (c) Noise levels; (d) Timing and duration; and (e) Methods of construction.

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited

APPENDIX E PLANT SOUND POWER LEVELS

Plant	Source type	Sound power level (dB L_{WA})	Frequency (Hz)						
			63	125	250	500	1000	2000	4000
Excavator (40T)	Point source	108	105	114	103	103	99	97	92
Wheeled loader	Line source at 10kph	107	115	110	105	106	101	98	92
Bulldozer (40T)	Line source at 5kph	113	105	114	103	103	110	108	101
Tractor	Line source at 10kph	108	107	99	106	103	106	98	89
Trucks (x2)	Line source at 20kph	108	122	104	105	103	104	101	96
Watercart	Line source at 10kph	110	110	124	106	103	100	99	93
Tipper truck	Line source at 10kph	108	122	104	105	103	104	101	96
Mobile processing plant	Point source	113	113	113	109	106	108	107	105

This document may not be reproduced in full or in part without the written consent of Marshall Day Acoustics Limited