Before the Hearing Commissioners

Appointed by Canterbury Regional Council and Selwyn District Council

Under	The Resource Management Act 1991
In the matter of	an application by Southern Screenworks Limited for land use consents and discharge permits associated with the extension of, and changes to, existing quarry operations at 50 Bealey Road, Kirwee

Statement of evidence of William Peter Reeve

31 March 2025

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Qualifications and experience

1 My full name is William Peter Reeve. I am employed as a Senior Associate Acoustic Engineer with Acoustic Engineering Services.

2 I hold a Bachelor of Engineering with Honours from the University of Auckland. I am a member of the Acoustical Society of New Zealand.

3 I have over 13 years' experience in the field of acoustic engineering consultancy and have been involved with many environmental noise assessments on behalf of applicants, submitters and as a peer reviewer for Councils, including other quarries, and activities involving heavy vehicles on the road network.

4 My role in relation to the Southern Screenworks Limited (**Southern Screenworks**) application to extend the existing cleanfill at 50 Bealey Road, Kirwee (**Application** and **Site**) has been to provide advice in relation to noise effects. I reviewed and approved the Assessment of Environmental Noise Effects report dated the 16th of May 2024, which was attached as Appendix G of the AEE. I also attended the pre-hearing meeting on the 11th of March 2025.

5 I have since undertaken further predictions of noise from the proposed activity to reflect the changes to the proposal since lodgement.

6 In preparing this statement of evidence I have considered the following documents:

(a) the AEE accompanying the Application;

(b) submissions relevant to my area of expertise;

(c) the statement of evidence of Ms Sarah Bonnington which provides an overview of the proposed extension of the quarry and how it is intended to operate, including machinery used on site;

(d) the noise provisions of the Selwyn Partially Operative District Plan (PODP); and

(e) the section 42A report, which includes a peer review undertaken by Mr Jon Farren of Marshall Day Acoustics at Appendix 3.

7 I am familiar with the site and have previously visited and undertaken noise monitoring of Southern Screenworks' equipment here and in the surrounding area. My colleague Mr Caleb Tevaga undertook further supplementary noise studies in 2024, and I have also reviewed his measurement results and observations.

Code of Conduct for Expert Witnesses

8 While this is not a hearing before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of evidence

9 I have prepared evidence in relation to:

(a) the existing noise environment in the vicinity of the Application Site;

(b) the key findings of my assessment of effects, including results of updated modelling;

(c) matters raised by submitters to the Application;

(d) matters raised in the Selwyn District Council (SDC) staff report (issued under s42A of the RMA); and

(e) proposed conditions of consent.

Executive summary

10 The ambient noise environment in the vicinity of the site is typical of rural areas relatively close to transportation links. Current noise levels at dwellings to the south of Bealey Road are primarily influenced by road traffic.

11 In this environment, where operational noise from peak quarry activity, including the extension is less than 55 dB $L_{Aeq\ (15\ min)}$, I consider that an acceptable level of residential amenity will be maintained for the key dwellings to the south of Bealey Road.

12 This limit is consistent with what is enabled by the PODP at the notional boundary of dwellings in this zone – for permitted activities. It is also consistent with the upper guideline values for residential amenity outlined in NZS 6802:2008 *Acoustics - Environmental Noise*, and the World Health Organisation *Guidelines for Community Noise*.

13 I have modelled activity in the worst-case stages of the quarry with processing plant, and related equipment operating simultaneously alongside peak heavy vehicle activity on the site. I have updated my modelling to reflect the increased

setbacks for processing activity and extraction that Southern Screenworks have proposed in response to submitter concerns.

14 On this basis I have predicted noise levels of 49 dB $L_{Aeq\ (15\ min)}$ at 137 Bealey Road, 46 dB $L_{Aeq\ (15\ min)}$ at 153 Bealey Road, and 51 dB $L_{Aeq\ (15\ min)}$ at 23 Bealey Road. For the dwellings at 137 and 153 Bealey Road, noise levels will be lower when processing equipment is not operating on weekends or public holidays.

15 I have also confirmed that noise levels may be 1 – 3 dB higher at these locations when a second crusher operates on the site, as I understand may occur for up to 10 days annually. This means that the proposed daytime noise limit can also be met when this occurs, and a condition requiring a separate assessment for this aspect is no longer required.

16 My calculated noise levels from transporters moving on and departing the site before 7 am are expected to remain well below existing traffic noise levels at 23 Bealey Road and comply with the proposed noise limits for the site.

17 Given the setbacks between site works and the closest dwellings, I expect it will be practical for construction work associated with the extension to comply with the construction noise standards – and consider the proposed conditions an appropriate control in this regard.

The existing environment

18 During the proposed operating hours of the quarry, the main contributor to ambient noise levels at the dwellings to the south of Bealey Road is traffic movements on this road – within the order of one to three vehicles a minute observed during our daytime visits to the site[1]. Based on noise monitoring conducted during these visits, I expect that noise from existing traffic movements at the closest façade of the dwellings at 23, 137 and 153 Bealey Road will be in the order of 52 – 55 dB $L_{Aeq\ (15\ min)}$ at times during the day.

19 Traffic noise levels will further reduce with distance and there will be areas on these neighbouring properties that receive lower traffic noise levels. Background levels, representing periods when traffic is not passing on the closest portions of Bealey Road, and there is little audible quarry activity, will be lower – in the order of 43 dB L_{A90} at these dwelling locations.

20 The current noise environment in the vicinity of the site includes the current Southern Screenworks activity.

[1] From observations commencing 10.30 am on the 26th November 2020 and 2.40 pm on the 25th of March 2024.

21 Southern Screenworks trucks generally travel to / from the east to West Coast Road, passing 23 Bealey Road. The existing environment at this location includes the contribution from Southern Screenworks trucks that already access the site. For context, if comparing to a baseline without quarry traffic I have calculated that peak on road heavy vehicle activity from Southern Screenworks could increase 24-hour average (L_{Aeq}) traffic noise levels at 23 Bealey Road by 2 dB.

22 The dwellings at 137 and 153 Bealey Road are further removed from the current activity and will receive lower noise levels from it. During site visits, little contribution from the existing quarry activity was observed at these locations.

23 Noise monitoring undertaken between 6 am and 7 am on 24 July 2024 confirmed that there is a similar volume of vehicles on Bealey Road to our observations later in the day[1], again in the order of three vehicles a minute, with one in five being a heavy vehicle. Noise levels were of a similar order to those observed during the day.

24 Ambient noise levels are lower at dwellings further removed from nearby roads, for example 35 and 158 Bealey Road. However, these properties have provided written approval to the proposed activity.

25 Conversely, the influence of State Highway 73 becomes more prominent for dwellings on Railway Road, and background noise levels are higher at these locations. The closest dwellings on Railway Road are located within either the State Highway Noise Control Overlay, or the Railway Network Noise Control Overlays in the PODP. 23 Bealey Road is also located within the Railway Network Noise Control Overlay.

26 Along with noise from rail movements, I expect there will also be other sources present in the wider area on a transient basis, for example mobile machinery associated with rural production.

27 Overall, I consider that the ambient noise environment in the area in the vicinity of the site is typical of rural areas relatively close to transportation links. Noise levels at dwellings close to the road are primarily influenced by traffic, even without an existing quarry contribution, and in the absence of traffic noise levels may often be relatively low.

Appropriate assessment criteria for operational noise

28 A daytime operational noise limit of 55 dB $L_{Aeq\ (15\ min)}$ is consistent with what is enabled by the PODP at the notional boundary of dwellings in this zone – for activities permitted in this zone. This limit is also consistent with the upper guideline values for residential amenity outlined in NZS 6802:2008 *Acoustics* -

Environmental Noise, and the World Health Organisation *Guidelines for Community Noise*.

29 Noise levels in some areas of the rural zone can be much quieter than this at times. However, in this case, as I have discussed above, ambient noise levels at the key receivers south of Bealey Road are not unusually low during quarry operating hours because of the presence of traffic noise. A control that is more stringent than the PODP is not warranted at these locations.

30 I also note that the PODP 'daytime' noise limit applies between 7 am and 10 pm seven days a week. The proposed operating hours of the quarry are shorter than this, with proposed operating hours only until 6 pm Monday to Friday, and no activity on Sundays or public holidays. Limitations have also been proposed on Saturday activity which will only occur from 7 am to 1 pm.

31 Therefore, in this situation if quarry noise levels predicted on a worst-case basis remain below 55 dB $L_{Aeq\ (15\ min)}$ at the notional boundary of dwellings, I consider this will maintain an acceptable level of residential amenity.

Predicted noise levels from quarrying activity

32 To confirm the noise levels that are expected, I have modelled scenarios for each of the quarry stages. These represent extraction and processing activities in the closest locations relative to key dwellings, and peak activity on the site, as follows:

(a) Mobile crushing and screening plant operating on the base of the quarry pit.

(b) Excavator on site working the quarry face. Either an excavator or loader will excavate the pit face.

(c) Three loaders operating on site. Two are in the quarry pit and are associated with excavating the pit face, filling the feeder hopper, relocating material, and loading out trucks. One is in the existing cleanfill area.

(d) Heavy vehicle movements based on a peak day, with four movements in or out of the site in a 15-minute period. The same number of movements have been assumed in the cleanfill area.

33 Although the quarry will typically make use of one crusher and one screening unit at any one time, on occasion (no more than 10 days a year), I understand a second crusher and screening unit may be required to process specific materials, and both sets of equipment will need to operate simultaneously. I have also modelled this scenario.

34 I have calculated the propagation of noise from these sources using computational noise modelling software SoundPLAN. This model implements the calculation

standard ISO 9613 which means that predictions are representative of conditions favourable to sound propagation, such as light downwind conditions or ground-based temperature inversions.

35 This makes the modelling conservative in weather conditions which do not reflect this. I have also modelled previously completed quarry stages as an open pit, which reduces the amount of screening, and is also a conservatism in the modelling.

36 In response to concerns raised by submitters, Southern Screenworks have volunteered several conditions which will reduce noise levels received at neighbouring dwellings. These are:

(a) No aggregate processing within Stages 3 and 4.

(b) No aggregate extraction within 150 m of the notional boundary of the dwelling at 23 Bealey Road, or 200 m of the notional boundary of the dwellings at 137 and 153 Bealey Road (unless written approval is provided).

(c) No aggregate extraction within 300 m of the dwellings at 137 and 153 Bealey Road on Saturdays.

(d) A 3 m high bund in the southwest corner of the site (near 153 Bealey Road) is to be established at the start of Stage 3.

37 Southern Screenworks are also proposing to relocate the truck and trailer loading zone from a location opposite 23 and 35 Bealey Road, to another location west of the existing offices / workshop. This increases the distance between these activities and the closest dwellings, and I have discussed this later in my evidence in relation to concerns raised by the submitter at 23 Bealey Road.

38 I have attached to my evidence updated noise contours for Stages 3 and 4 of the quarry which reflect the changes proposed by Southern Screenworks. These stages are closest to the dwellings at 137 and 153 Bealey Road, and by implementing these changes, predicted noise levels reduce to well below 55 dB $L_{Aeq\ (15\ min)}$. The revised predictions are as follows:

137 Bealey Road	Stage 3 – 49 dB $L_{Aeq\ (15\ min)}$
	Stage 4 – 48 dB $L_{Aeq\ (15\ min)}$
153 Bealey Road	Stage 3 – 46 dB $L_{Aeq\ (15\ min)}$
	Stage 4 – 46 dB $L_{Aeq\ (15\ min)}$

39 In a scenario where two crushers operate simultaneously in a similar location to what I have shown in this modelling; noise levels will increase by 2 – 3 dB at the

notional boundary of 137 and 153 Bealey Road. This still comfortably complies with the proposed 55 dB $L_{Aeq\ (15\ min)}$ daytime noise limit and is also below the traffic noise levels observed near these locations.

40 On Saturdays, given the increased extraction distance and restriction on the use of processing equipment, noise levels from the quarry are predicted to reduce to 42 dB L_{Aeq} or below at the notional boundary of these two dwellings, which is of a similar order to the background noise levels measured at these properties, in the absence of traffic passing on Bealey Road.

41 Predicted noise levels at 23 Bealey Road are 51 dB $L_{Aeq\ (15\ min)}$ for Stage 1 of the quarry extension and I have attached a revised noise contour to my evidence for this Stage. If a second crusher is used simultaneously in the existing quarry pit (as I have described may be required on occasion), noise levels are predicted to be 52 dB $L_{Aeq\ (15\ min)}$. Noise levels at this location remain similar for the latter stages of the quarry, and with a second crusher operating because of the relative contribution from trucks on the access.

42 I note that while noise from the quarry and existing traffic on Bealey Road will add cumulatively at times, in this case I do not expect it will result in a consequential change to overall noise levels at any of the key dwellings. For the dwellings at 137 and 153 Bealey Road, the change in overall levels during the operating scenario I have described in paragraph 38 would be 1 dB or less. At 23 Bealey Road, the overall predicted levels have not changed when compared to the current quarry operations.

Transporters

43 As described in the evidence of Ms Bonnington, Southern Screenworks operates two large vehicles used for transporting heavy vehicles and machinery. These transporter movements will need to occur between 6 am and 7 am on occasion, which is outside the typical daytime period reflected by the PODP noise limits.

44 I have calculated a noise level of 45 dB $L_{Aeq\ (15\ min)}$ at the façade of the dwelling at 23 Bealey Road from a transporter passing. This means that noise from this activity will remain well below the traffic noise levels that will be received at the façade of 23 Bealey Road at this time of the day, based on our measurements at this time.

45 I also note that the component of this noise that is generated on the site itself will readily comply with the proposed 45 dB $L_{Aeq\ (15\ min)}$ limit that applies at the notional boundary of this dwelling.

Construction noise

46 Noise generated by construction activities associated with the site preparation for the extended quarry area has the potential to adversely affect nearby sensitive receivers. These short duration works associated with site establishment, creation of access roads and bunds, topsoil stripping and the construction, rehabilitation and removal of earthen bunds is typically assessed under construction noise standards.

47 Given the site setbacks I expect it will be practical for such works to comply with the construction noise standards – and an appropriate control is included in the proposed conditions.

Matters raised by submitters

48 The submissions from Coleman (153 Bealey Road), Wiig (1062 Railway Road), Nunn (23 Bealey Road) and Voice (137 Bealey Road) included noise related concerns. Many of these concerns were explored at the pre-hearing meeting, and the additional conditions I have discussed above have been proposed by Southern Screenworks in response.

Coleman – 153 Bealey Road

49 The Coleman submission describes how the property at 153 Bealey Road was purchased with the intention of living in a quiet peaceful area. The occupants have observed quarry activity from 23 Bealey Road which led to concerns about the character and level of the noise that would be enabled by the proposal.

50 The underlying District Plan limits which are being adopted as a condition of consent for this proposal are typical of those in a working rural area – in that they enable a moderate level of noise during daytime hours, and therefore a degree of change in some scenarios.

51 Southern Screenworks has since volunteered an increased setback from the notional boundary of this property for both processing and extraction activity, which will reduce noise levels to below 50 dB L_{Aeq} in a peak operating scenario – which constitutes a superior level of amenity than the underlying District Plan noise limits. As I have described above, lower noise levels are also expected on Saturdays.

Wiig – 1062 Railway Road

52 The Wiig submission discusses concerns about extra traffic, including transporters leaving between 6 and 7 am. The increased frequency of crushing operation is also raised as a concern – with potential impacts on work and being outside.

53 I note that the predicted noise levels at this property are relatively modest, at 45 – 47 dB L_{Aeq} over the quarry stages. This is lower than background daytime noise levels I have previously measured in the vicinity of this site, primarily from State Highway 73. While quarry activity may still be heard at this location this illustrates that any impacts on work or being outside are likely to be limited.

Voice – 137 Bealey Road

54 The Voice submission (137 Bealey Road) describes how at times the existing activity can generate elevated noise and raises concerns that the extension will increase the intensity and frequency of this. The submission also describes how quarrying activities have a different character from usual farming noises.

55 Southern Screenworks have since volunteered further operating setbacks, which will ensure that for typical operation, quarry noise levels of at least 6 dB below the PODP daytime limits will be received during the worst-case quarry stages. Further restrictions on processing activity on the weekend and statutory holidays have also been proposed and will further mitigate potential noise effects.

56 The operation of mobile machinery is a typical noise source in the rural area – although I do appreciate that in many cases it may often only be present for short periods at a time. I also note that the PODP does enable Mineral Extraction, including processing activity, in the rural zone, subject to the management of adverse effects. This means that to some extent, noise with a similar character is not unexpected in this context. In this case, Southern Screenworks have volunteered setbacks and additional controls relating to weekend activity to manage adverse noise effects.

Nunn – 23 Bealey Road

57 The Nunn submission (23 Bealey Road) describes some of the aspects that can be heard from the existing quarry activity. From further questions and comments from the submitter at the pre-hearing meeting, I understand that many of these concerns related to the storage and movement of trucks and heavy machinery on the portion of the site closest to this dwelling which created a higher likelihood of transient higher noise events.

58 Southern Screenworks have since agreed to relocate this machinery to an area west of the main site office and workshop which is further from this dwelling which I consider a pragmatic approach to reducing noise from this activity. The additional distance involved will reduce noise from any louder events by in the order of 7 dB – and there may also be some additional screening from the Southern Screenworks buildings and bund at 35 Bealey Road.

Summary

59 While concerns have been raised in submissions, Southern Screenworks have engaged with neighbour concerns, and volunteered additional limitations on their activity which will reduce the noise levels received at these properties to well below the District Plan noise standards even during peak weekday activity.

Matters raised by SDC staff report

60 Mr Tim Hegarty prepared the section 42a report for SDC, relying on the acoustic peer review undertaken by Mr Jon Farren of Marshall Day Acoustics.

61 Mr Farren has agreed that the proposed daytime and night-time noise limits are appropriate and will result in reasonable effects for the closest dwellings along Bealey Road.

62 Mr Farren also appears to confirm general agreement with my descriptions of the existing environment, and the noise prediction methodology and assumptions I have used – ultimately concluding that the potential noise effects of the proposal have been appropriately assessed.

63 I generally agree with the conditions proposed by Mr Farren and included by Mr Hegarty – subject to the following notes.

64 As I have discussed earlier in my evidence, I have revised my modelling to include the proposed mitigation by Southern Screenworks. As part of this, I have also confirmed that a second crusher operating in Stages 2 and 5, or in the existing pit area – as may happen on occasion, will be able to comply with the proposed daytime noise limit. This change is primarily because of the increased setbacks now incorporated by Southern Screenworks into the proposal and means that there will be no need for a separate assessment at a later date.

65 I also recommend that the noise limit condition applies only at dwellings that exist when this consent is granted. Irrespective of rule GRUZ-REQ11 – which is intended to maintain suitable setbacks between new dwellings and existing quarry activities – this would provide certainty of the limits that apply should a new activity establish via a consent process.

Proposed consent conditions

66 I have reviewed the relevant proposed conditions and consider these to be consistent with my assessment and recommendations – subject to the change noted in 65 above.

Conclusion

67 Overall, I consider that the ambient noise environment in the area in the vicinity of the site is typical of rural areas relatively close to transportation links. Current noise levels at dwellings to the south of Bealey Road are primarily influenced by traffic, and in the absence of traffic noise levels may often be relatively low.

68 In this environment, where operational noise from peak quarry activity, including the extension is less than 55 dB $L_{Aeq\ (15\ min)}$, I consider that an acceptable level of residential amenity will be maintained for the key dwellings to the south of Bealey Road.

69 This limit is consistent with what is enabled by the PODP at the notional boundary of dwellings in this zone – for activities permitted in this zone. It is also consistent with the upper guideline values for residential amenity outlined in NZS 6802:2008 *Acoustics - Environmental Noise*, and the World Health Organisation *Guidelines for Community Noise*.

70 I have modelled activity in the worst-case stages of the quarry with processing plant, and related equipment operating simultaneously alongside peak heavy vehicle activity on the site. I have updated my modelling to reflect the increased setbacks for processing activity and extraction that Southern Screenworks have proposed in response to submitter concerns.

71 On this basis I have predicted a noise level of 49 dB $L_{Aeq(15\ min)}$ at 137 Bealey Road, 46 dB $L_{Aeq(15\ min)}$ at 153 Bealey Road, and 51 dB $L_{Aeq(15\ min)}$ at 23 Bealey Road. These levels are 4 – 9 dB lower than the proposed limit when accounting for the operating restrictions proposed by Southern Screenworks. Noise levels will be lower when processing equipment is not operating, and this will not occur on weekends or public holidays.

72 I have also confirmed that the proposed daytime noise limit will also be met if a second crusher operates on the site, as I understand may occur for up to 10 days annually. This means that a condition requiring a separate assessment of this aspect is no longer required.

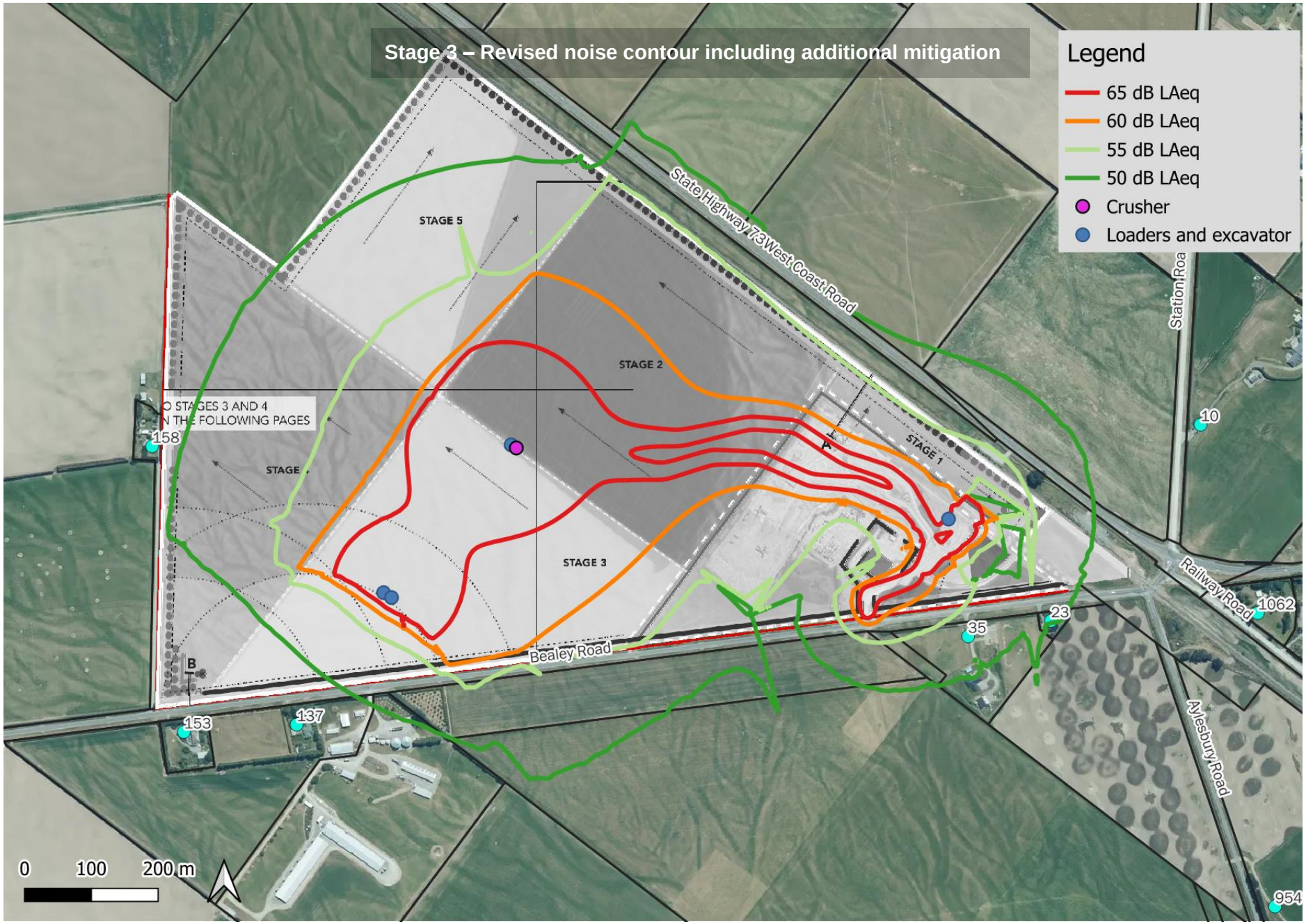
73 My calculated noise levels from transporters moving on and departing the site before 7 am are expected to remain well below existing traffic noise levels at 23 Bealey Road and comply with the proposed noise limits.

74 Given the setbacks between site works and the closest dwellings, I expect it will be practical for construction work associated with the extension to comply with the

construction noise standards – and consider the proposed conditions an appropriate control in this regard.

William Peter Reeve

31 March 2025


Stage 3 – Revised noise contour including additional mitigation
Legend
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Loaders and excavator
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Station Roa
Railway Road
Bealey Road
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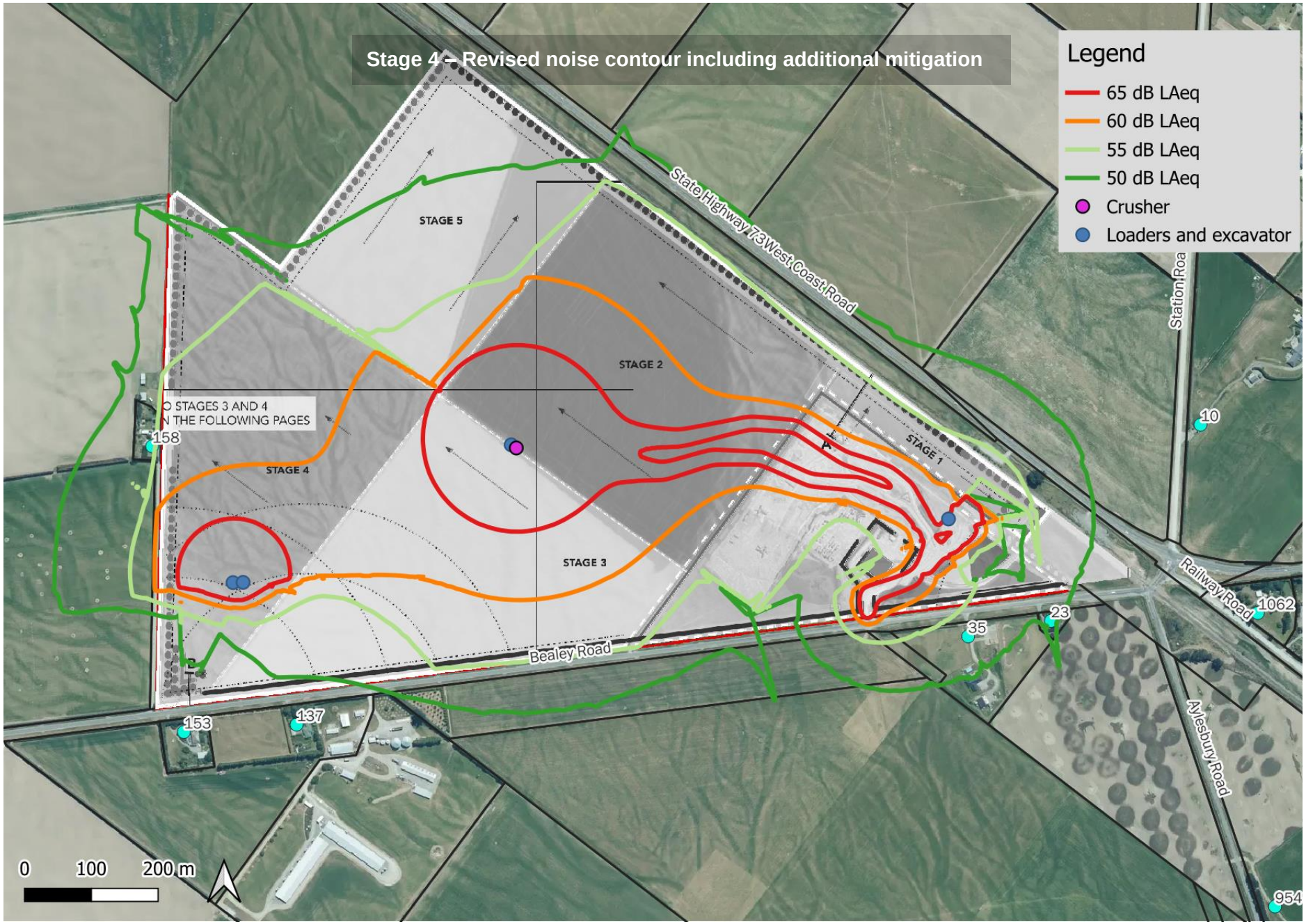
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Crusher
Loaders and excavator
STAGE 5
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STAGE 1
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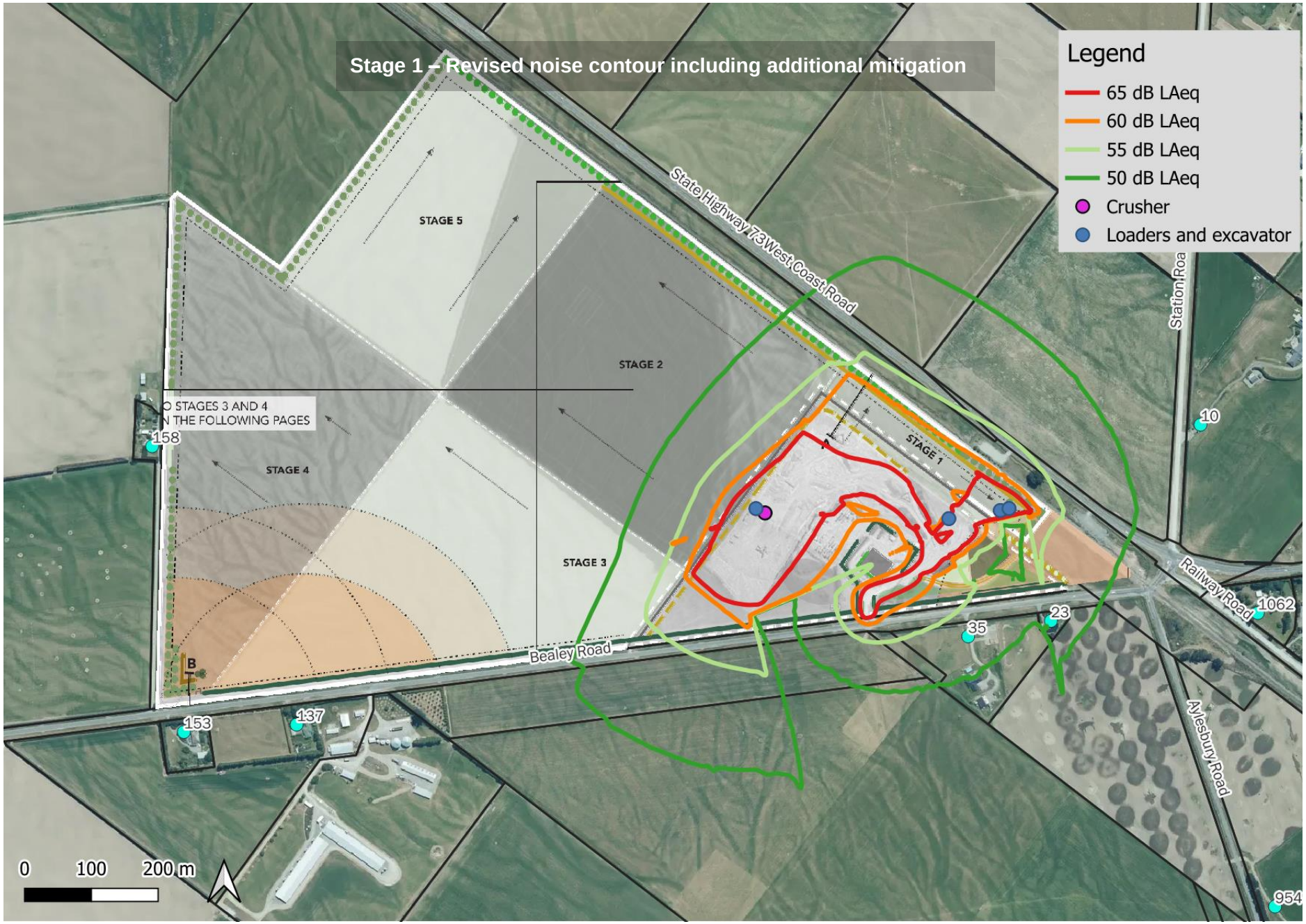
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