BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY WAIPA DISTRICT COUNCIL

IN THE MATTER	of the Resource Management Act 1991 (Act)
AND	
IN THE MATTER	of an application for resource consent under section 88 of the Act for the establishment and operation of a sand quarry and cleanfill operation located at 928 Kaipaki Road, Cambridge
BETWEEN	**SHAW'S PROPERTY HOLDINGS LIMITED**
	Applicant
AND	**WAIPA DISTRICT COUNCIL**
	Consent Authority

STATEMENT OF EVIDENCE OF MATHEW JOHN COTTLE FOR THE APPLICANT

(Acoustics)

Dated: 6 November 2020

INTRODUCTION

1. My full name is Mathew John Cottle. I am an Associate with Marshall Day Acoustics. I hold a Master of Design Science (Audio and Acoustics) qualification from the University of Sydney, New South Wales, Australia. I am a current member of the Acoustical Society of New Zealand.

2. I have been engaged by Shaw's Property Holdings Limited ("Shaw's" or "the Applicant") to prepare a statement of evidence in support of its application for resource consent approval from Waipa District Council ("Council") to establish and operate a proposed Sand Quarry and Cleanfill operation, located at 928 Kaipaki Road, Leamington, Cambridge ("Application").

3. I am responsible for overseeing the preparation of the Acoustic Assessment, which assessed the potential acoustic effects associated with the construction and operation of the proposed Kaipaki Sand Quarry ("the **Project**"). The Acoustic Assessment was attached as Appendix G to the Assessment of Environmental Effects ("AEE') for the Project.

EXPERIENCE

4. I have more than 13 years' experience in acoustic consulting in both Australia and New Zealand, specialising in environmental / industrial noise and vibration control and three-dimensional computer noise modelling. I have been involved in investigating and reporting on numerous environmental noise matters. I have provided expert evidence on acoustic matters on a number of occasions at council level hearings and in the Environment Court.

5. The relevant projects I have been involved in include:

(a) **Redvale Landfill Re-consenting:** I prepared the assessment of noise effects report included in the Application. I attended the council level hearing and the Environment Court hearing as an expert witness.

(b) **Central Interceptor:** I prepared the assessment of construction and operational noise effects report included in the Application. I attended the council level hearing as an expert witness.

(c) **Pukekohe East Reservoirs:** I prepared the assessment of construction noise and vibration effects report included in the Application. I attended the council level hearing and Environment Court hearing as an expert witness.

INVOLVEMENT IN THE PROJECT

6. I have been involved with the Project since 2019. I visited the Project site at 928 Kaipaki Road, Cambridge ("Site") in November 2020 to familiarise myself with the area. I oversaw the preparation of the acoustic technical report, the details of which I summarise in my evidence.

7. I have read all submissions received on the Application relating to noise.

8. I have also read Council's s42A report prepared by Ms Thomas.

CODE OF CONDUCT

9. Although this is a Council level hearing, I have read the Environment Court's Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and agree to comply with it. My

qualifications as an expert are set out above. I confirm that the issues addressed in this statement of evidence are within my area of expertise.

SCOPE OF EVIDENCE

10. In my evidence, I will:

(a) Provide an overview of the existing noise environment, including the results of background noise monitoring and the identification of nearby potentially sensitive receivers;

(b) Provide an overview of the Project from an acoustic assessment perspective and provide an overview of the potential noise sources associated with its construction and operation;

(c) Explain the methodology I used to predict sound emissions from the noise sources associated with the Project and summarise these predictions;

(d) Set out the relevant Waipā District Plan ("WDP") noise performance standards for construction and operational noise and explain the assessment results that determine that the Project will achieve full compliance with these standards;

(e) Respond to noise issues and concerns raised in submissions;

(f) Respond to matters raised in the s42A Report;

(g) Comment on the Applicant's latest proposed conditions of consent as they relate to noise (attached to Mr Chrisp's planning evidence for the Applicant at **Annexure "A"** ("Proposed Conditions"), including any changes to those conditions that I recommend.

EXECUTIVE SUMMARY

11. Nine receivers were identified by the Acoustic Assessment as being potentially affected by noise from the Project. The location of these receivers range between 132m and 472m from the boundary of the Project Site. Two of the identified receivers raised noise issues in their submissions.[1]

12. The existing daytime acoustic environment has been measured and observed to be controlled by vehicle movement noise on Kaipaki Road.

13. Sand quarrying noise has been predicted using noise levels for machinery that will operate in the quarry based on the ISO 9613-2: 1996 noise propagation standard. Noise levels have been averaged in accordance with NZS 6802: 2008.

14. The relevant performance standards from the WDP have been used in the assessment of operation and construction noise. These WDP standards are proposed as conditions of consent (refer Proposed Conditions 23 - 25).

15. The construction of earth bunds is proposed in the Application to mitigate and reduce operational noise from the Project to ensure that it achieves full compliance with the WDP noise standards. I have been advised that additional noise and visual earth bunds will be constructed by the Applicant in response to requests from neighbours.

16. The Project if consented will generate noise levels typically lower than the road traffic noise presently experienced at receiver properties (from

[1] Rob and Debbie Comez (914 Kaipaki Road); Keith and Amanda Walker (899 Kaipaki Road).

Kaipaki Road). Operational noise will still be audible however it is my opinion that it will not be intrusive.

17. Construction noise associated with the construction of the access road, earth bunds and site buildings will readily comply with the construction noise standard in the WDP.

18. The Application was limited notified and Council received submissions from two neighbours[2] that raise concerns relating to noise associated with the Project. I consider that the noise concerns raised in these Submissions are fully addressed by the Applicant's Proposed Conditions, by the Acoustic Assessment, or by this evidence.

19. The Council's s42A report confirms that noise effects can be adequately controlled through the imposition of conditions of consent.[3]

20. The proposed sand quarry can be constructed and operated to comply with the WDP noise limits. With the proposed mitigation measures in place, I consider that operational noise can be practicably controlled to reasonable levels.

21. I support the adoption of the Applicant's Proposed Conditions relating to noise, subject to one minor amendment as detailed in my evidence.

EXISTING NOISE ENVIRONMENT AND SENSITIVE RECIEVERS

22. A typical effects assessment requires an understanding of the existing noise environment which I note is comprised of the background (L_{A90}) and

[2] Rob and Debbie Comez (914 Kaipaki Road); Keith and Amanda Walker (899 Kaipaki Road).
[3] S 42A report, at 9.33.

ambient (L_{Aeq}) level descriptors. This can be achieved via short-term attended measurements or long-term unattended logging and analysis.

23. My colleague, Mr. Jansen, visited the Site on two separate occasions[4] and measured the existing ambient noise environment at locations off-set from Kaipaki Road by 20m and 60m respectively. The offset distances are analogous to the range of distances from the road to the façades of dwellings adjacent to the road in the area.

24. The background and ambient noise levels measured by Mr Jansen are summarised in Table 1 below.

Table 1: Summary of measured noise levels

Measurement Position	**Measured levels dBA**		**Comments**
	L_{eq}	**L_{90}**	
MP1 20m from road edge	63	38	Kaipaki Rd traffic noise
MP2 60m from road edge	53	40	Traffic noise with intermittent bird calls. No other noise sources in the area

25. In section 3.0 of the Acoustic Assessment Mr Jansen noted that the controlling noise source was traffic movements on Kaipaki Road. Following my recent site visit during which I observed traffic on the road, I concur with my colleague's observation.

26. The Acoustic Assessment identified a number of potentially sensitive receivers. These receivers were selected such that, due to setback

[4] 9 July 2019 and 29 July 2019. Refer to Section 3.0 of the Acoustic Assessment

distance and / or topographical elevation, there was a potential for adverse noise effects which warranted further assessment. Table 2 summarises these receivers.

Table 2: Potentially affected receivers

Receiver – Address	Distance (m) to closest extraction boundary, from Notional Boundary
R1 - 1/898 Kaipaki Road	453
R2 - 898 Kaipaki Road	257
R3 - 906 Kaipaki Road	146
R4 - 914 Kaipaki Road	132
R5 - 899 Kaipaki Road	343
R6 - 1/951 Kaipaki Road	277
R7 - 951 Kaipaki Road	298
R8 - 983 Kaipaki Road	432
R9 - 982 Kaipaki Road	472

27. I attach at **Appendix A** to my evidence a figure showing the location of the receivers identified in the Acoustic Assessment.

PROJECT OVERVIEW AND NOISE SOURCES

28. The Project proposes to quarry sand and transport it off-site via truck. In turn, clean fill would be brought onto the site via truck and placed into previously excavated areas.

29. The proposed hours of operation are 7:00am to 5:30pm weekdays. Saturday operation would occur between 9:00am and 2:00pm. No activity would occur on Sundays or public holidays.

30. The Applicant is seeking to extract up to 200,000m^3 of sand per year. While an open-ended consent duration was initially sought, I understand that the Applicant now offers a consent duration of 15 years.

31. The machinery proposed to operate on Site is as follows:

- Two excavators (1x12-tonne unit and 1x30-tonne unit);
- One front-end loader;
- One bulldozer; and
- Twin-axle and articulated haulage trucks (up to 66 movements entering then exiting the site – 132 movements in total)[5].

32. The machinery described above would inherently move around on Site throughout the life of the quarry. However, I understand that sand extraction is proposed to only occur over 3-hectare sections at any one time.

33. The sand winning machinery (excavators and front-end loader) will operate within the pit approximately 6-7 metres below ground surface level. Consequently, the edge of the escarpment will provide acoustic screening. This inherently reduces noise emission from the Site activities. This was factored into the noise model.

[5] The Acoustic Assessment assessed 82 trucks / 164 movements. The numbers were revised downwards and form condition 34

34. The front-end loader and/or excavators will primarily be used to remove and stockpile overburden. On occasion, the activity might involve a bulldozer to strip larger areas more efficiently. The overburden will be used to construct earth bunds on Site. These will act to screen nearby receivers from activity noise. I note that the activity will still be audible to nearby receivers, albeit the noise experienced will be compliant with the WDP noise limits.

35. I note that the acts of forming earth bunds and establishing haul roads are classified as construction activities. All other activities are classified as part of quarrying operation. Different noise performance standards apply to construction and operational activities occurring on Site in relation to the quarry and cleanfill operations. I discuss these standards further in my evidence.

36. The proposed machinery and associated sound power levels are contained in the table in Appendix F of the Acoustic Assessment. I consider the source levels used by Mr Jansen to calculate noise emissions are representative of the potential noise emissions from the Project.

NOISE PREDICTION METHODOLOGY

37. In preparing the Acoustic Assessment my colleague, Mr Jansen, calculated noise emissions from the proposed sand quarry using the following methodology.

    (a) The noise sources previously described;

    (b) Sand extraction and load-out activities occurring simultaneously;

    (c) Overburden stripping co-occurring with sand extraction to simulate the worst-case scenario;

(d) The Site being operational for up to 10.5 hours per day Monday to Friday;[6]

(e) Calculations use the ISO 9613-2:1996 propagation standard[7] to predict noise at the notional boundary of all identified receivers;

(f) Noise levels have been calculated for four arbitrarily divided sections (refer to **Appendix B** of my evidence); and

(g) The calculated results have been averaged in accordance with NZS 6802:2008.[8]

OPERATIONAL AND CONSTRUCTION NOISE STANDARDS

District Plan noise performance standards

38. All of the receivers surrounding the Site are zoned Rural under the WDP. The WDP contains permitted activity standards for operational and construction noise for Rural Zone receivers, which I explain below.

Operational Noise – Rule 4.4.2.15

39. Rule 4.4.2.15 applies to operational noise in the Rural Zone. It states:

> Noise generating activity…operated and maintained in accordance with the manufacturer's specifications and in accordance with accepted management practices…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

[6] The site would be operational for 5 hours on Saturdays.
[7] ISO 9613-2:1996 "Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation".
[8] Section 6.4 NZS 6802:2008 *"Acoustics - Environmental Noise".*

following limits within the notional boundary of any dwelling (excluding dwellings within mineral extraction sites):

(a)	Daytime – 7.00am to 10.00pm	50dB L_{Aeq}
(b)	Night-time – 10.00pm to 7.00am	40dB L_{Aeq}
(c)	Night-time single noise event	70dB L_{Amax}

The noise levels shall be measured and assessed in accordance with the requirements of NZS 6801:2008 – Acoustics – Environmental Sound and assessed in accordance with 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.

Construction Noise – Rule 4.4.2.19

40. Rule 4.4.2.19 applies to construction noise in the Rural Zone. It states:

> 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.

41. Refer to Appendix C of my evidence for the relevant table of noise limits from NZS6803:1999.

OPERATIONAL NOISE EFFECTS ASSESSEMENT

42. Using the methodology set out in paragraph 37 of my evidence my evidence, Mr Jansen calculated operational noise from the proposed sand quarry as follows:

(a) Based on plant operating in four arbitrarily divided zones;

(b) For the proposed operating hours of 7.00am to 5.30pm Monday to Friday and 9.00am to 2.00pm on Saturday, and

(c) Designed noise control bunds to ensure that operational noise complies with the WDP noise limit.

43. Mr Jansen also recommended management measures to ensure that adjacent landowners were kept informed when sand quarrying is foreseen to approach their homes.

44. The following paragraphs summarise the calculated noise levels and assessment of effects.

45. Table 3 below reproduces Table 3 from the Acoustic Assessment. It sets out the predicted rating levels for each receiver for each source zone. I note that the results include noise from 82 trucks entering and leaving (164 movements). The predictions therefore overestimate noise emission from truck movements, given proposed condition 34 places a limit on the maximum number of trucks at 66 per day (132 movements).

Table 3: Calculated rating noise level (including 82 trucks per day)

Loc. / Address	**Rating Noise Level (dB L_R)**					**Complies with ODP Limit?**
	Existing Ambient Level (dB L_{Aeq})	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	
R1 - 1/898 Kaipaki Rd	49	**50**	44	41	40	Yes
R2 - 898 Kaipaki Rd	48	**49**	44	44	42	Yes
R3 - 906 Kaipaki Rd	53	**49**	45	47	44	Yes
R4 - 914 Kaipaki Rd	50	45	43	**48**	44	Yes
R5 - 899 Kaipaki Rd	54	**45**	42	42	41	Yes
R6 - 1/951 Kaipaki Rd	51	39	39	**44**	42	Yes
R7 - 951 Kaipaki Rd	50	38	38	**44**	42	Yes

Loc. / Address	Rating Noise Level (dB L_R)					Complies with ODP Limit?
	Existing Ambient Level (dB L_{Aeq})	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	
R8 - 983 Kaipaki Rd	54	35	36	**40**	**40**	Yes
R9 - 982 Kaipaki Rd	54	34	35	39	**41**	Yes

46. The calculated results shown in Table 3 range between 34 and 50 dB L_{Aeq} with earth bund mitigation in place for quarrying in Zone 1. The results fully comply with the WDP noise limit of 50 dB L_{Aeq} daytime.

47. The measured background noise level in the area is 38 - 40 dB $L_{A90.}$[9] The background noise level describes the acoustic environment in the absence of noisier events such as nearby traffic movements on Kaipaki Road.

48. The measured ambient noise level range is 53 – 63 dB $L_{Aeq.}$[10] The ambient noise level describes the acoustic environment based on noisier but shorter-term events, such as in this case nearby traffic movements on Kaipaki Road.

49. Regarding potential effects the Acoustic Assessment found:[11]

> Noise from the proposed activity received at near-by [sic] dwellings would be audible, particularly during lulls in traffic movements on Kaipaki Road. However, given the activity is predicted to comply with the 50dB L_{Aeq} rural zone limit and would generate noise [levels] lower than road traffic noise (refer to Table 1), the potential effects are considered to be acceptable.

[9] . Table 1 paragraph 3.3 of evidence
[10] Table 1 paragraph 3.3 of evidence.
[11] Last paragraph of Section 5.2 of the Acoustic Assessment.

50. I concur with the Acoustic Assessment's conclusion regarding operational noise effects.

CONSTRUCTION NOISE ASSESSMENT

51. The Acoustic Assessment states:[12]

> Provided that standard construction practices are used for the new site office building, internal access roads and earth bunds, and given the distance to the nearest residence, the activity is anticipated to readily comply with the noise limits in New Zealand Standard NZS 6803:1999 "Acoustics: Construction Work".

52. I concur with the Acoustic Assessment's conclusion regarding construction noise compliance.

RESPONSE TO SUBMISSIONS

53. I have read the submissions lodged on the Project that relate to acoustic matters. There were two in total. I address these below.

Rob and Debbie Comez (914 Kaipaki Road)

54. The Comez submission expresses concern in relation to the following areas:

(a) The proposed noise bunds are too limited in footprint and height;

(b) Noise pollution from reverse beepers on machinery;

(c) Noise from overburden stripping on Saturdays; and

(d) Noise from heavy vehicle movements prior to 9.00am Saturdays.

[12] Section 5.3 of the Acoustic Assessment

55. I now address each of these concerns.

56. Regarding the proposed noise bunds I understand that the Applicant has met with the Comez's and has agreed to construct earth bunds above and beyond the recommendations in the Acoustic Assessment.

57. A noise bund is now proposed to run the full length of the sealed access road. An amenity bund is also proposed a little closer to the Comez's property.

58. Regarding planting of the proposed bunds, whilst I do not believe that plantings will enhance the noise reduction properties of the bunds, I am of the opinion that they will provide a psycho-acoustic effect in that they will obscure the sand quarry's sources from adjacent landholdings, thus providing a disconnect between what is seen and what is heard.

59. Regarding the use of reverse warning beepers on vehicles and machinery on Site I note that their use is primarily required for health and safety reasons and is therefore mandatory.

60. I am aware of an alternative to the common tonal reverse beeper, and it is available for sale in New Zealand. The system uses a broadband sound (sound spread out across all audible frequencies) rather than a tonal sound (sound focused at 1,000 Hertz) to provide an audible warning when a vehicle reverses. I note that this system has been successfully implemented on major infrastructure projects.[13]

61. I generally recommend that this type of warning system be implemented on all earthmoving plants.

[13] Waterview Tunnel, Victoria Park Tunnel.

62. I refer to my evidence starting at paragraph 88 where I recommend changes to the wording of Proposed Condition 30 contained in Annexure A of Mr Chrisp's evidence. Currently, the condition prohibits reverse beepers on any vehicles or earthmoving machinery used on site. It is my opinion that the condition should be more specific and exclude the use of "tonal" reverse beepers.

63. Regarding soil stripping I understand that Proposed Condition 29 restricts this activity to between 10.00am and 4.00pm Monday to Friday where it occurs less than 300m from an occupied dwelling unless written approval has been provided by the owner / occupant.

64. Regarding the concern about noise from heavy vehicle movements prior to 9.00am Saturdays I understand that the hours of proposed Saturday operation have been changed and are now 9.00am to 2.00pm, as reflected in Proposed Condition 22 contained in Annexure 1 of Mr Chrisp's evidence.

65. I understand that the Comez's are happy with the changes made to the conditions and that they address all of their concerns. I am advised that on the basis of the above, that the Comez's have agreed to withdraw their submission in opposition to the Application.

Keith and Amanda Walker (899 Kaipaki Road)

66. The Walker's submission expresses concern or seeks conditions of the consent (should it be granted) in relation to the following areas:

    (a) "Unusual" noise from quarrying activities could potentially frighten horses being trained;

(b) A condition mandating the use of non-tonal reverse beepers;

(c) Construction of a 3m high noise and visual bund along the length of the Site's northern boundary and for it to be planted;

(d) No overburden stripping or general Site works (other than sand extraction or acceptance of clean fill) to occur on Saturdays;

(e) A condition prohibiting the use of either a crusher or sand washer on Site;

(f) The use of quiet seal on the road outside the quarry entrance; and

(g) Signage along Kaipaki Road and on the Site preventing the use of truck engine brakes.

67. I now address each of these concerns.

68. Regarding the issue of horses being frightened by "unusual" noises it is my opinion that the Walker's are referring to instantaneous, louder bangs and crashes which typically occur when empty truck and trailer units encounter an uneven road surface or potholes. The potential for this to occur can be significantly reduced by regular road / driveway maintenance. I refer to the evidence of Stephen Marsh who addresses the startle effects on horses and do not discuss this any further.

69. The Applicant has no control over the maintenance programme for the adjacent section of Kaipaki Road. I also note that non-site related trucks could also emit similar noise if they encounter poorly maintained roads and this too is outside the control of the Applicant and therefore was not a consideration in the Acoustic Assessment.

70. The Applicant's Proposed Condition 8 requires them to construct and maintain a sealed access road. I rely on the evidence of Mr Marsh for the Applicant that the chance of startle events from truck and trailer movements entering and exiting the Applicant's Site is unlikely to startle horses using the Walker's canter track.

71. I consider the Walker's request for a condition mandating the use of non-tonal reverse beepers to be adequately addressed by the Applicant's Proposed Condition 30, subject to my recommended minor amendment as discussed starting at paragraph 88 of my evidence.

72. Regarding the Walker's request for a 3m high noise bund along the entire length of the northern boundary it is my opinion that this is unnecessary from a noise compliance perspective. I consider the bunding proposed by the Applicant, which as I previously noted goes above and beyond the Acoustic Assessment's recommendations, adequately addresses the Walker's concerns.

73. The Walker's have requested that no overburden stripping or general site works occur on Saturday's other than sand extraction or acceptance of clean fill. I consider the Applicant's Proposed Condition 29 adequately addresses their concern regarding overburden stripping because it restricts the activity to 10.00am to 4.00pm weekdays unless it is more than 300m away from a dwelling (or written approval is provided to the consent holder allowing it to occur).

74. It is my opinion that a Saturday restriction on "general site works" is unnecessary because Proposed Condition 23 provides the appropriate control.

75. Regarding the Walker's request for a condition prohibiting the use of either a crusher or sand washer on Site it is my understanding that neither plant is proposed for this Project. The Applicant's proposed condition 31 prohibits the use of mechanical sand processing plant on site. I consider that this adequately addresses the Walker's concern.

76. The Walker's have requested the use of "quiet seal" on the road outside the quarry. It is my understanding that this request refers to the use of hot mix asphalt rather than the more customary coarse chip.

77. It is my experience that asphalt provides a more durable road surface with the added benefit of reduced road traffic noise. Unfortunately, road surface selection is outside the control of the Applicant and is a decision made by Council.

78. The Walker's have requested the erection of signage along Kaipaki Road and on the Site preventing the use of truck engine brakes. I consider the Applicant's Proposed Condition 35 adequately addresses the Walker's concern.

Increased heavy vehicle movements on Kaipaki Road

79. Although not a submission from a member of public, Council has raised the issue of increased traffic noise impacts for dwellings located adjacent to Kaipaki Road in the vicinity of the Project.

80. The integrated transport assessment (the "**ITA**") also discussed the issue. It stated:[14]

> There may also be an increase in the adverse amenity effects (e.g. noise) experienced by residents along this

[14] Section 3.8.1 page 21 of the Integrated Transport Assessment prepared by Gray Matter (21 April 2020).

> section of Kaipaki Road. Our understanding is that for there to be a noticeable increase in noise (approx. 3dB) the traffic volume would need to double.

81. District plans typically do not contain noise controls for vehicles using public roads. This is left to New Zealand Standard NZS 6806:2010 "Acoustics - Road-traffic noise - New and altered roads". I note that NZS 6806:2010 does not apply to this Project.

82. The Acoustic Assessment did not address the matter. However, I agree with the ITA in that for there to be a noticeable change in sound level a 3 dB increase would need to occur.

83. The Project will increase traffic flows on Kaipaki Road by no more than 132 heavy vehicle movements per day, taking the total traffic flow to 3,332 vpd and 14% heavy vehicles.[15] I calculate an increase in traffic noise of only 1 dB. This is an imperceptible change. Therefore, it is my opinion that the Project will not generate adverse traffic noise effects for residents adjacent to Kaipaki Road.

RESPONSE TO SECTION 42A REPORT

84. I have read the section 42a report, prepared by Ms Thomas, as it relates to my field of expertise. Noise effects are discussed by Ms Thomas starting at paragraph 9.27.

85. Ms Thomas advises in paragraph 9.29 that Council's Manager Compliance, Mr Tutty, has reviewed the Acoustic Assessment and concurs with the conclusions it reaches.

86. Ms Thomas concludes that:

[15] Existing traffic count information for Kaipaki Road, sourced from the ITA, is 3,200 vpd and 10% heavy vehicles.

> …it is my opinion the proposed conditions of consent (i.e. Conditions 22 to 26), should consent be granted, will ensure the noise effects are acceptable for the rural environment.

87. I concur with Ms Thomas' conclusion that the imposition of noise conditions of consent will ensure noise effects are acceptable. It is my opinion that the version of conditions proposed by the Applicant, subject to my proposed minor edit, will provide the appropriate protection to ensure noise remains reasonable.

COMMENT ON PROPOSED CONSENT CONDITIONS

88. I have reviewed the Applicant's Proposed Conditions as they relate to noise. I am in general agreement that they are suitable for this Project and should consent be granted will ensure that noise emissions will remain reasonable. I do have one edit which I propose below and discuss.

> Condition 30
>
> There shall be no vehicle reversing beepers used on any vehicles or earthmoving machinery used on site.

89. Whilst I agree with the intent of the condition, I consider that is requires more specificity. I propose that the condition explicitly prohibit the use of *tonal* vehicle reversing beepers because as it is currently proposed, it is my opinion that it prohibits the use of all vehicle reversing beepers, which is a contravention of health and safety regulations.

90. I therefore propose the following minor change (additions <u>underlined</u>):

> Condition 30
>
> There shall be no <u>tonal</u> vehicle reversing beepers used on any vehicles or earthmoving machinery used on site.

CONCLUSION

91. I conclude that the proposed sand quarry can be constructed and operated to comply with the WDP noise limits. With the proposed mitigation measures in place, I consider that operational noise can be practicably controlled to reasonable levels.

92. I support the adoption of the Applicant's Proposed Conditions relating to noise, subject to one minor amendment as detailed above.

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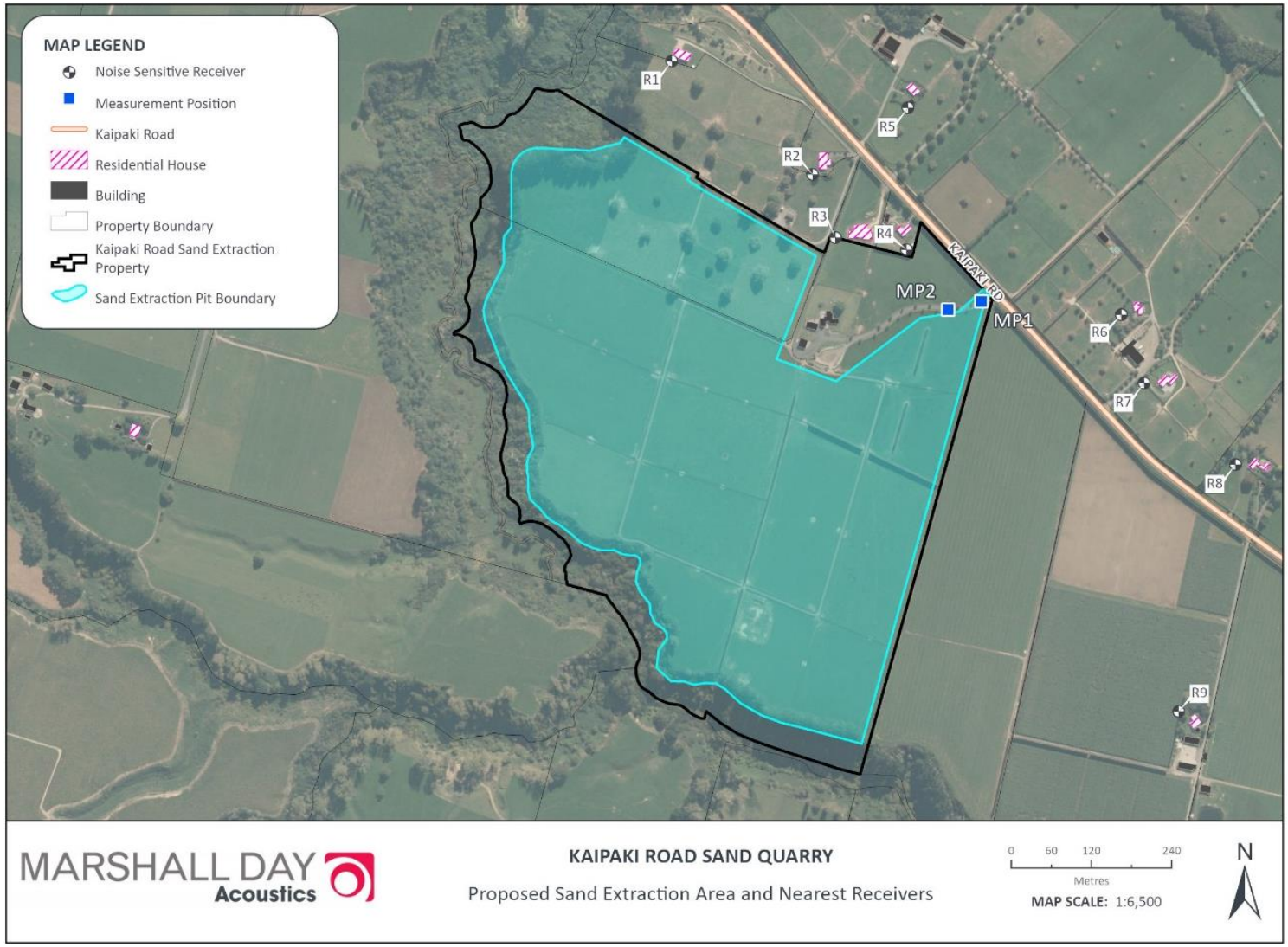
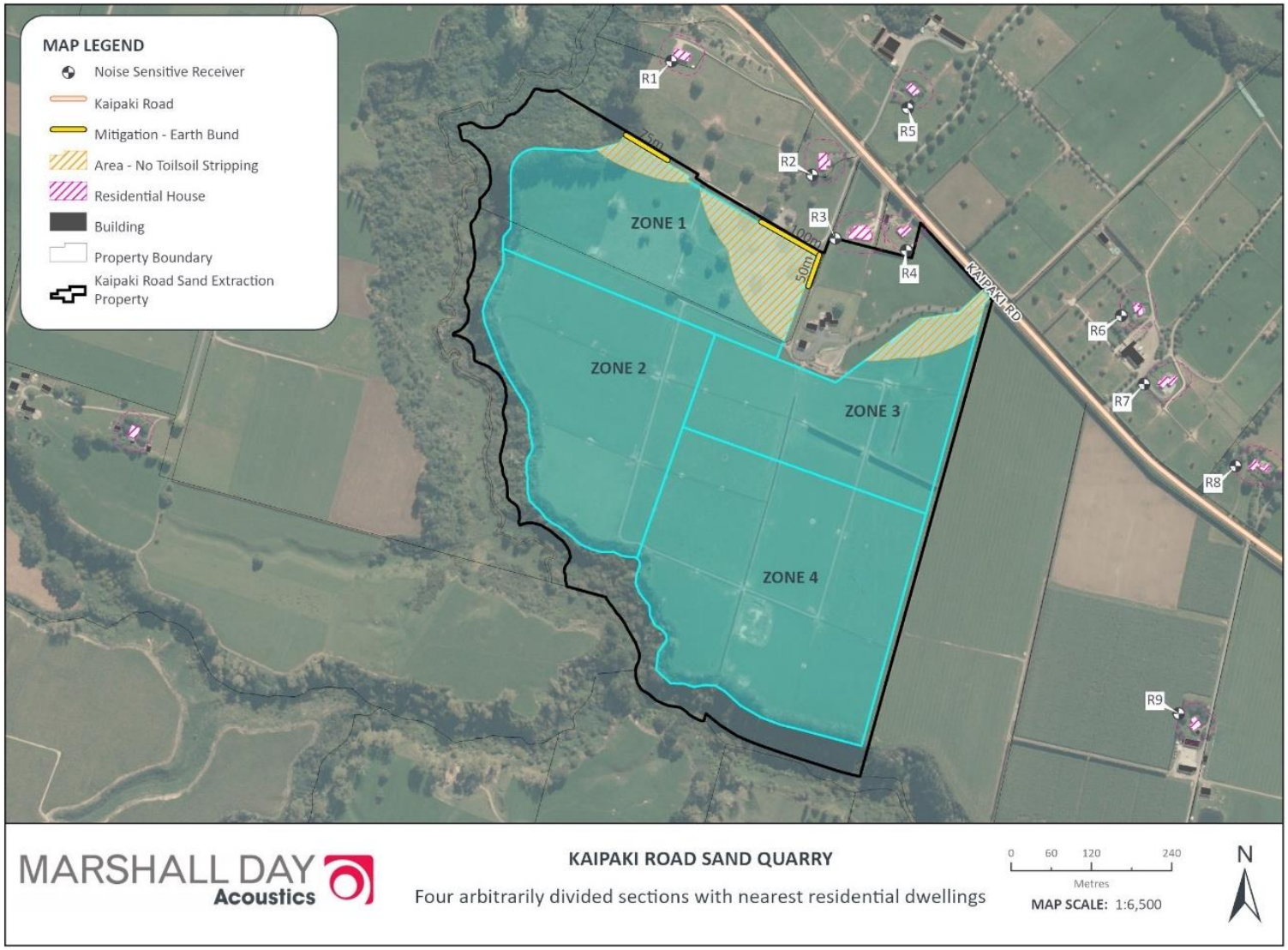
Mathew John Cottle
6 November 2020

APPENDIX A PROJECT SITE AND NEAREST RECEIVERS



APPENDIX B NOISE CALCULATION ZONES



APPENDIX C NZS 6803:1999 NOISE LIMITS

Table 2 – Recommended upper limits for construction noise received in residential zones and dwellings in rural areas

Time of week	Time period	Duration of work					
		Typical duration (dBA)		Short-term duration (dBA)		Long-term duration (dBA)	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Weekdays	0630-0730	60	75	65	75	55	75
	0730-1800	75	90	80	95	70	85
	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	85	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

"