

**PROPOSED MANAGED FILL**

**300 RIVERVIEW ROAD, HUNTLY**

**ASSESSMENT OF NOISE EFFECTS**

**Report No 19069/2**

**Prepared for:**

*Paua Planning Ltd  
Auckland  
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**Prepared by:**



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## 1. INTRODUCTION

Gleeson and Cox Ltd own and operate the Huntly Quarry located at 300 Riverview Road, Huntly as shown on Figure 1. Initially there were 5 areas identified for the fill activity, however, fill site 1 was discarded. Areas 3 and 5 are to be filled concurrently as area 5 is restricted to the disposal of overburden only and once these sites are filled area 2 then area 4 will commence operation

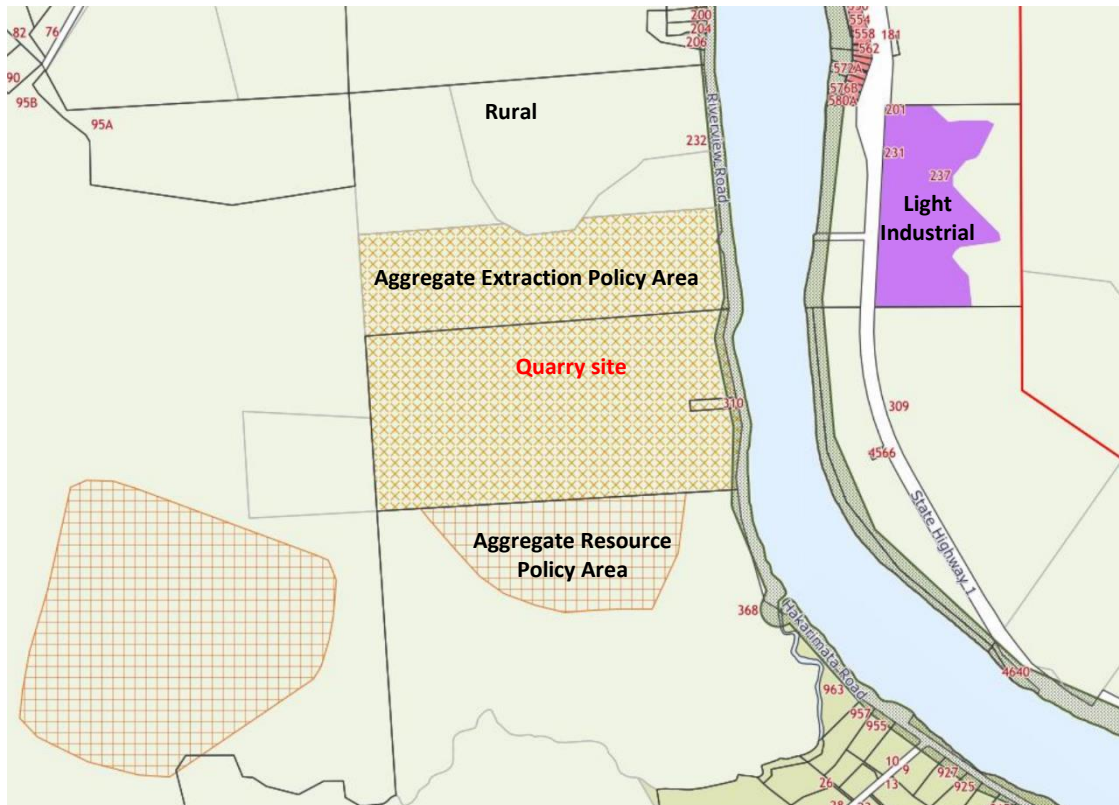


**Figure 1. Proposed Managed Fill, 300 Riverview Road**

The proposed hours of operation of the managed fill will be 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.

## 2. DESIGN CRITERIA

As shown on Figure 2 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 area as shown on Figure 2.



**Figure 2. Managed Fill Zoning, Operative District Plan**

The Aggregate Extraction Policy Area relates to an operating extractive industry and while the overburden aspect of the proposed fill relates to the operating extractive industry the imported fill does not so the rural zone noise rules would apply to the site.

Rule 25.17 of the Operative District Plan (Waikato Section) sets the following noise limits for a permitted activity in a rural zone.

*Any activity is a permitted activity if it is designed and conducted so that noise from the activity measured at any other site does not exceed:*

- (a) 50dBA (L<sub>10</sub>), 7am to 7 pm any day, and*
- (b) 45dBA (L<sub>10</sub>), 7pm to 10pm any day, and*
- (c) 40dBA (L<sub>10</sub>), and 65dBA (L<sub>max</sub>) at all other times.*

Rule 25.19 *Extractive industry noise* sets the following limits to be complied with:

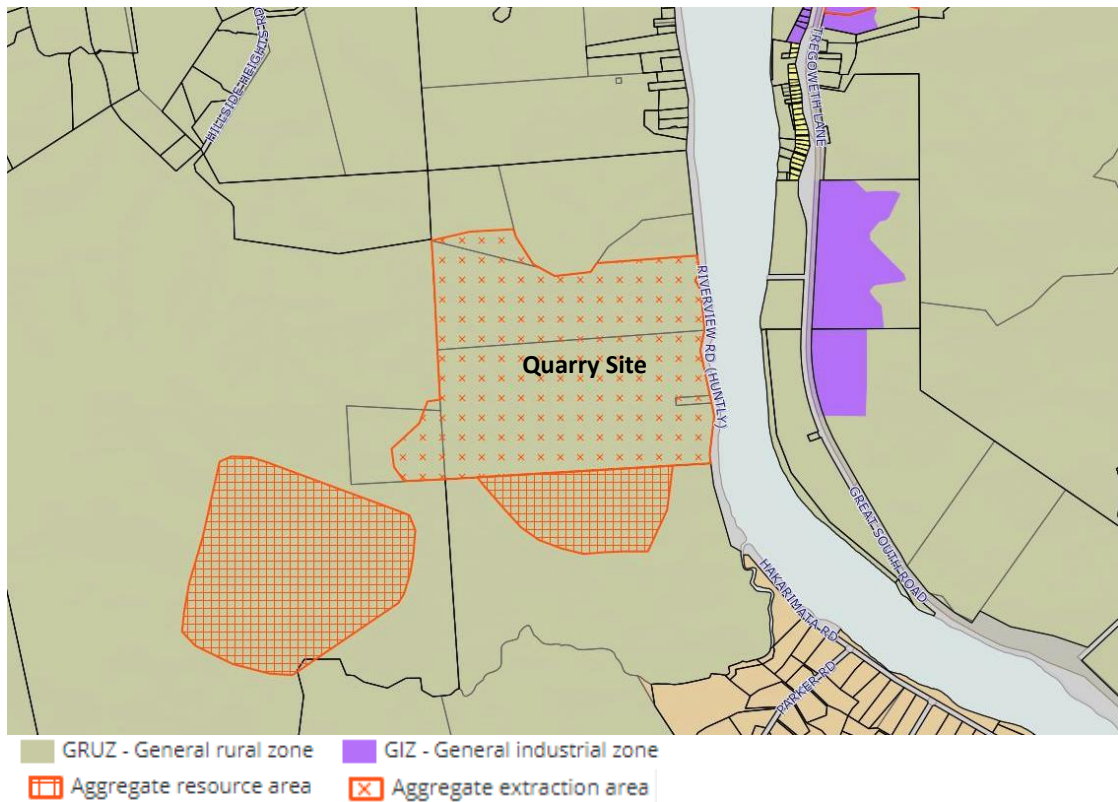
*Any activity is permitted if extractive industry noise, measured at the notional boundary of any dwelling existing at 25 September 2004, or at any site in the Living Zone, does not exceed:*

- 55dBA (L<sub>10</sub>) 7am to 7pm Monday to Friday;*
- 55dBA (L<sub>10</sub>) 7am to 6pm Saturday;*
- 50dBA (L<sub>10</sub>) 7pm to 10pm Monday to Friday;*
- 50dBA (L<sub>10</sub>) 7am to 6pm Sundays and Public Holidays;*
- 45dBA (L<sub>10</sub>) and 70dBA (L<sub>max</sub>) at all other times including public holidays.*

Noise is defined in the Operative District Plan as:

*Means noise levels as measured in accordance with NZS6801:1999 Acoustics Measurement of Environmental Sound and assessed in accordance with NZS6802:1991 Assessment of Environmental Sound. Noise from vehicles being operated on a road shall not be controlled using rules in this plan, except where specifically provided for.*

In the Proposed Waikato District Plan – Decisions Version the site is similarly located in a Rural Zone with all of Fill Area 2 and the southern part of Fill Area 3 within the Aggregate Extraction Area Overlay Area as shown on Figure 3.



**Figure 3. Managed Fill Zoning, Proposed District Plan**

The noise limits for the area in the Proposed District Plan are:

*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  $L_{Aeqr}$  7am to 7pm every day;*
  - (ii) *45dB  $L_{Aeqr}$  7pm to 10pm every day;*
  - (iii) *40dB  $L_{Aeq}$  and 65dB  $L_{Amaxr}$  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:*

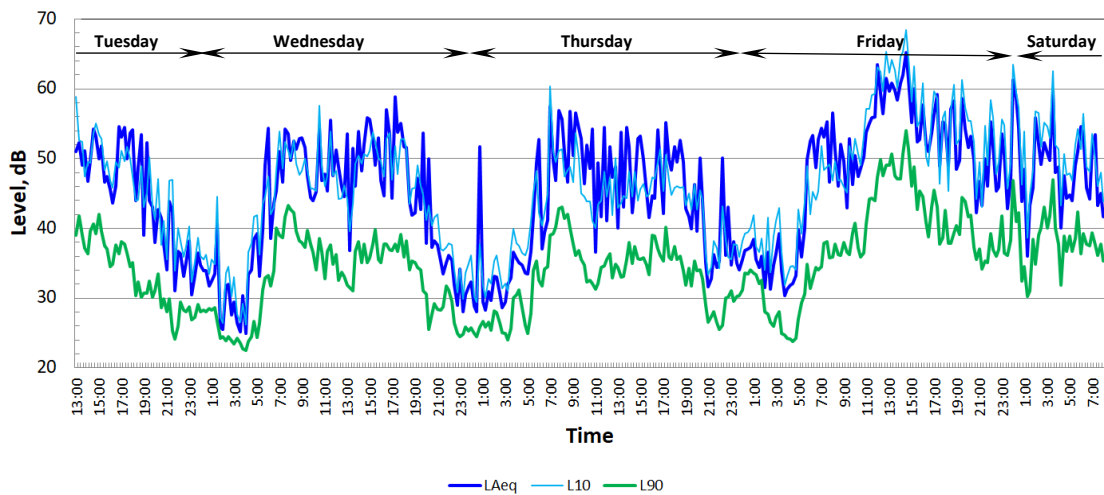
- (a) *Noise generated by extractive activity from a facility existing or operating under resource consent at 17 January 2022, shall be measured at the notional boundary of any residential unit existing at 25 September 2004, or at any site in a GRZ – General residential zone, MRZ – Medium density residential 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  $L_{Aeqr}$  7am to 7pm Monday to Friday;*
  - (ii) *55dB  $L_{Aeqr}$  7am to 6pm Saturday;*
  - (iii) *50dB  $L_{Aeqr}$  7pm to 10pm Monday to Friday;*
  - (iv) *50dB  $L_{Aeqr}$  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 “Acoustic – Environmental noise”*



### 3. EXISTING NOISE ENVIRONMENT

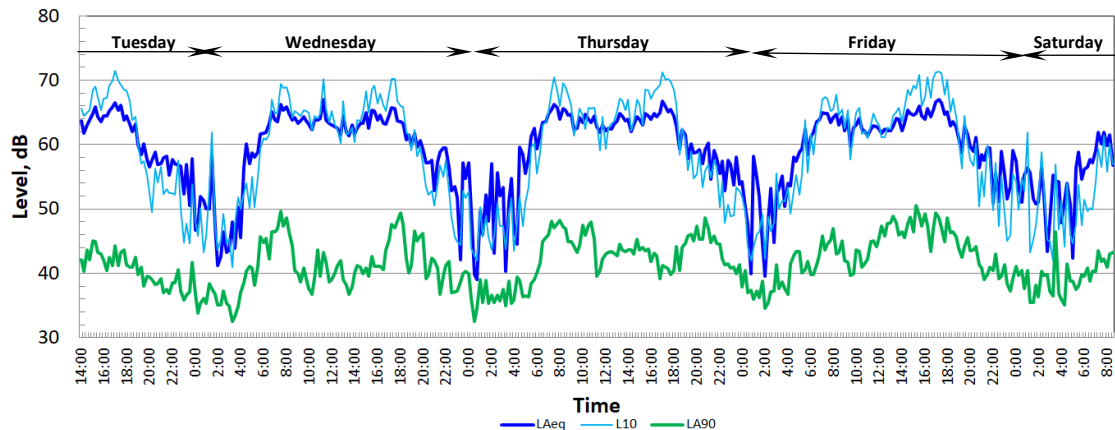
The existing noise environment was measured from Tuesday 30 July – Saturday 3 August 2019. Measurements were undertaken at two sites that represented the locations where the maximum noise exposure to the proposed managed fill will occur for any residents. The first site was in Hillside Heights Road and 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 and passing showers.

Figure 4 shows the noise level that was measured opposite 70 Hillside Heights Road (Measurement 1 on Figure 1).



**Figure 4. Measured noise opposite 70 Hillside Heights Road**

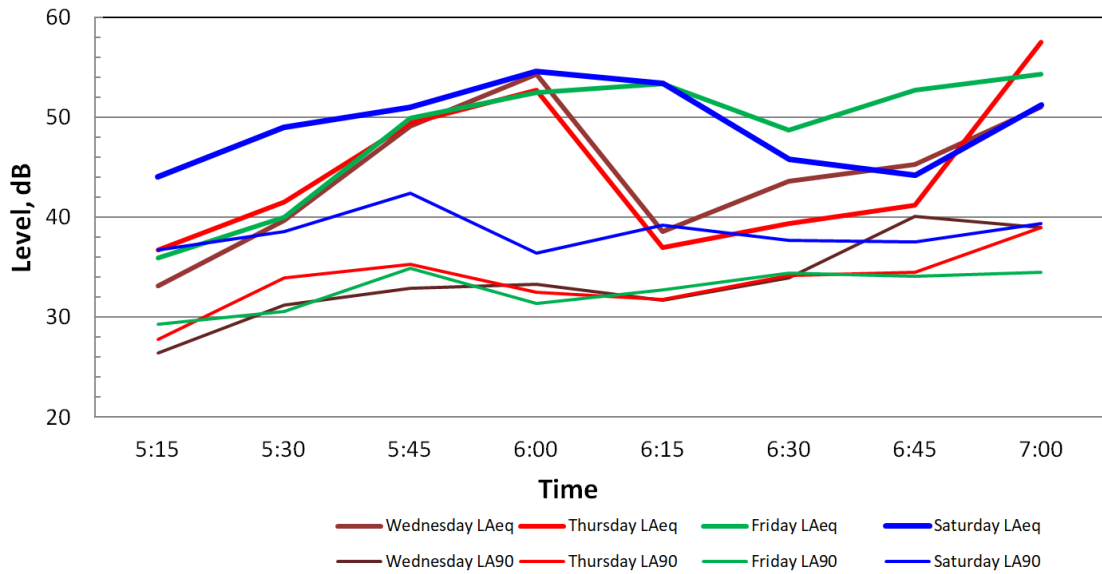
Figure 5 shows the noise level that was measured opposite 206 Riverview Road (Measurement 2 on Figure 1).



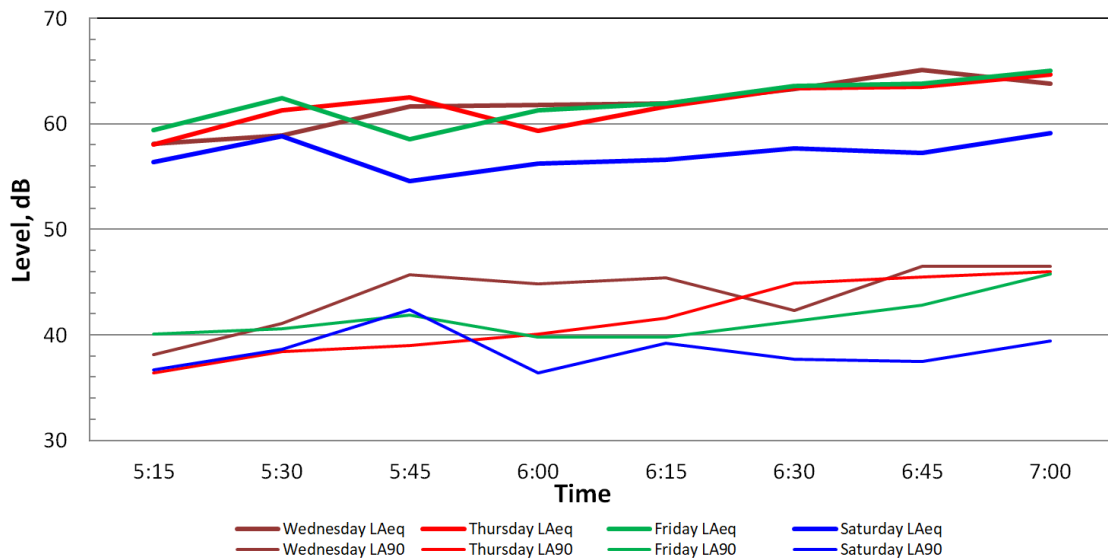
**Figure 5. Measured noise opposite 206 Riverview Road**



The  $L_{Aeq}$  and  $L_{A90}$  have also been assessed in greater detail for the 5am – 7am period as shown for 70 Hillside Heights Road (Figure 6) and 206 Riverview Road (Figure 7).



**Figure 6. Measured noise opposite 70 Hillside Heights**



**Figure 7. Measured noise opposite 206 Riverview Road**

#### **4. THE PROPOSAL**

It is proposed to develop four separate managed fill areas as shown on Figure 1 to take both the quarry overburden (only to fill area 5) 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.

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

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).

This report assesses the noise on a busy day from the managed fill operating at 300,000m<sup>3</sup> of fill per annum. The traffic engineer predicts 80% of the trucks carrying cleanfill will be owned by Gleeson & Cox 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.

The assessment has been undertaken assuming the current quarry activities 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 a total of 245 trucks a day.

The fill material will be managed on site with plant such as

- Komatsu D65 Bulldozer;
- Caterpillar 20 Ton excavator;
- Caterpillar 16G grader;
- 10,000 litre Watercart;
- Compactor to be used when overburden material is used in the managed fill area as bunds and the lining, and
- Trucks delivering the fill material

The noise from this equipment has been based on measurements undertaken of the machinery operating in the field with the measured sound power level ( $L_{WA}$ ) of:

- Komatsu D65 Bulldozer, 114dB
- Caterpillar 20 Ton excavator, 106dB
- Caterpillar 16G grader, 102dB
- 10,000 litre Watercart, 102dB
- Compactor, 107dB and
- Trucks delivering the fill material, 105dB

Although not all plant 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 the quarry will be operating at capacity and has progressed to the north of its current position so represents the higher noise expected in the future rather than the current noise levels.

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 current ground contours to the neighbours. The assessment has been undertaken with plant at the maximum height of each of the fill areas.

The noise received to the south of the quarry is controlled by the noise from activities at the quarry, not the managed fill work. The effect of quarry noise is addressed in a separate report.

## **5. PREDICTED NOISE LEVELS**

Based on the above levels the 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 quarry 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.

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

Figure 8 shows the noise contours for Fill Area 2 with the fill at its maximum height.

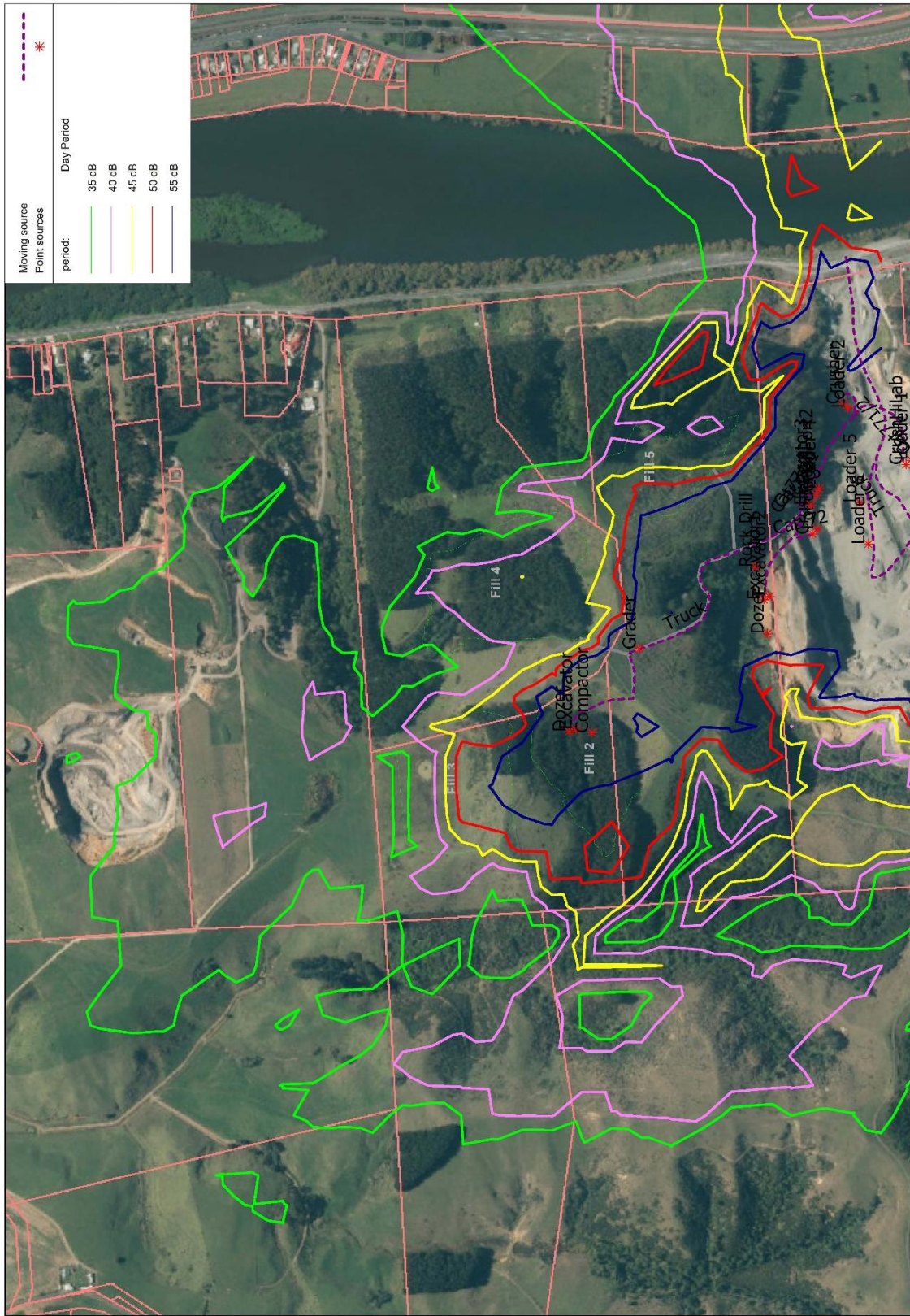


Figure 8. Fill Area 2 with fill at maximum height, dBA L<sub>Aeq</sub>



Figure 9 shows the noise contours for Fill Area 3 with the fill at its maximum height.

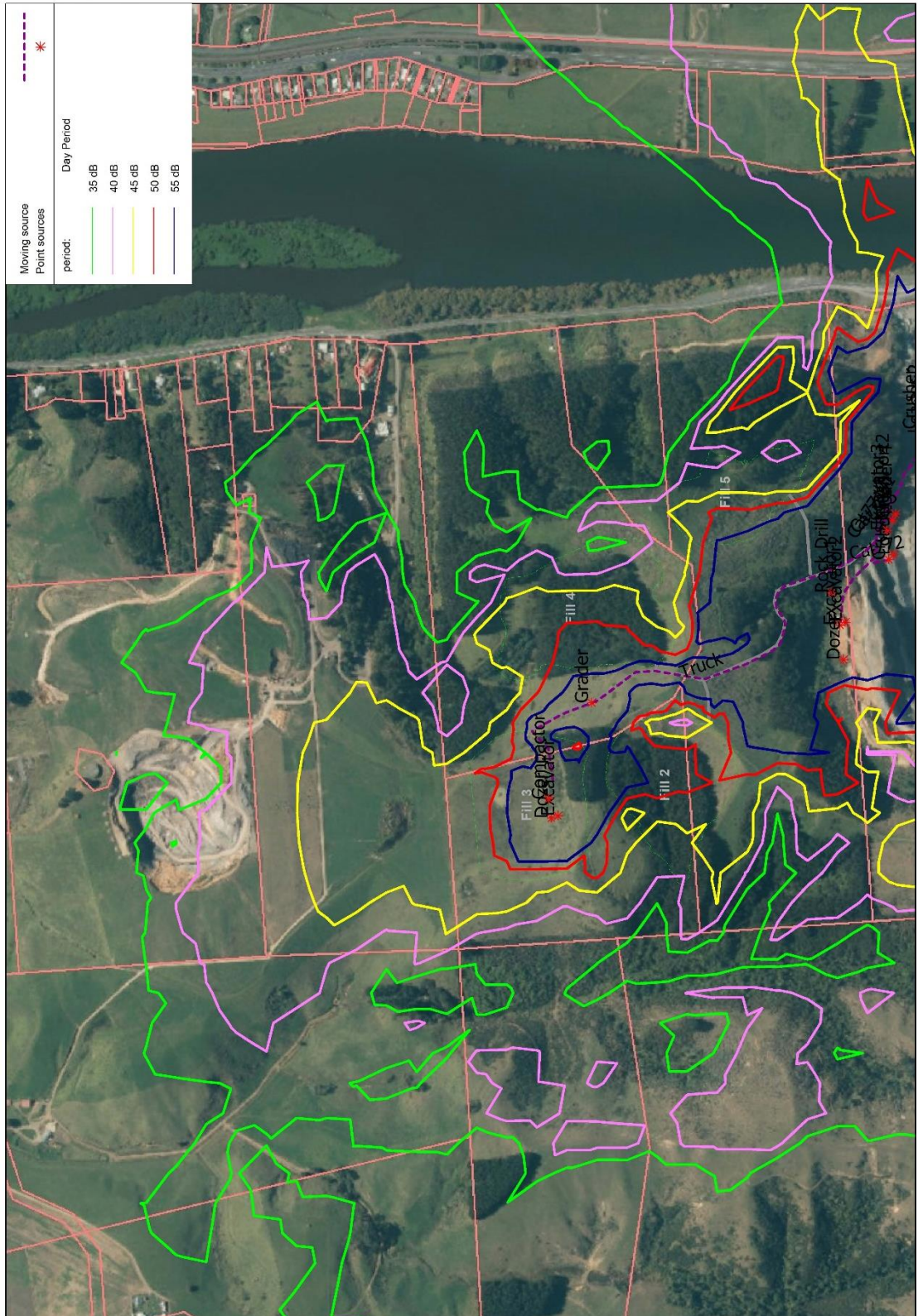


Figure 9 Fill Area 3 with fill at maximum height, dBA L<sub>Aeq</sub>



Figure 10 shows the noise contours for Fill area 4 with the fill at its maximum height.

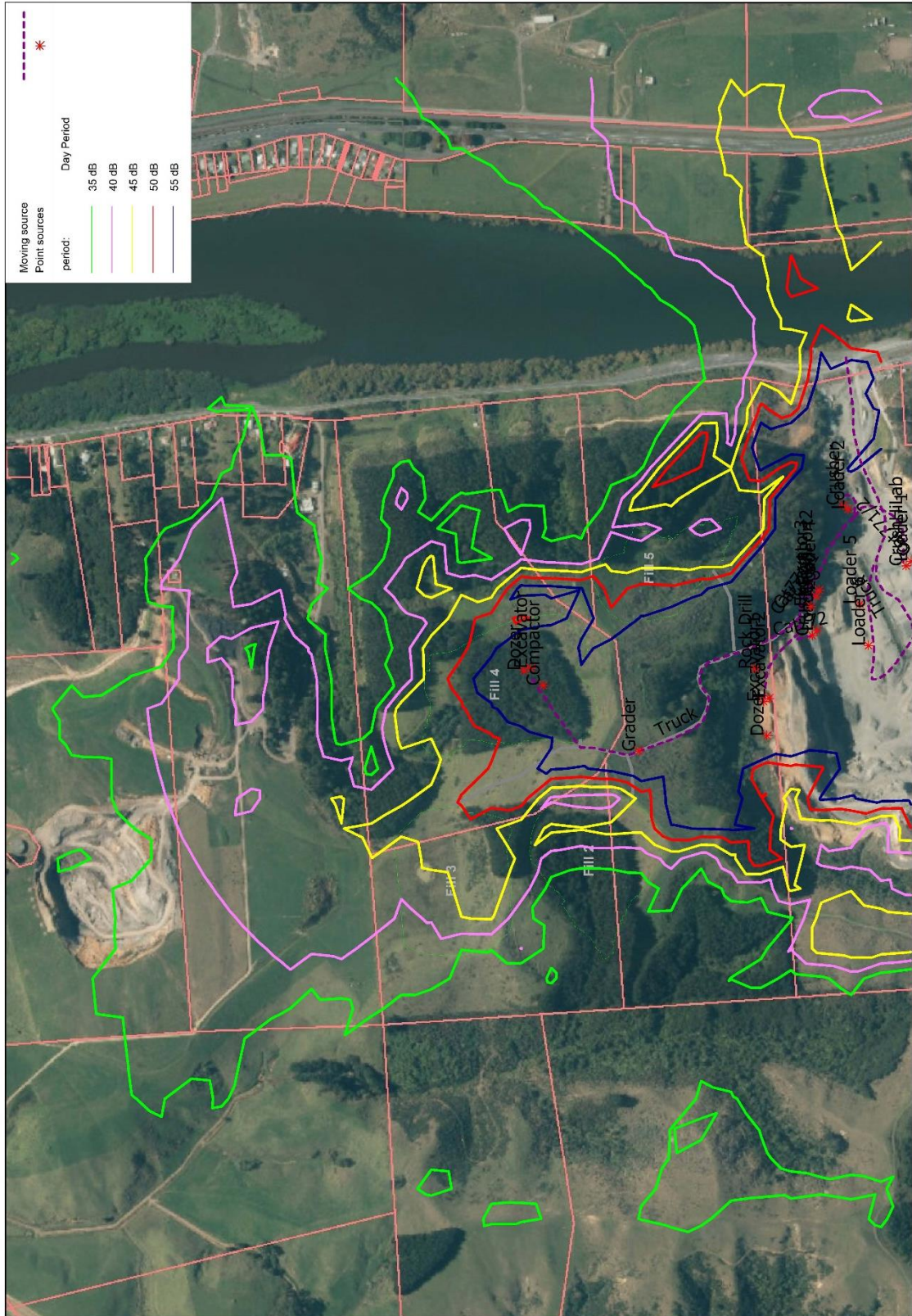


Figure 10. Fill Area 4 with fill at maximum height, dBA L<sub>Aeq</sub>



Figure 11 shows the noise contours for Fill area 5 with the fill at its maximum height.

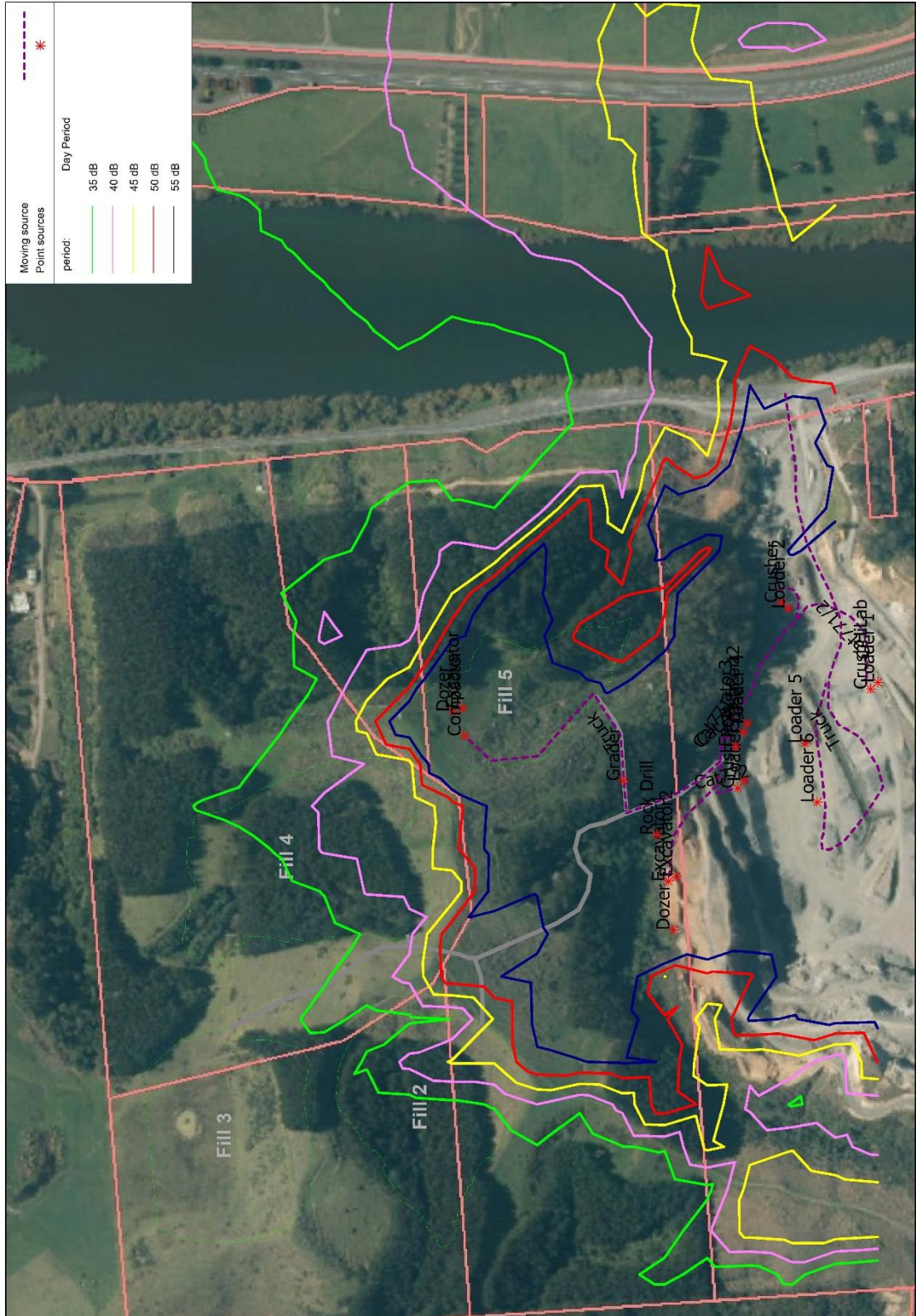


Figure 11. Fill Area 5 with fill at maximum height, dBA L<sub>Aeq</sub>

In addition to the contouring the noise has been calculated at the notional boundary of each of the closer dwellings as shown on Figure 12. The levels for each fill are set out in Table 1.



Figure 12. Noise assessment points

Site <sup>1</sup>	Level, dB L <sub>Aeq</sub>			
	Fill 2 <sup>2</sup>	Fill 3 <sup>3</sup>	Fill 4 <sup>4</sup>	Fill 5 <sup>5</sup>
1	31	32	29	27
2	28	30	27	21
3	32	34	31	27
4	23	26	27	25
5	31	33	37	29
6	28	34	34	27
7	29	30	31	30
8	29	30	32	31
9	29	30	32	33
10	29	31	34	34

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

Table 1. Predicted Noise – dBA L<sub>Aeq</sub>



Figure 13 shows the truck noise between 5:00am - 6:00am when working Fill area 2. Figure 14 shows the operational noise between 6:00am - 7:00am for Fill area 3.

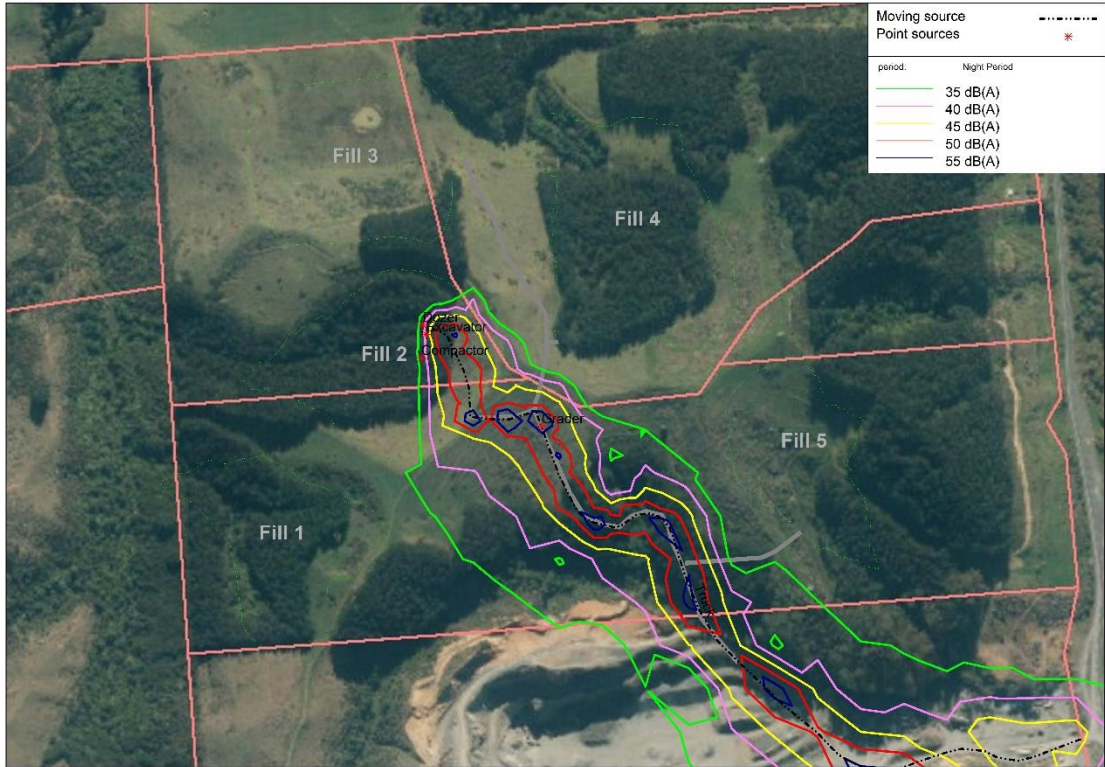


Figure 13. Trucks 5:00am - 6:00am for Fill Area 2

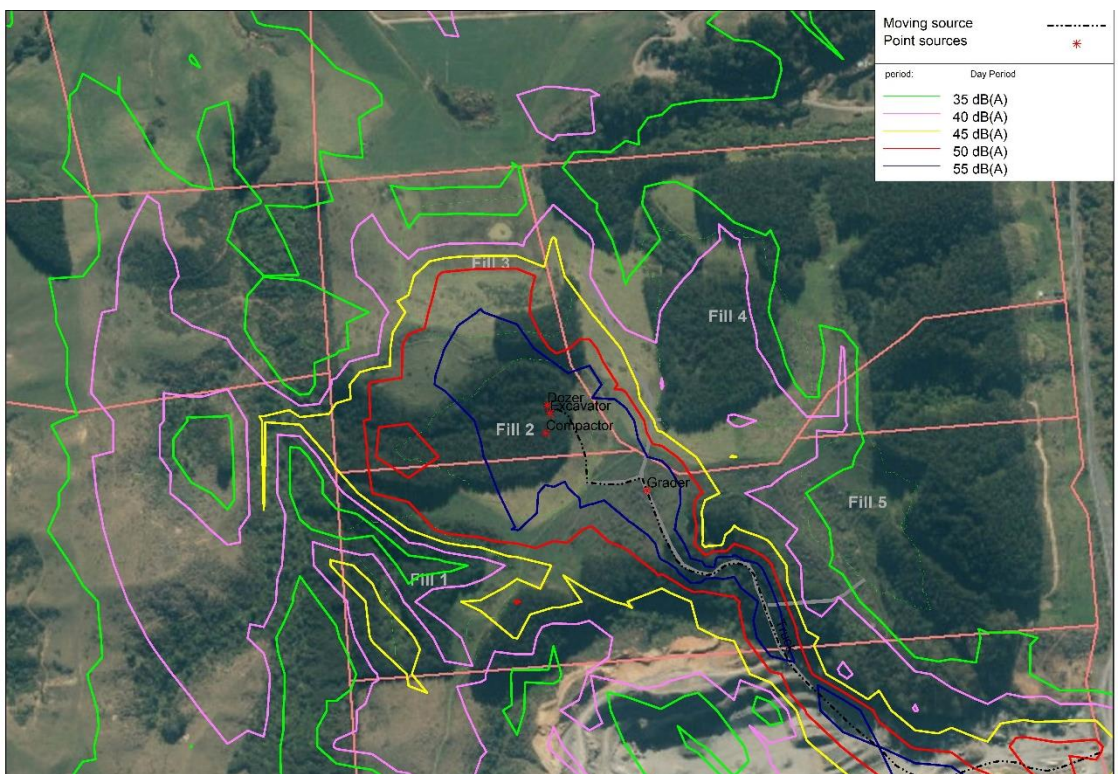


Figure 14. Work 6:00am - 7:00am for Fill Area 2



Figure 15 shows the truck noise between 5:00am - 6:00am when working Fill area 3. Figure 16 shows the operational noise between 6:00am - 7:00am for Fill area 3.

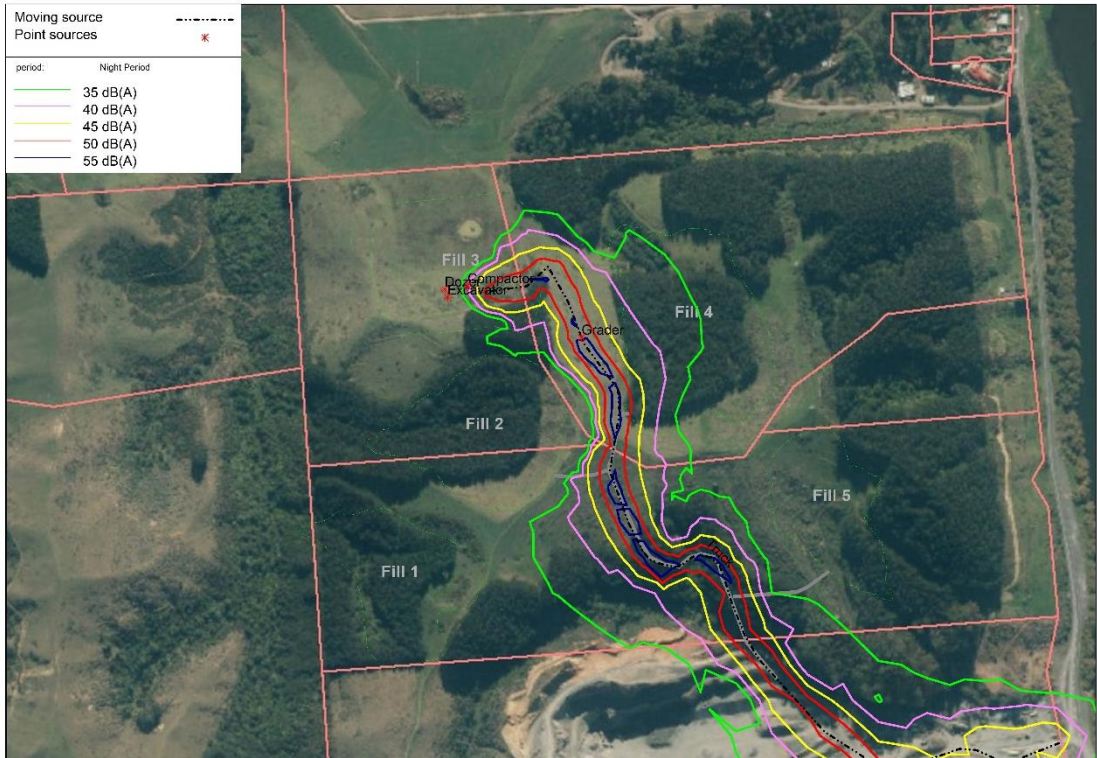


Figure 15. Trucks 5:00am - 6:00am for Fill Area 3

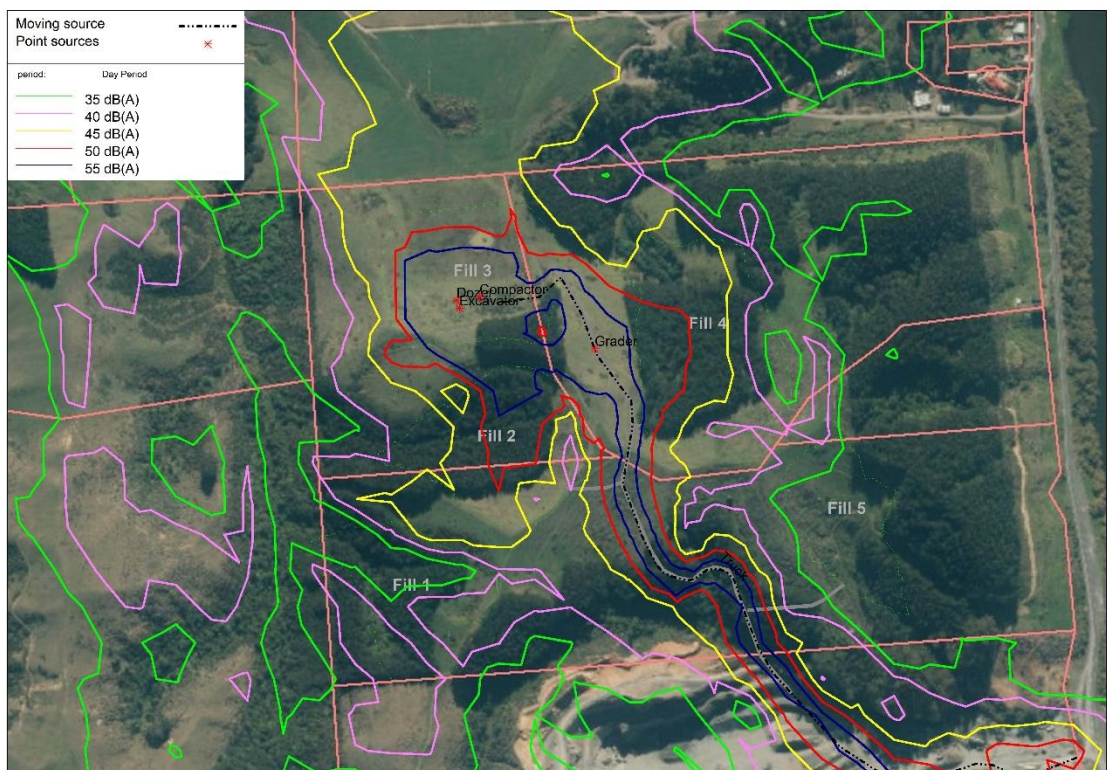
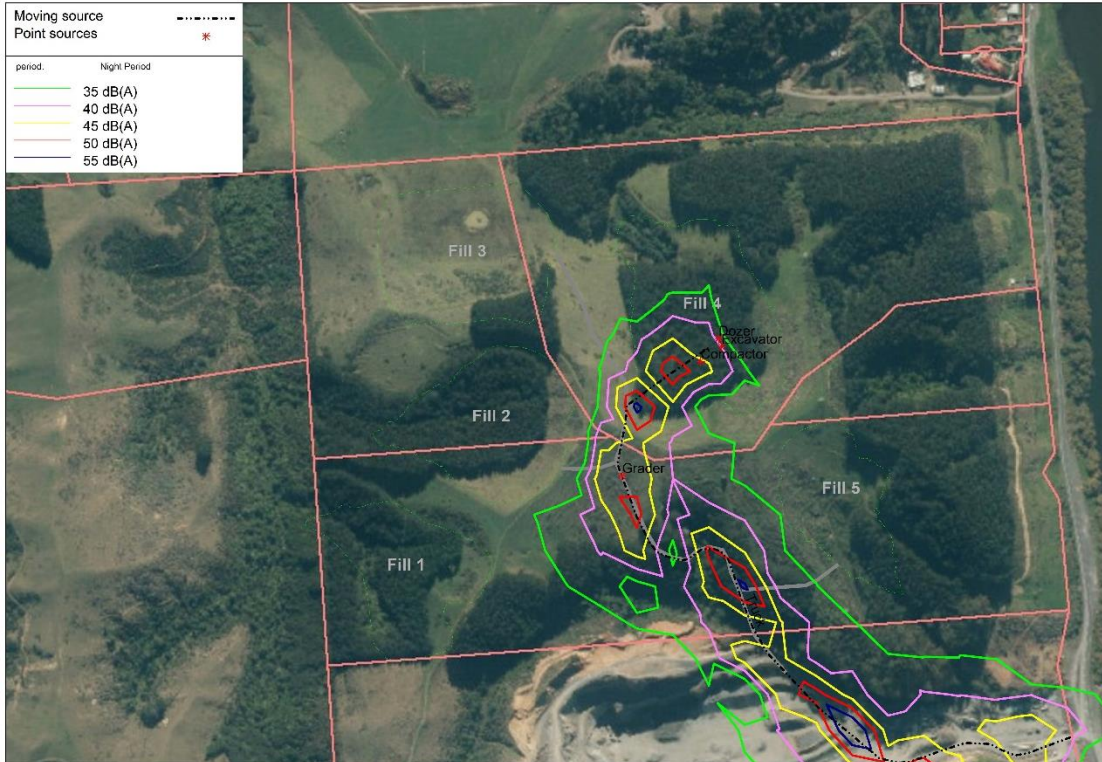


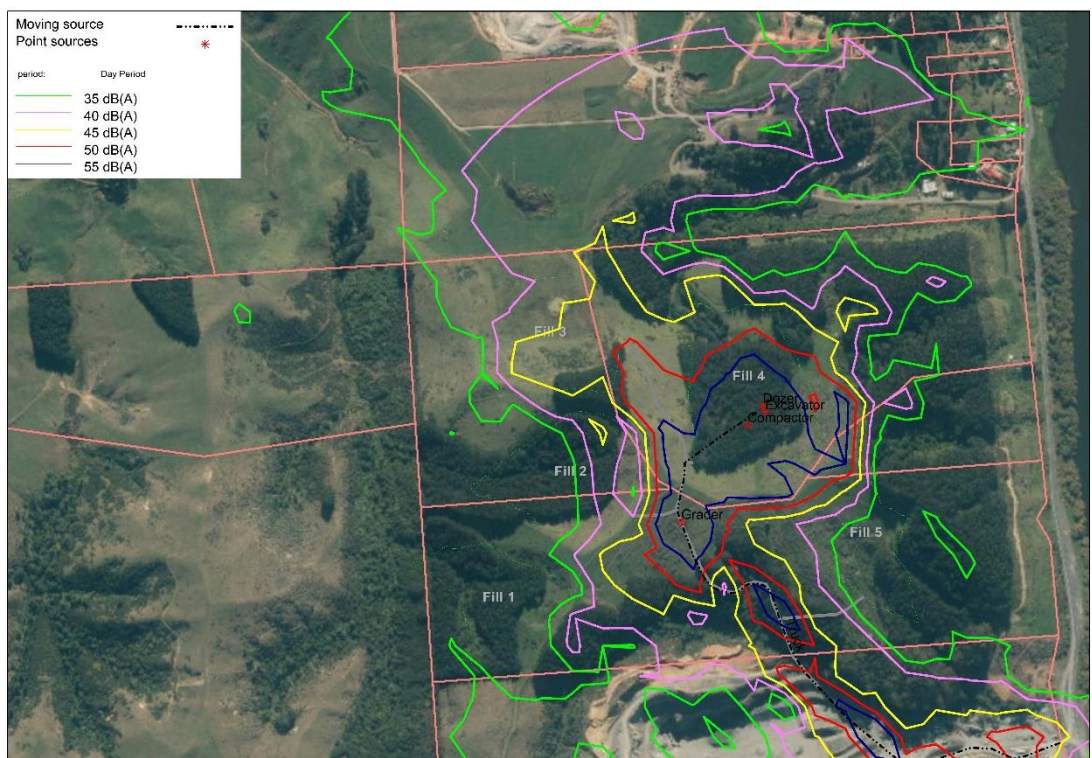
Figure 16. Work 6:00am - 7:00am for Fill Area 3



Figure 17 shows the truck noise between 5:00am - 6:00am when working Fill area 3. Figure 18 shows the operational noise between 6:00am - 7:00am for Fill area 4.



**Figure 17. Trucks 5:00am - 6:00am for Fill Area 4**



**Figure 18. Work 6:00am - 7:00am for Fill Area 4**



Figure 19 shows the truck noise between 5:00am - 6:00am when working Fill area 3. Figure 20 shows the work noise between 6:00am - 7:00am for Fill area 5.

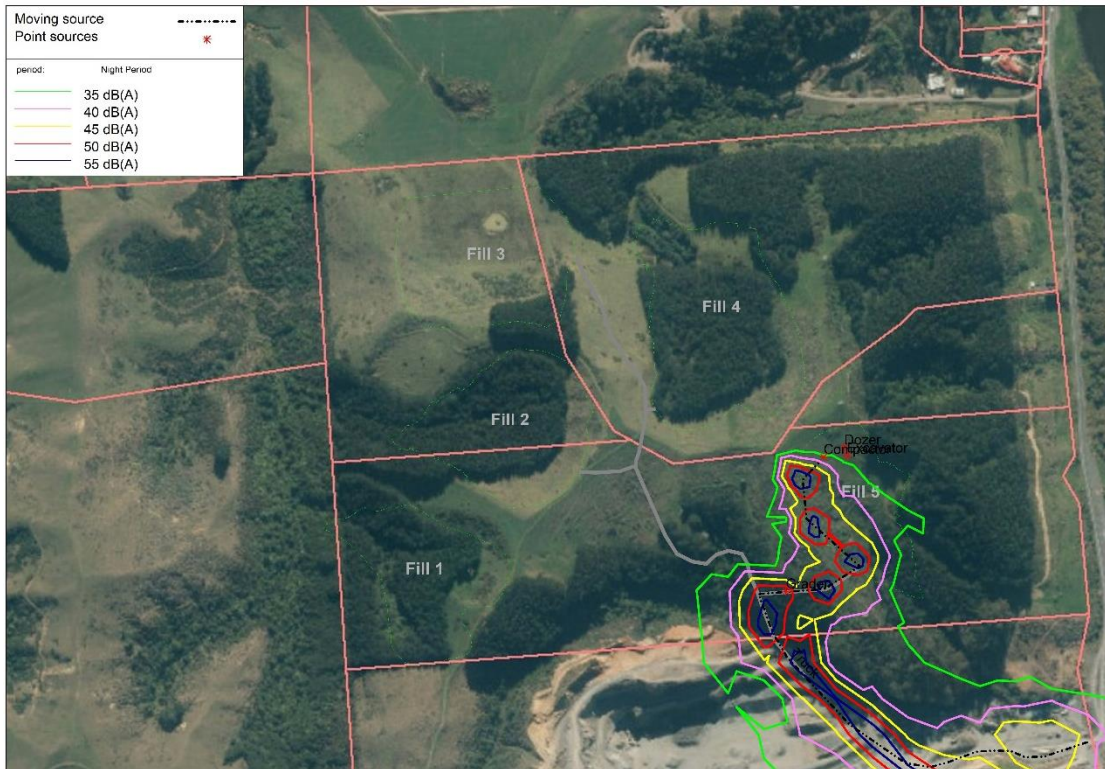


Figure 19. Trucks 5:00am - 6:00am for Fill Area 5

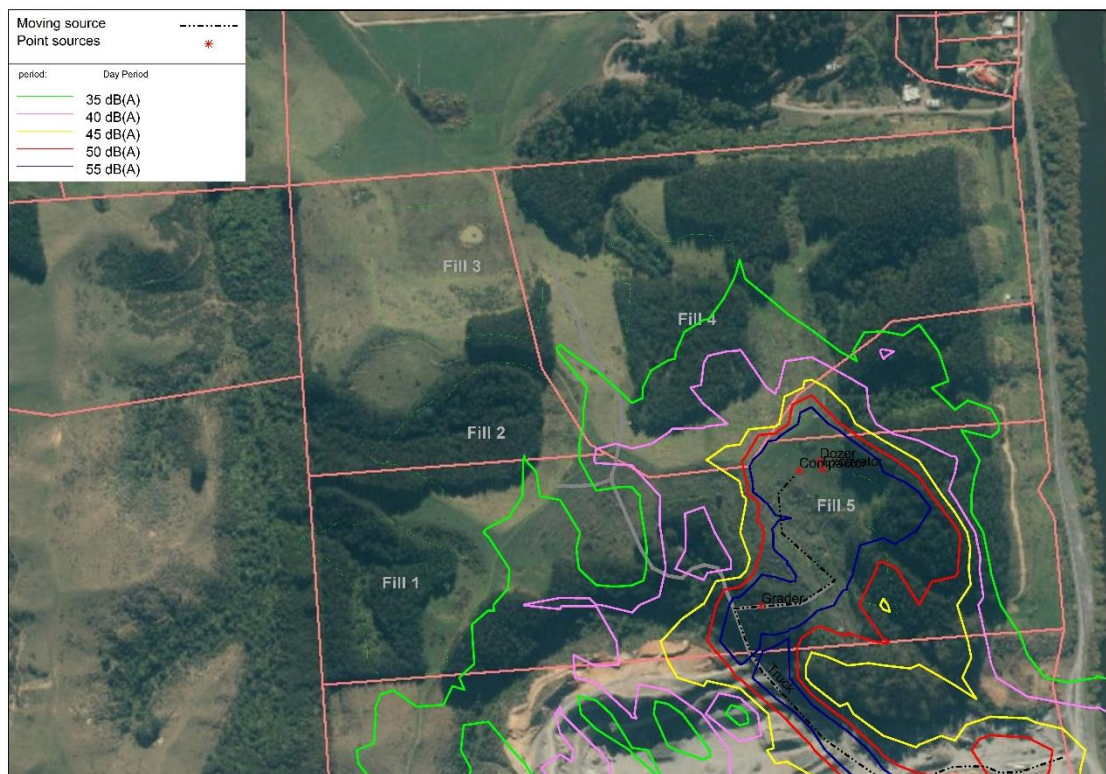


Figure 20. Work 6:00am - 7:00am for Fill Area 5

The noise has been calculated at the notional boundary of each of the closer dwellings shown on Figure 12. The levels for the 5:00am – 6:00am and 6:00am – 7:00am periods are set out in Table 2.

**Table 2. Predicted Noise – dBA  $L_{Aeq}$**

Site <sup>1</sup>	Fill 2 <sup>2</sup>		Fill 3 <sup>3</sup>		Fill 4 <sup>4</sup>		Fill 5 <sup>5</sup>	
	5-6am	6-7am	5-6am	6-7am	5-6am	6-7am	5-6am	6-7am
1	4	30	6	32	5	28	1	24
2	0	28	1	30	1	26	0	19
3	4	32	8	34	6	30	1	24
4	0	19	4	24	2	25	0	23
5	3	31	14	33	10	37	1	28
6	1	26	12	34	5	33	0	24
7	4	28	10	29	7	30	4	29
8	6	28	11	29	7	31	5	31
9	8	27	11	28	8	32	6	32
10	10	24	11	29	12	33	11	33
11	11	24	11	23	12	26	13	35

1 Site location is shown on Figure 12

2 Figures 13 and 14

3 Figures 15 and 16

4 Figures 17 and 18

5 Figures 19 and 20

From the above, 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  $L_{Aeq}$  levels. 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.

## 6. TRAFFIC NOISE

As set out above, the only change to the truck numbers as a result of the proposed managed fill will be an increase of 12 trucks a day to the number of trucks on the road. This will be insignificant and will not have any noticeable

effect on the traffic noise that will be experienced by residents along Riverview Road.

## **7. CONCLUSIONS**

It is proposed to develop four separate managed fill areas to the north of the existing Huntly Quarry at 300 Riverview Road, Huntly to take both the quarry overburden (only to fill area 5) and imported fill material from other sites. The proposed hours of operation of the managed fill related activities within the site are:

- 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.

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

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).

It is proposed to comply with the Rural Zone noise limits as set out in the Proposed Waikato District Plan – Decisions Version.

The cumulative noise effects of the existing quarry expanded to the north plus the noise from each of the proposed four fill areas as shown on Figure 1 have been assessed for the daytime activities. Both the noise contours and spot levels

at the notional boundary of the closer houses have been predicted and this shows the noise will not exceed 37dBA  $L_{Aeq}$  at the most exposed notional boundary on Riverview Road and 34dBA  $L_{Aeq}$  on Hillside Heights Road. This is below the existing measured background ( $L_{A90}$ ) noise for the proposed hours of work as shown on Figures 4 and 5 so there will not be any adverse noise effects for the residents around the site.

Noise from the 12 additional trucks on Riverview Road will have an insignificant effect on the existing noise environment.

For the proposed 12 truck movements between 5:00am – 6:00am and the operation of the managed fill between 6:00am – 7:00am the noise will be at or below the existing background sound ( $L_{A90}$ ) and well below the existing  $L_{Aeq}$  levels.

From the assessment the noise effects of the proposed managed fill will not noticeably change the existing noise levels for the neighbours and will be less than minor in terms of the requirements of the Resource Management Act.

\* \* \*