

IN THE MATTER of the Resource Management Act 1991 ("RMA" or "the Act")

AND

IN THE MATTER of an application under section 88 of the Act to **WAIKATO REGIONAL COUNCIL** and **WAIKATO DISTRICT COUNCIL** (ref LUC0488/22) BY **GLEESON MANAGED FILL LIMITED** to establish and operate a managed fill disposal activity at 310 Riverview Road, Huntly.

STATEMENT OF EVIDENCE OF NEVIL IAN HEGLEY

NOISE

Dated 21 November 2022

1. INTRODUCTION

- 1.1 My full name is Nevil Ian Hegley. I am the principal of Hegley Acoustic Consultants Limited.
- 1.2 This evidence is given in respect of a resource consent application LUC0488/22 by Gleeson Managed Fill Limited ("Gleeson") to Waikato Regional Council ("WRC") and ("Waikato District Council") ("WDC") to establish and operate a managed fill disposal activity at 310 Riverview Road, Huntly ("Site").

Qualifications and experience

- 1.3 I have the following relevant qualifications and experience:
- (a) I have specialised in acoustics for over 40 years;

- (b) I have an MSc from Southampton University (UK) where I undertook research in acoustics in 1975/76;
- (c) I have been on the majority of the Standards sub-committees dealing with sound issues since 1977 and I was the Chairman of both of the sub-committees that approved the 1984 and 1999 versions of the Construction Noise Standard NZS6803.
- (d) I have been involved with more than 35 different quarrying and managed fill projects throughout the country.

Involvement in the project

- 1.4 I have visited the site and surrounding environment on three occasions. The aim of these visits was a general familiarisation of the existing quarry operation, measuring noise from plant on site, checking the surrounding environment and monitoring the existing noise environment.
- 1.5 I was engaged to assess the noise from the proposed development and advise on any specific noise control treatment to comply with the noise requirements of the Waikato District plan.
- 1.6 To assess the noise effects of the proposed development I monitored the existing noise environment.
- 1.7 I was responsible for the preparation of:
 - (a) *Proposed Managed Fill 300 Riverview Road, Huntly – Assessment of Noise Effects – Report No 19069/2, dated 14 June 2022;*
- 1.8 I am familiar with the subject site and the wider receiving environment.

Site visits and background material

- 1.9 My initial site visit was in May 2019 and I monitored the existing noise environment in August 2019.

Purpose and scope of evidence

- 1.10 The purpose of my evidence is to determine the noise from the proposed managed fill and ensure the proposal will achieve the expectations of both the Operative Waikato District Plan and the Proposed Waikato District Plan – Decisions Version. In addition, I have assessed the noise effects of the proposal for the neighbours of the proposed managed fill.

1.11 My evidence is structured as follows:

- (a) Briefly describes the site (Section 3).
- (b) Briefly describes the proposal (Section 4).
- (c) Sets out the key policy matters (Section 5).
- (d) Addresses the relevant noise issues arising (Section 6).
- (e) Comments on issues raised by the Officer's Report relevant to my area of expertise (Section 7).
- (f) Comments on the issues raised by Submitters that are relevant to my area of expertise (Section 8).
- (g) Comments on the conditions (Section 9).
- (h) Provides a brief conclusion (Section 10).

1.12 A summary of my evidence is contained in Section 2.

Expert Witness Code of Conduct

1.13 I have been provided a copy of the Code of Conduct for Expert Witnesses contained in the Environment Court's 2014 Practice Note. I have read and agree to comply with that Code. This evidence is within my area of expertise, except where I state that I am relying upon evidence of another person. I have not omitted to consider material facts know to me that might alter or detract from the opinions that I express.

1.14 I understand and accept that it is my overriding duty to assist the Independent Commissioner in matters which are within my expertise as an Acoustical Engineer.

2. SUMMARY OF EVIDENCE

2.1 The cumulative effects of the existing quarry plus the proposed managed fill will be controlled to within the expectations of both the Operative Waikato District Plan and the Proposed Waikato District Plan – Decisions Version.

2.2 Based on measurements of the existing noise environment over a typical week, the proposed noise limits for the managed fill will be at or below the existing noise environment. This will minimise any adverse noise effects for the neighbours.

- 2.3 The noise from each of the proposed four managed fill areas (including Fill Area 5; previously granted by WRC/WDC) has been assessed with the activity at the maximum fill height. By complying with a reasonable noise level for this scenario for the majority of the time the noise will be well within the design limits.
- 2.4 Noise from the proposed trucks operating between 5:00am - 6:00am and the managed fill operating between 6:00am - 7:00am will be well within a reasonable level. There will be an insignificant noise effect on the existing noise environment from these activities.
- 2.5 Noise from vehicles on the roads is not controlled by the District Plan or any other legislation. However, the effect on the existing noise environment of the additional trucks on the road from the proposed development has been assessed and shown to be insignificant for the neighbours.
- 2.6 Overall, the cumulative noise effects of the proposed managed fill plus the existing quarry will be insignificant for all neighbours.
- 2.7 I have reviewed the noise related submissions. With the proposed noise controls in place and considering the existing noise environment I believe this will ensure all concerns are adequately addressed and there will not be any noise nuisance from the proposed managed fill.

3. **SITE DESCRIPTION AND LOCALITY**

- 3.1 Gleeson and Cox Ltd own and operate the Huntly Quarry located at 310 Riverview Road, Huntly as shown on Figure 1. Initially there were 5 areas identified for the fill activity, however, Fill Area 1 was discarded. Fill Area 5 has previously been consented and is restricted to the disposal of overburden only. The fill sites are to be constructed and operated sequentially, with the only overlap being the preparatory works of Fill Area 3 whilst Fill Area 2 is being closed out, and the same in Fill Area 3 / 4.



Figure 1. Proposed Managed Fill, 300 Riverview Road

3.2 The proposed hours of operation of the managed fill are 6am - 7pm Monday – Friday plus 6am – 2pm on Saturdays. The proposed hours of operation related to truck movements to and from the site entrance are from 5:00am Monday – Friday (except from 1 May to 30 September when the day will finish at 6:00pm) plus 6am – 3pm on Saturdays. There is no work proposed on Sundays and Public Holidays. The truck numbers between 5am and 6am Monday to Friday are limited to no more than 6 trucks (12 movements) for aggregate pick-ups for concrete orders. These hours of operation are consistent with those approved for Gleeson Quarry.

4. **DESCRIPTION OF PROPOSAL**

4.1 It is proposed to develop three separate managed fill areas as shown on Figure 1 to take both the quarry overburden fill and imported fill material. The proposed hours of operation of the managed fill related activities within the site will be:

Monday to Friday (inclusive) 6:00am to 7:00pm

Saturday 6:00am to 2:00pm

No managed fill works shall be carried out on a Sunday or Public Holiday.

4.2 The hours of operation related to truck movements to and from the site entrance will be limited to:

1 October to 30 April:
Monday to Friday (inclusive) 5:00am to 8:00pm
Saturday 6:00am to 3:00pm

1 May to 30 September:
Monday to Friday (inclusive) 5:00am to 6:00pm
Saturday 6:00am to 3:00pm

- 4.3 Truck movements to and from the site entrance shall be limited to a maximum of 12 per day during the morning period between 5:00am to 6:00am Monday to Friday (inclusive).
- 4.4 This report assesses the noise on a busy day from the managed fill operating at the maximum rate of 300,000m³ of fill per annum. The traffic engineer predicts 80% of the trucks carrying cleanfill will be owned by Gleeson & Cox Ltd with the remaining 20% owned by other contractors. The trucks would normally arrive empty to the site and as advised by the traffic engineer there will be a predicted 12 trucks (12 arrivals and 12 departures) a day made by other contractors. That is, there will be an increase of 12 trucks a day to the number of trucks on the road.
- 4.5 The assessment has been undertaken assuming the current quarry activities will continue with the change being that the plant will operate for the total daytime period to produce the aggregate and the truck numbers will increase from the current maximum of 233 trucks (233 arrivals and 233 departures) by 12 trucks (12 arrivals and 12 departures) per day to give a total of 245 trucks a day.
- 4.6 The typical machinery and noise levels of each item of machinery to be used on site are detailed in the original noise assessment report so are not repeated in my evidence.
- 4.7 Although not all plant on site will necessarily be used at the same time the assessment has assumed all plant will operate with the maximum expected number of trucks delivering the fill material. In addition, it has been assumed that the quarry will be operating at capacity and has progressed to the north of its current position so will represent the higher noise levels expected in the future rather than the current noise levels.
- 4.8 The noisiest stage of any fill activity is when the fill is at its maximum height and hence there will be the minimum screening by the existing ground contours to the neighbours. Thus, the assessment has been undertaken with plant at the maximum height of each of the fill areas.

4.9 The level of noise received to the south of the quarry will be controlled by the noise from activities at the quarry, not the managed fill work. The effect of quarry noise has been addressed in a separate report.

5. DESIGN CRITERIA

5.1 The site is located in a Rural Zone in the Operative Waikato District Plan with an Aggregate Extraction Policy Area overlay for the southern part of the Fill 2 and all of the Fill 3 areas.

5.2 In the Proposed Waikato District Plan – Decisions Version (PDP) the site is similarly located in a Rural Zone with the southern part of the Fill 2 and all of the Fill 3 areas within the Aggregate Extraction Area Overlay Area.

5.3 The detailed requirements of the Operative and Proposed District Plans are set out in the original noise assessment so have not been repeated in my evidence.

5.4 It is proposed to adopt the noise requirements of the PDP and if these limits are complied with then the limits of the OPD will also be complied with.

Noise–R8 GRUZ – General rural zone – general:

(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*

Noise–R10 GRUZ – General rural zone – extractive activity:

(a) *Noise generated by extractive activity from a facility existing or operating under resource consent at 17 January 2022, shall be measured at the notional boundary of any residential unit existing at 25 September 2004, or at any site in a GRZ – General residential zone, MRZ – Medium density residential zone, LLRZ – Large lot residential zone, SETZ – Settlement zone or RLZ – Rural lifestyle zone;*

(b) *Noise generated by new extractive activity located within a Coal Mining Area, Aggregate Extraction Area, or Extractive Resource*

Area shall be measured at the notional boundary of any residential, or at any site in a GRZ – General residential zone, MRZ – Medium density residential zone, LLRZ – Large lot residential zone, SETZ – Settlement zone or RLZ – Rural lifestyle zone;

(c) Noise generated from extractive activity subject to clause (a) or (b) shall not exceed:

- (i) 55dB L_{Aeq} 7am to 7pm Monday to Friday;
- (ii) 55dB L_{Aeq} 7am to 6pm Saturday;
- (iii) 50dB L_{Aeq} 7pm to 10pm Monday to Friday;
- (iv) 50dB L_{Aeq} 7am to 6pm Sundays and Public Holidays;
- (v) 45dB L_{Aeq} and 70dB L_{AFmax} at all other times including Public Holidays;

(d) Noise levels must be measured in accordance with the requirements of New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of Environmental Sound";

(e) Noise levels must be assessed in accordance with the requirements of New Zealand Standard NZS 6802:2008 "Acoustics – Environmental Noise"

6. EXISTING NOISE ENVIRONMENT

6.1 The existing noise environment was measured from Tuesday 30 July – Saturday 3 August 2019 at two sites that represent the locations where the maximum noise exposure to the proposed managed fill will occur for any residents. The first site was in Hillside Heights Road and the second in Riverview Road as shown on Figure 1. The weather during the monitoring period was fine and calm initially with gusty conditions later in the week with passing showers.

6.2 Figure 2 shows the noise level as measured opposite 70 Hillside Heights Road (Measurement 1 on Figure 1):

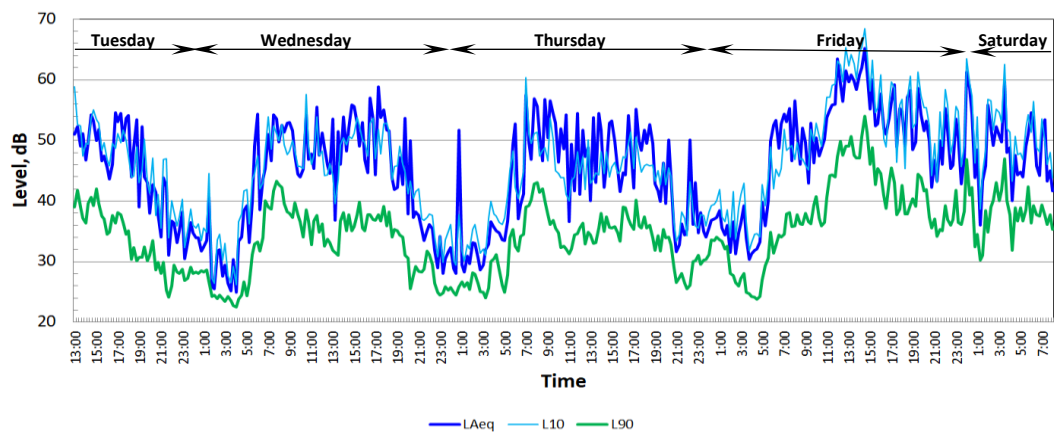


Figure 2. Measured noise opposite 70 Hillside Heights Road

6.3 Figure 3 shows the noise level as measured opposite 206 Riverview Road (Measurement 2 on Figure 1):

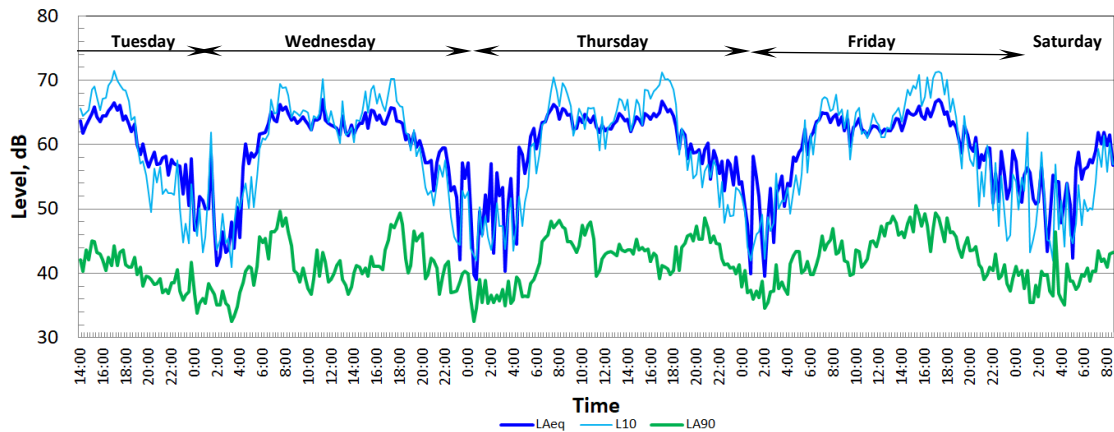


Figure 3. Measured noise opposite 206 Riverview Road

6.4 The L_{Aeq} and L_{A90} have also been assessed in greater detail for the 5am – 7am period. This information is shown as Figures 6 and 7 in the original noise assessment.

7. PREDICTED NOISE

7.1 Noise from the managed fill has been predicted using the Brüel & Kjær Predictor programme v2022.11. This is a powerful environmental noise calculation software package that uses a digital terrain model with the ground conditions modelled and each of the noise sources modelled at their various locations on the ground. An existing ground contour interval of 1m has been used. Calculations are undertaken in accordance with the requirements of ISO 9613-1/2 Acoustics – Attenuation of Sound during Propagation Outdoors. For this project a grid varying between 25m – 75m has been adopted to calculate the noise contours. The noise from the proposed managed fill operating is calculated at each grid point and the noise contours have been drawn based on these levels. In addition, the noise at the notional boundaries of the closest neighbours' houses has been calculated so a more accurate level can be given than interpolating from the noise contours, which are a smoothing of the noise level calculated at each of the grid positions. All calculations have been undertaken assuming a slightly positive meteorological effect at the receiver position as required by NZS 6802:2008 Acoustics - Environmental Noise, ground absorption of 0.7 and a receiver height of 1.5m.

7.2 Each of the proposed four managed fill areas has been assessed with the activity at the maximum fill height.

7.3 Figure 4 shows the noise contours for Fill Area 2 with the fill at its maximum height.

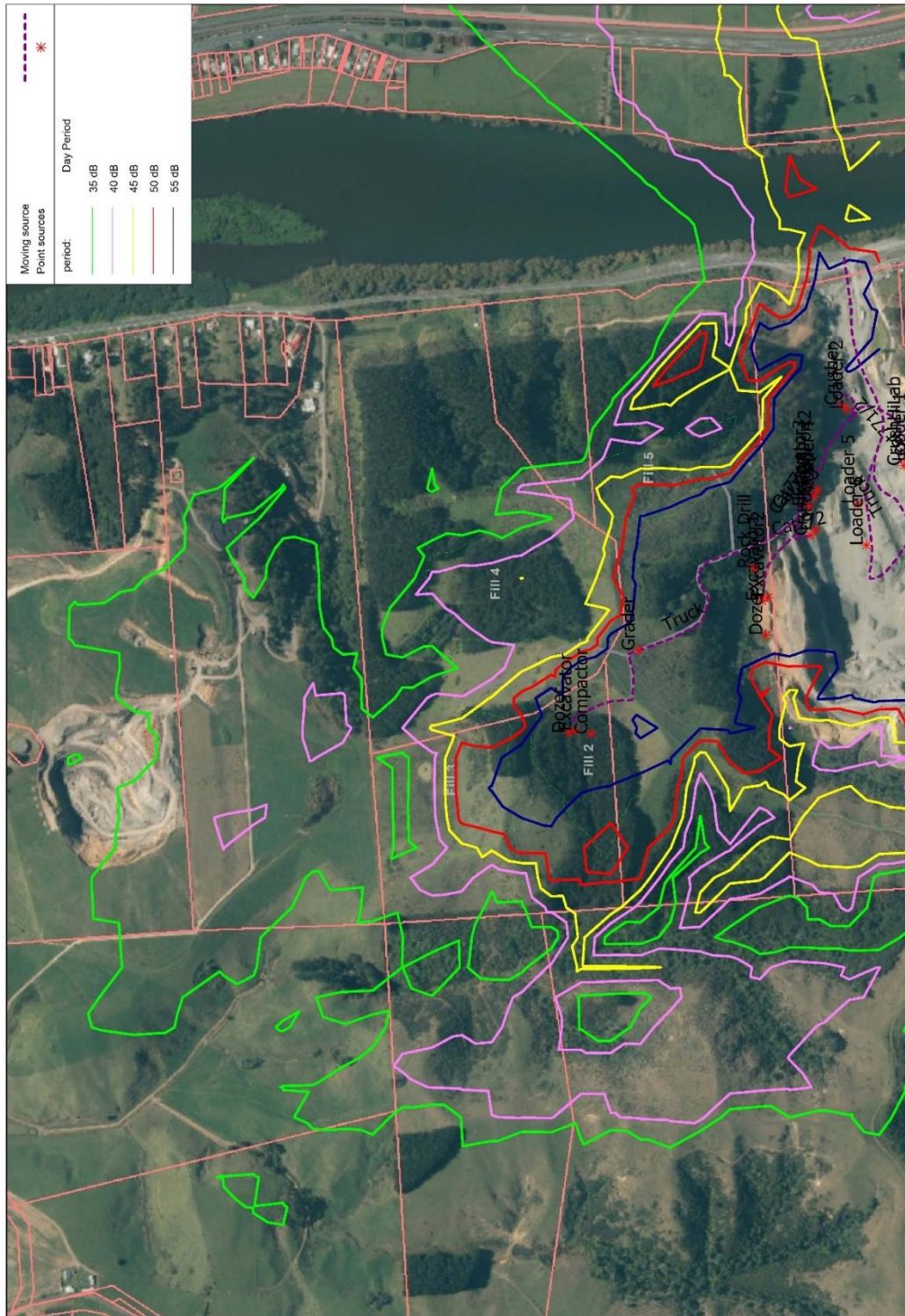


Figure 4. Fill Area 2 with fill at maximum height, dB LAeq

7.4 Figure 5 shows the noise contours for Fill Area 3 with the fill at its maximum height.

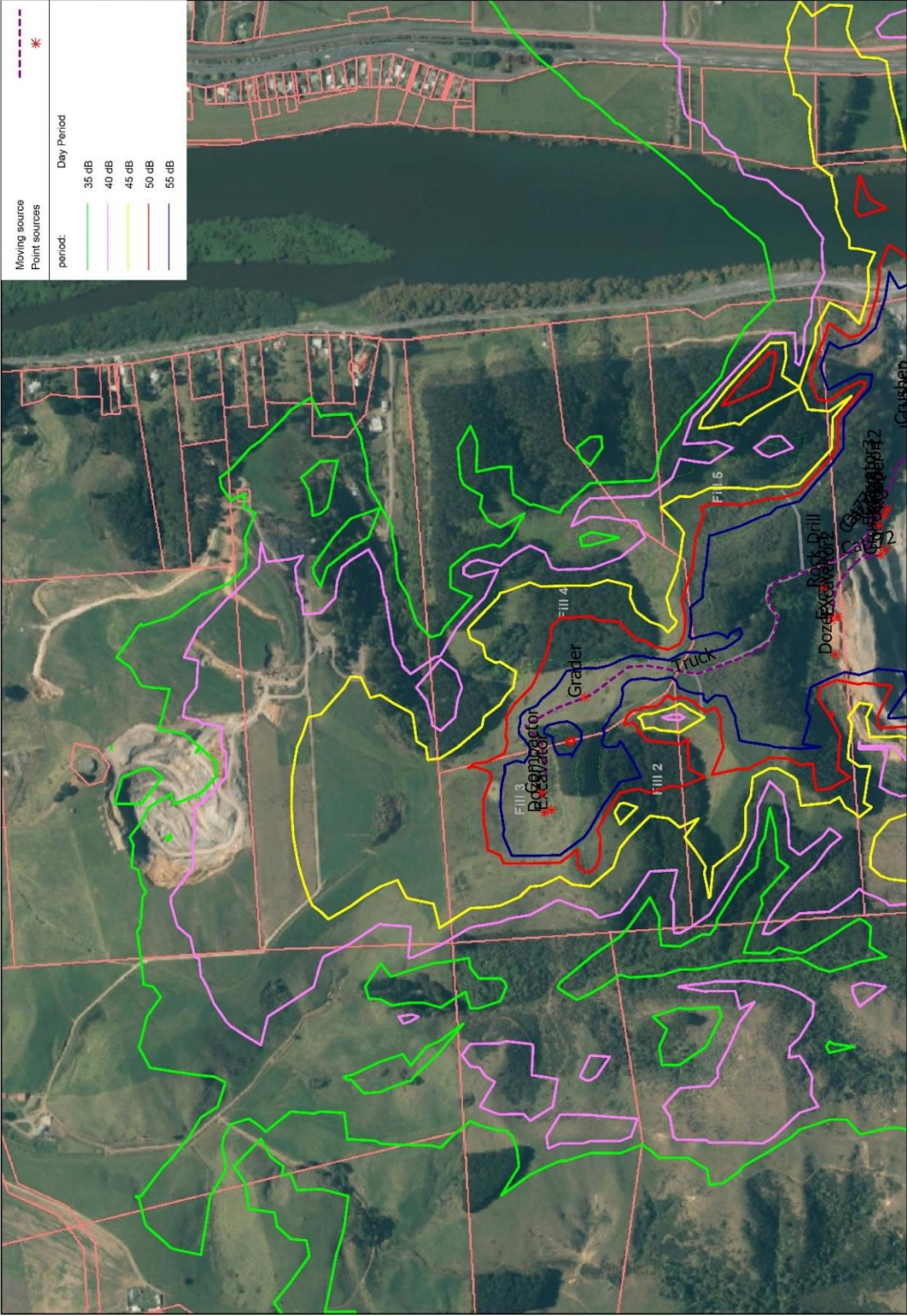


Figure 5 Fill Area 3 with fill at maximum height, dB L_{Aeq}

7.5 Figure 6 shows the noise contours for Fill area 4 with the fill at its maximum height.

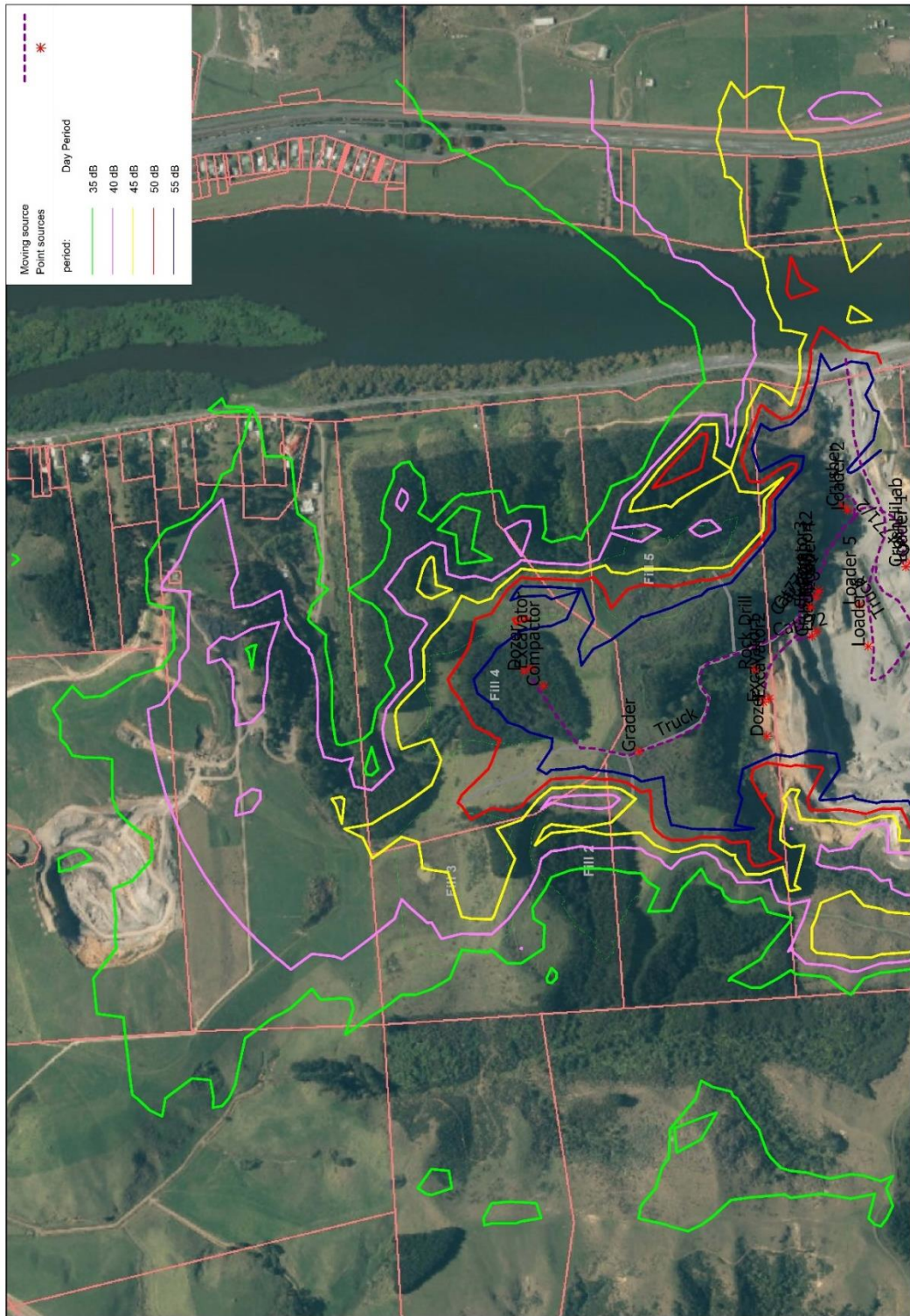


Figure 6. Fill Area 4 with fill at maximum height, dB L_{Aeq}

7.6 In addition to the contouring the noise has been calculated at the notional boundary of each of the closer dwellings shown on Figure 7. The levels for each fill are set out in Table 1.



Figure 7. Noise assessment points

Site ¹	Level, dB L _{Aeq}		
	Fill 2 ²	Fill 3 ³	Fill 4 ⁴
1	31	32	29
2	28	30	27
3	32	34	31
4	23	26	27
5	31	33	37
6	28	34	34
7	29	30	31
8	29	30	32
9	29	30	32
10	29	31	34

- 1 Site location is shown on Figure 8
- 2 Figure 4
- 3 Figure 5
- 4 Figure 6

Table 1. Predicted Noise – dB L_{Aeq}

7.7 Figure 8 shows the truck noise between 5:00am - 6:00am when working Fill area 2. Figure 9 shows the operational noise between 6:00am - 7:00am for Fill area 3.

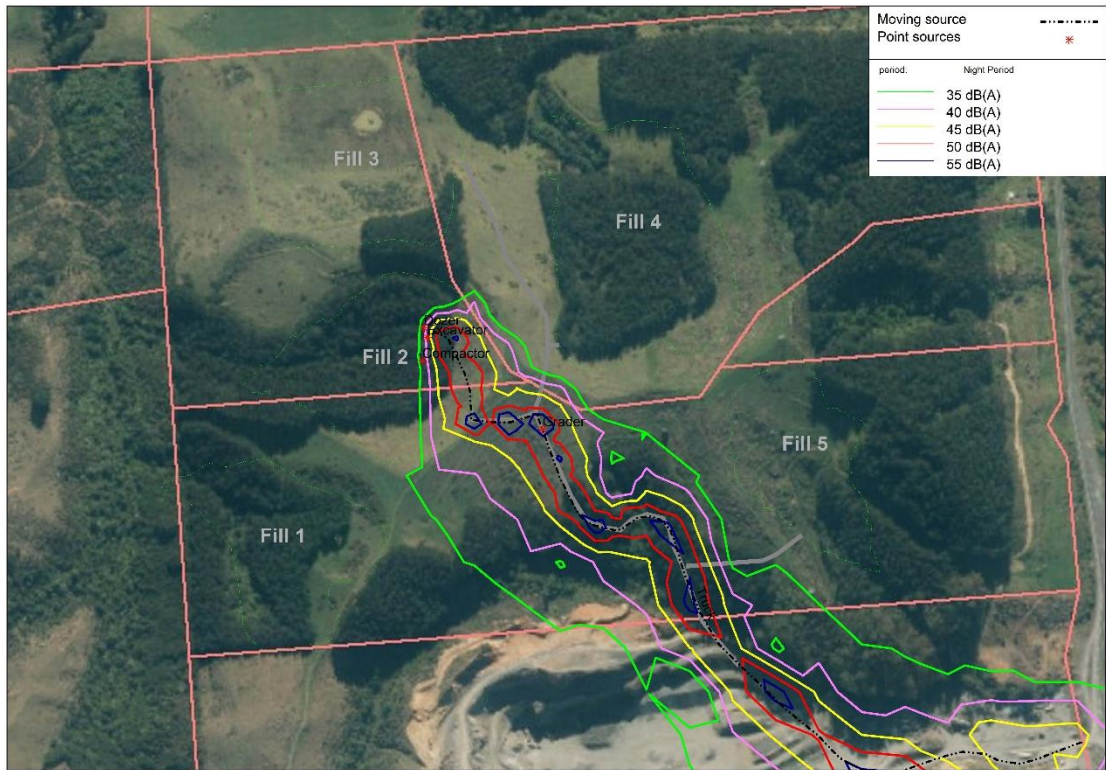


Figure 8. Trucks 5:00am - 6:00am for Fill Area 2

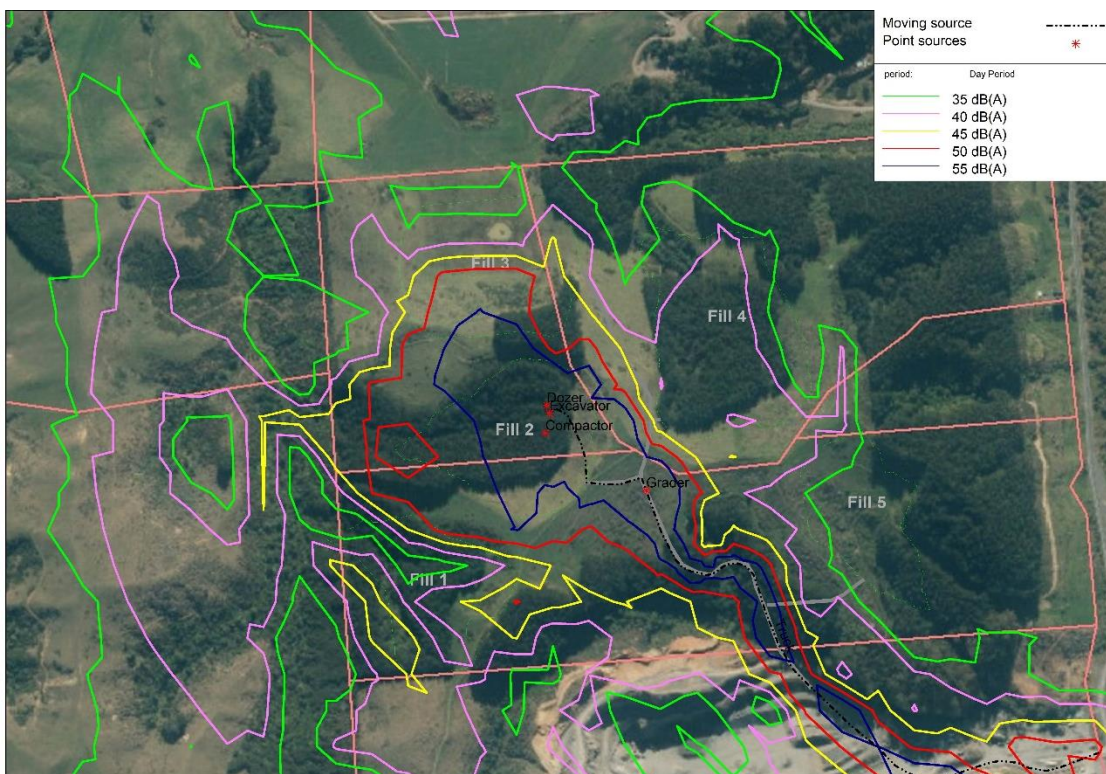


Figure 9. Work 6:00am - 7:00am for Fill Area 3

7.8 Figure 10 shows the truck noise between 5:00am - 6:00am when working Fill area 3. Figure 11 shows the operational noise between 6:00am - 7:00am for Fill area 3.

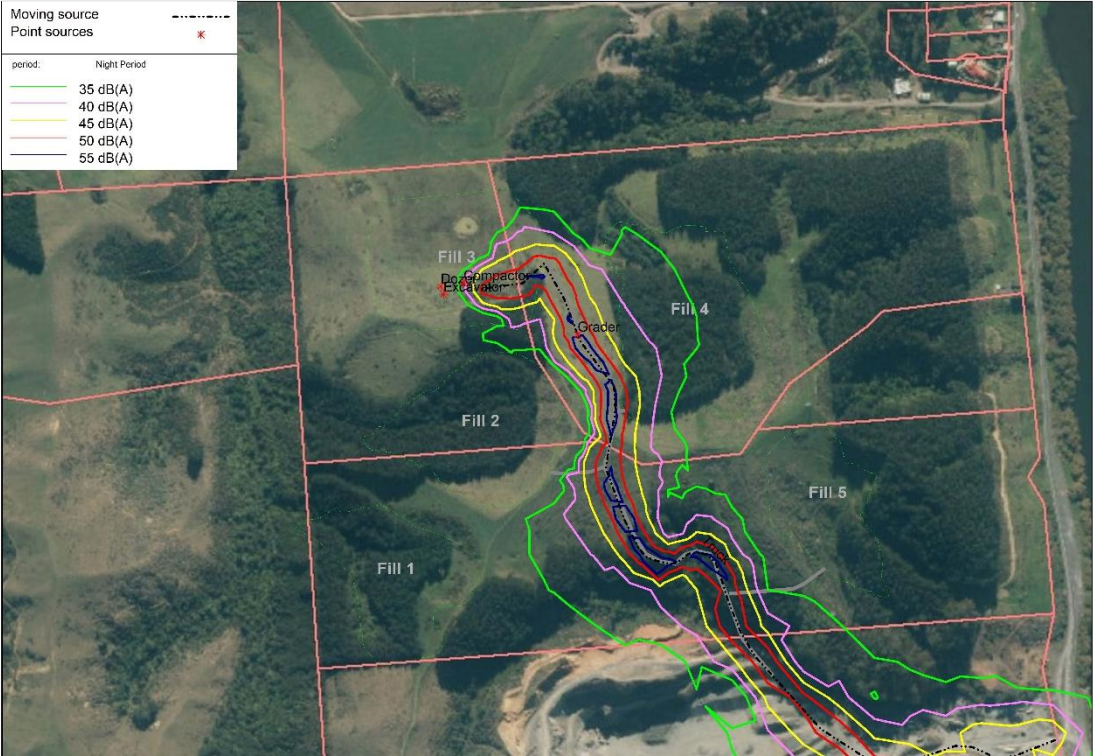


Figure 10. Trucks 5:00am - 6:00am for Fill Area 3

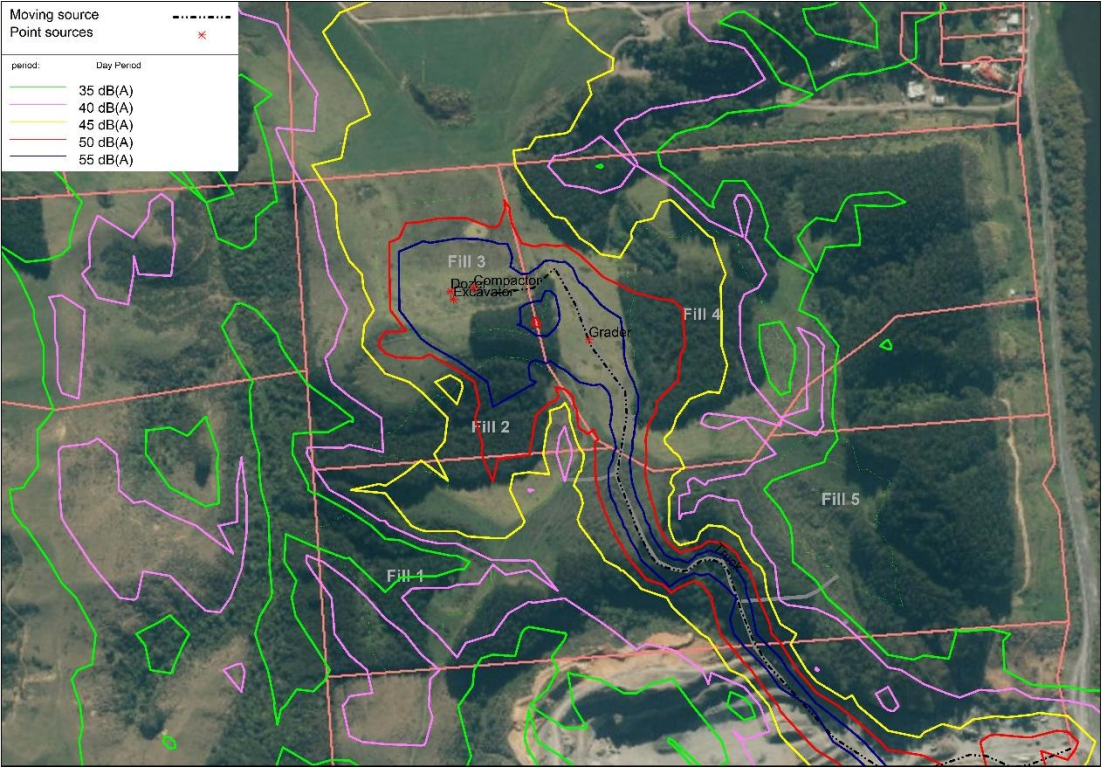


Figure 11. Work 6:00am - 7:00am for Fill Area 3.

7.9 Figure 12 shows the truck noise between 5:00am - 6:00am when working Fill area 4. Figure 13 shows the operational noise between 6:00am - 7:00am for Fill area 4.

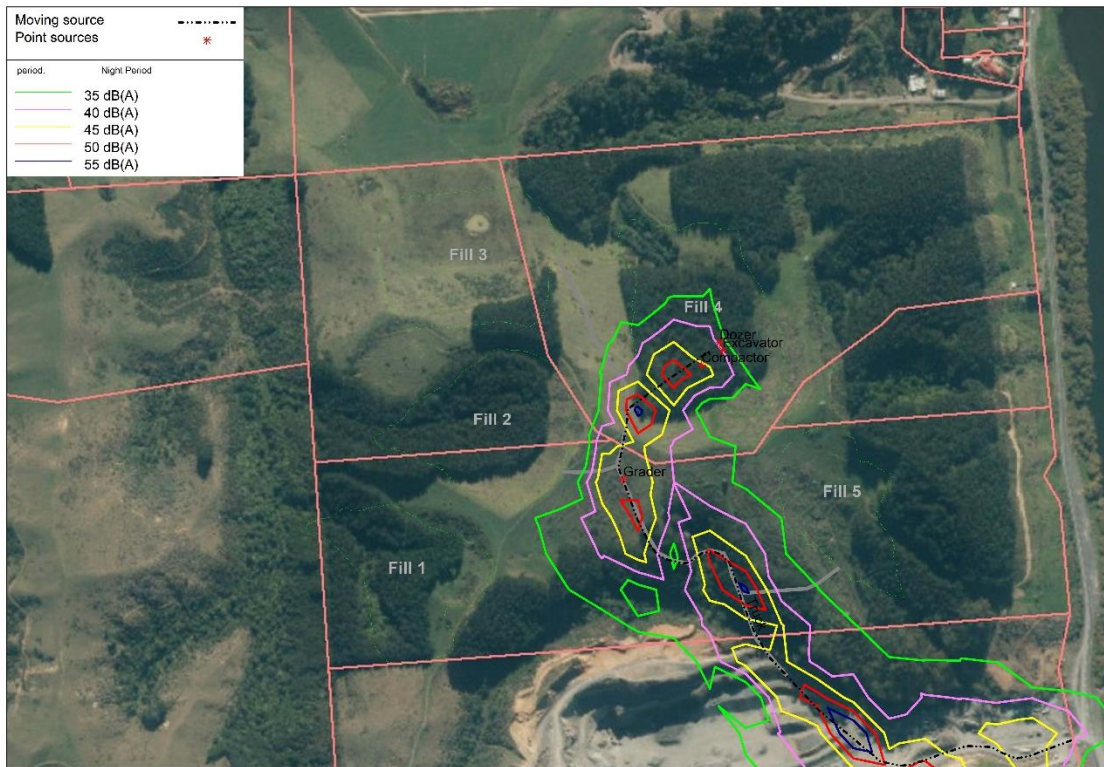


Figure 12. Trucks 5:00am - 6:00am for Fill Area 4

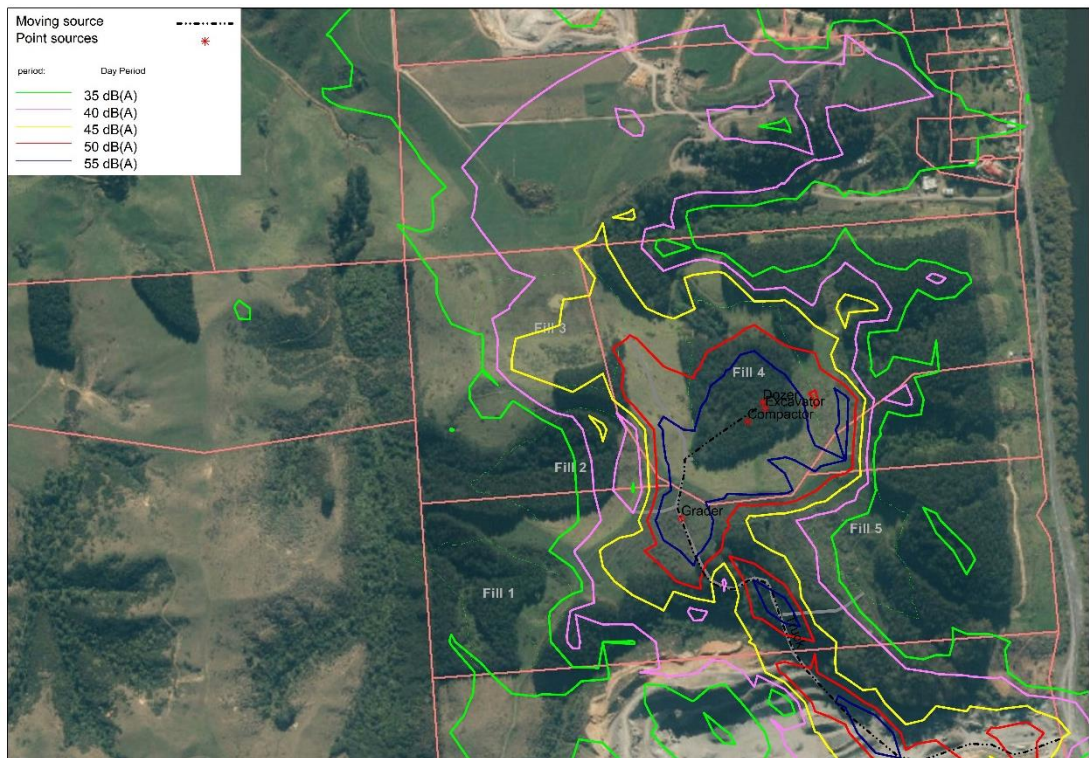


Figure 13. Work 6:00am - 7:00am for Fill Area 4

- 7.10 The noise has been calculated at the notional boundary of each of the closer dwellings shown on Figure 7 with the levels for the 5:00am – 6:00am and 6:00am – 7:00am periods set out in Table 2.

Table 2. Predicted Noise – dBA L_{Aeq}

Site ¹	Fill 2 ²		Fill 3 ³		Fill 4 ⁴	
	5-6am	6-7am	5-6am	6-7am	5-6am	6-7am
1	4	30	6	32	5	28
2	0	28	1	30	1	26
3	4	32	8	34	6	30
4	0	19	4	24	2	25
5	3	31	14	33	10	37
6	1	26	12	34	5	33
7	4	28	10	29	7	30
8	6	28	11	29	7	31
9	8	27	11	28	8	32
10	10	24	11	29	12	33
11	11	24	11	23	12	26

- 1 Site location is shown on Figure 8
 2 Figures 8 and 9
 3 Figures 10 and 11
 4 Figures 12 and 13

- 7.11 From the above, the noise (L_{Aeq}) from the proposed work between 5:00am – 7:00am is at or below the existing background sound (L_{A90}) and well below the existing L_{Aeq}. Thus, the effects of the proposed work for the neighbours between 5:00am – 7:00am, as set out above, will be less than minor in terms of the Resource Management Act.

8. TRAFFIC NOISE

- 8.1 As set out above, the only change to the truck numbers, as a result of the proposed managed fill, is an increase of 12 trucks a day to the number of trucks on the road. This is insignificant and will not have any noticeable effect on the traffic noise that will be experienced by residents along Riverview Road.

9. ISSUES RAISED BY COUNCIL OFFICER'S REPORT

- 9.1 I have read the report prepared by Julia Masters, the Council's reporting planner and concur with her findings.

10. ISSUES RAISED BY SUBMITTERS

10.1 A total of 42 submissions have been received. The topics raised in the submissions that I can comment on are as follows:

(a) Operational noise;¹ and

(b) Traffic noise.²

Operational noise

10.2 Only general comments have been made by the submitters with respect to operational noise, with one submitter (Freeway Design Limited) proposing strict conditions controlling the noise of equipment. I support noise conditions and note the noise limits adopted for this project will comply with the WPDP, will satisfy the recommendations of the World Health Organization³ and the recommendations of NZS 6802:2008 Acoustics - Environmental Noise.

10.3 The noise levels adopted are similar to those currently applicable for the existing quarry operation. I also note that the existing environmental noise levels (L_{Aeq}) at the two sites monitored (Figures 2 and 3 above) in Hillside Heights Road and Riverview Road are generally at or above the proposed noise levels.

10.4 It is also relevant that the predicted noise levels reflect the upper level of noise that will be experienced. For the majority of the time the level of noise will be lower for the neighbours

Traffic noise and vibration

10.5 The main concerns raised are with respect to truck noise on the roads. Once the trucks are on the roads, there are no specific noise limits in the District Plan or in any other legislation for the control of noise from vehicles.

10.6 As set out in the original noise assessment the truck numbers will increase from the current maximum of 233 trucks (233 arrivals and 233 departures) by 12 trucks (12 arrivals and 12 departures) per day to give a total of 245

¹ Submissions of: Denise Lamb (#5), Kate Thomas (#6), Norm Hill (#7), Kevin Wickens (#13), Nola Morland (#18), Shirley McDonald (#35), Te Kauri Maarae Trust (#37), and Freeway Design Limited (#42).

² Submissions of: Anthony Perkins (#2), Denise Lamb (#5), Kate Thomas (#6), Norm Hill (#7), Jennifer Lee Malloy (#8), Appollonia Johnston (#10), Kevin Wickens (#13), Garry & Audrey Cox (#15), Nola Morland (#18), Jessica Rix (#19), Colleen Earby (#24), Seli Saararaba Scutts (#27), Shirley McDonald (#35), Te Kauri Maarae Trust (#37), Robert Hunt (#40), and Freeway Design Limited (#42).

³ Guidelines For Community Noise

trucks a day. This will not generate a noticeable change in the existing truck noise.

10.7 With respect to the noise from truck movements between 5am – 7am Figure 14 shows the existing noise environment between 5am – 7am opposite 206 Riverview Road based on the measurements shown on Figure 3 above.

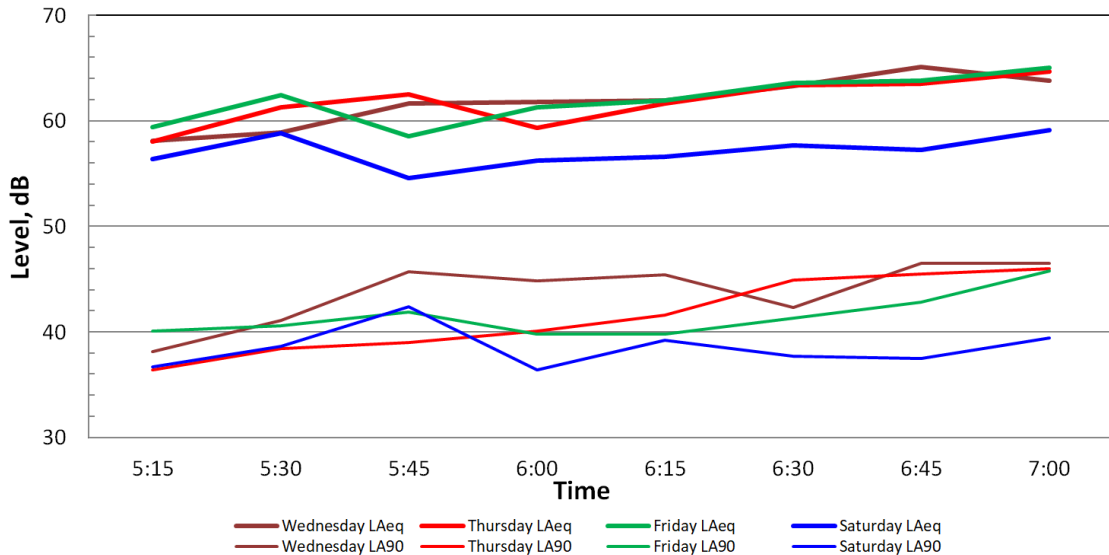


Figure 14. Measured noise opposite 206 Riverview Road

10.8 As shown on Figure 14, the existing noise environment at 5am is 58 – 59dB LAeq and the background sound is typically 40dB LA90 with both values increasing through to 6am. Although not shown on Figure 14, the maximum level between 5am – 6am was measured at 80 – 82dB LA_{Fmax}. This maximum level is representative of the noise experienced throughout the 24 hours, including for the majority of the night time and appears to be representative of the noise from passing traffic with no apparent spikes for passing trucks.

10.9 I am advised by the traffic engineer there are typically 2 - 3 trucks already on the road between 5am – 6am.

10.10 From this information it is believed there will not be any perceivable increase in the existing LAeq level. There will be the minimum adverse noise effects from the proposed maximum of 6 trucks arriving and departing the quarry site between 5am – 6am Monday to Friday.

10.11 Some submitters have raised concern regarding the vibration from trucks on the roads. The only potential vibration that may occur from these trucks would be due to a rough road surface. This is beyond the control of the managed fill management and is expected to be handled by the Council's roading maintenance programme.

11. **COMMENTS ON CONDITIONS**

11.1 I have read the proposed conditions with respect to noise and agree with them without any changes.

12. **CONCLUSIONS**

12.1 The noise assessment has been based on the maximum noise exposure from the proposed development. By complying with a reasonable noise level for this scenario the noise received will be well within the design limits for the majority of the time at any given receiver position.

12.2 Based on measurements of the existing noise environment measured over a week, noise from the proposed managed fill will generally be at or below the existing noise environment. This will ensure there is the minimum noise effects for the neighbours.

12.3 With the proposed noise conditions in place this will ensure the noise from the managed fill will be within a reasonable level at all times. When considering the existing noise environment and the predicted level of noise the effects of the proposed managed fill will be less than minor for all neighbours.

Nevil Ian Hegley
Hegley Acoustic Consultants Limited
21 November 2022