

Peer Review

T&T Acoustic Report: Waste Management Facility 30 Benmore Crescent, Manor Park

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On Behalf of:

HUTT CITY
TE AWA KAIRANGI

Peer Review

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1 Purpose

Hutt City Council [Council] have commissioned Malcolm Hunt Associates [MHA], as independent acoustic consultants, to review the reported noise and vibration effects of a waste management facility proposed for a rural site at 30 Benmore Crescent involving both daytime and night time noise-generating activities.

This review has considered the methods and findings of the acoustic assessment report provided at Appendix 11 of the application and assesses whether the conclusions reached can be sustained on the facts and information provided, including the plans and information included in the application and from ambient noise levels MHA have measured during site visits to the area. This review provides the basis of recommendations to Council on the acceptable and enforceable (draft) conditions of consent dealing with noise effects affecting residentially zoned sites in the nearby area.

2 Assessments Undertaken

We have reviewed the methods and assessment findings outlined in Appendix 11 of the application which is an acoustic assessment report by *Tonkin & Taylor*¹. The report sets out the basis of noise predictions carried out to quantify noise levels expected to be received in the area and refers to the relevant noise provisions of the Hutt District Plan which are outlined in Section 2 of the report.

We consider the quoted district plan noise provisions to be an appropriate benchmark to achieve compliance with in order to avoid adverse noise or vibration effects associated with the development, however as noted below we consider the compliance assessment provided for Sundays has not been applied correctly.

This report includes results of recent weekend sound level readings undertaken by the author within the residential receiving environment. By measuring ambient sound levels across different days of the week, information has been collected which informs a discussion of expected impact of the proposed Sunday activities, assessed in the context of typical ambient noise levels experienced on Sundays. Based on available evidence, this report recommends allowing (as a condition of consent) noise from the site due to operations during daytime on Sundays be made subject to the same daytime noise limits that apply on all other days of the week. The recommended consent conditions also propose to update the reference to the relevant NZ Standards and recommends construction noise be measured and assessed using the more recent 1999 NZ construction noise standard. The 1999 version of this Standard is preferred as the older 1987 NZ construction noise standard referenced in the district plan is now considered obsolete.

3 Author's Experience

The author of this review (Malcolm Hunt) is considered sufficiently qualified and experienced to carry out this

¹ *Waste Management NZ - Manor Park, Acoustic Assessment*. Prepared for Waste Management NZ. Prepared by Tonkin & Taylor Ltd. Date 31 October 2022. Job Number 1015081 v1

review having undertaken similar noise assessments and field measurements of various commercial and industrial activities adjacent to residential areas including transport depots and manufacturing sites. Malcolm has experience over the last 35 years in applying the relevant NZ Standards and guidelines and with the measurement and prediction of noise related to transport operations and industrial sites including large-scale earthworks, waste transfer facilities and landfill sites. This work has included preparing *Assessment of Environmental Noise Effects*, peer reviews, acoustic modelling, preparation of monitoring and management plans, as well as field monitoring and measurements undertaken to assess compliance.

4 District Plan Noise Provisions

The Hutt City district plan states environmental noise can adversely affect health and amenity values in all activity areas. The Plan considers it is necessary to determine and establish noise limits that maintain or enhance health and amenity values. The implementation of noise rules in the district plan is required to be carried out in compliance with the following conditions;

14C 2.1 Permitted Activity - Conditions

In all Activity Areas

- (a) These rules are without prejudice to the powers of Council pursuant to the Act.
- (b) These rules are without prejudice to the powers of any Medical Officer of Health pursuant to the Health Act 1956.
- (c) The noise levels shall be measured in accordance with NZS 6801:1991 "Measurement of Sound", and assessed in accordance with NZS 6802:1991 "Assessment of Environmental Sound". The noise level is the L10 descriptor, as defined in NZS 6801:1991.
- (d) The lower levels shall apply between the commencement of the lower level on a Saturday evening and Monday morning, and Public Holidays, unless otherwise specified.
- (e) The maximum sound level shall not exceed Lmax75dBA during the hours 10.00pm - 7.00am, measured anywhere within a residential activity area.
- (f) All construction, demolition, and maintenance work shall comply with NZS 6803P "Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work".
- (g) Sirens being used in response to an emergency (and routine testing and maintenance) are exempt from the Permitted Activity Condition standards.

Note that **Rule 14.C.2.1(d)** states the lower levels apply between the commencement of Saturday evening and Monday morning. The T&T report makes no mention of this limitation on noise emissions during daytime on Sundays and Public Holidays. This issue is further discussed below.

The site is zoned **General Rural** within the Hutt City District Plan. The permitted activity noise standard for noise emitted by activities taking place on sites zoned *General Rural* is reproduced as follows;

14C 2.1.10 General Rural Activity Area	
All non-residential activities must not exceed the conditions as specified, measured anywhere beyond the site on which the activity takes place -	
Maximum 50dBA	7.00am - 10.00pm
Maximum 40dBA	10.00pm - 7.00am

The discussion set out in Section 6 below discusses noise limits recommended as conditions of consent for this project (if approved) should be based on the permitted activity noise standard for noise generated within the rural zone, but updated in terms of the noise units (LAeq) and measured and assessed using the more recent technical standards (2008 versions rather than the 1991 versions referred to in Chapter 14C of the district plan.

5 Existing Environment

As shown in Figure 1, The site is located between the Huitt River and state highway 2. The T&T report correctly notes the nearest residential receivers are located in Mary Hulse Grove, to the east of the site, some 50 metres from the site boundary. The nearest sensitive receivers on Mary Hulse Grove are partially or fully screened by the railway embankment which reduces the propagation of sound generated on the subject, when received at these closest residential sites. The nearest receivers to the south are on High Street, approximately 230 m from the southern border of the site.



Figure 1 Aerial photo graph showing the site proposed for the Waste Management NZ facility within the context of the surrounding area, including the closest residential sites.

The existing noise environment is dominated by traffic using state highway 2 and trains on the North Island Main Trunk rail line.

Automated sound level monitoring has been undertaken by the author (at the location indicated above) over the period 25 to 28 March 2023 as a means of quantifying the existing ambient noise environment, particularly levels measured during daytime on Sunday versus other days of the week. Graphs of measured sound levels are shown in Figures 2 and 3 below.

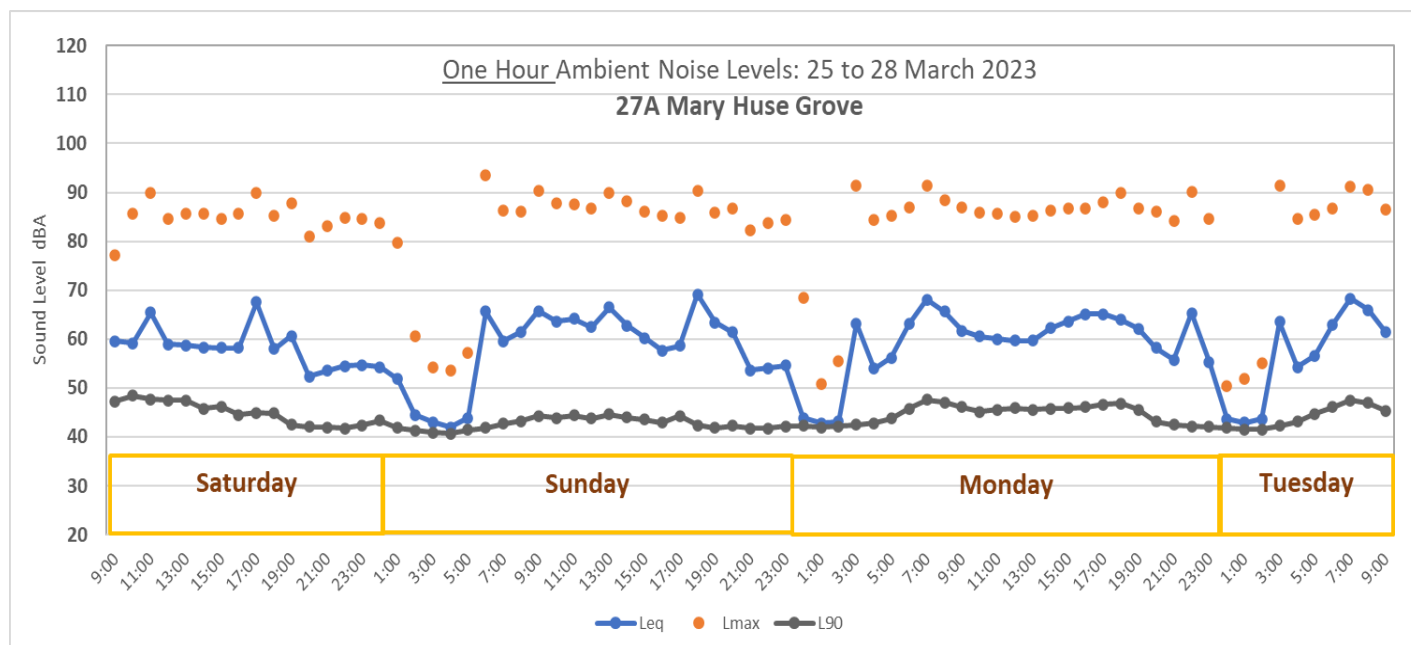


Figure 2 Results of automated 15 min x 15 min sound level monitoring has been undertaken at the site indicated above over the period 25 to 28 March 2023.

These results indicate daytime LAeq and Lmax sound levels are highly affect, on all days of the week, by ambient sources such as highway traffic and passing trains. The above results have been analysed for daytime for each day monitoring took place. The following table indicates average LAeq, LA10 and LA90 for daytime (7am to 7pm) across each day on which monitoring took place;

Measurement Unit	Saturday	Sunday	Monday	Tuesday
Log av. LA10	60 dB	59 dB	56 dB	53 dB
Log av. LAeq(15 min)	62 dB	64 dB	63 dB	64 dB
Av. LA90	46 dB	44 dB	45 dB	46 dB

These summary results indicate daytime on Sundays exhibits similar ambient sound levels across each day of the week and do not support the operative district plan Rule 14C 2.1(d) approach which states that the lower night time apply “....between the commencement of the lower level on a Saturday evening and Monday morning, and Public Holidays”.

The district plan approach attempts to provide for ‘quiet Sundays’ however such an approach is not found within the recommendations of any NZ Standard or guideline, but rather is seen as an artefact of a desire to achieve quieter living conditions on Sundays for religious or cultural reasons.

In our experience, there are difficulties with applying a night time noise limit to control noise from activities taking place during daytime on Sundays and statutory holidays. Often it is not possible to monitor compliance with this artificially low noise limit due to elevated ambient noise levels during daytime on Sundays and statutory holidays. The relevant NZ Standard (NZS6802:2008) recommends that if a separate Sunday daytime noise limit is necessary, this be set as a ‘daytime’ limit and does not recommend using night time limits for assessing daytime noise on Sundays.

6 Proposed Activities

The T&T report sets out a description of activities proposed for the site as;

- Recycling transfer station
- Materials recovery facility
- Construction and demolition waste recycling
- Workshop
- Office facilities
- Truck wash
- Parking

The report states the transfer station will operate between 7 am and 6 pm seven days per week. Outside of those hours it is stated some heavy vehicles will leave site from the parking area, mainly between 6 am and 7 am. The site will be open at all hours for staff parking on the western edge of the site adjacent to the state highway.

The forecast average daily traffic movements are for an average of 604 vehicle movements per day, including 275 light vehicle and 329 heavy vehicle movements per day. Noise from on-site vehicle movements are included in the T&T noise predictions discussed below. Noise from vehicles accessing the site on Benmore Crescent (a public road) is not covered by the district plan noise provisions, however separate recommendations are set out below regarding speed limits and measures to avoid road surface irregularities (which can cause additional impulse sounds which can cause additional annoyance).

7 Noise Predictions

The T&T report sets out predicted noise levels expected within the nearby residential environment as a result of the proposed activities. Section 5.2 sets out the sound levels at source adopted for predictions of operational noise, while section 6 sets out noise sources expected during the construction phase of the project.

7.1 Daytime & Night Time Operational Noise

Operational noise levels have been modelled using the industry standard software SoundPlan. Noise emissions have been separately modelled for daytime and night-time hours as follows;

- Daytime operation – All plant operating including transfer station and vehicles on site.
- Night-time peak operation – limited Waste Management vehicles leaving/parking and light vehicles of staff arriving and parking.

We understand predictions of operational noise have been made utilising the LA10 unit. This is so the predicted levels can be compared to district plan permitted activity noise limits for the site set out within Rule 14C.2.1.10. The predicted LA10 levels for sensitive receiver sites are presented in Table 7.1 of the T&T report, reproduced as follows;

Address	27 Mary Huse Grove	29 Mary Huse Grove	31 Mary Huse Grove	1397 High Street	1404 High Street
Daytime	46 dB	48 dB	46 dB	36 dB	37 dB
Night-time	25 dB	27 dB	26 dB	30 dB	28 dB

Subject to the ‘Sunday noise limit issue’ discussed below, the above LA10 levels predicted for the closest residential sites appear to be compliant with the district plan permitted activity standards of LA10 50 dB daytime and LA10 40 dB night time. The reference to 29 Mary Huse Grove appears to be a typo as there is no such address in Mary Huse grove. It is likely this is referring to the property at 27A Mary Huse Grove which is the closest property to the site.

Subject to comments below around the lack of assessment of ‘special audible character’ in received sounds (as require by both NZS6802:1991 and NZS6802:21008) we generally support the prediction results (based on the information provided) as the results seem reasonable and consistent with established practices (and the recommendations of the relevant NZ Standards. However the reliability and veracity of the predicted noise levels remain for T&T to substantiate, if necessary.

7.2 Construction Noise & Vibration

Section 6 of the report sets out the basis of predicted noise and vibration levels emitted during the construction phase. Results of construction noise predictions are set out in table 7.2 for the closest residence. These levels range from LAeq 54 dB to 67 dB and are compliant with **Rule 14.C2.1 (F)** which compliance with NZS6803:P 1987 which is a provisional standard no longer generally accepted. Similar construction noise limits and noise assessment methodologies existing within replacement standard NZS6803:1999 “*Acoustics – Construction Noise*”. It appears the predicted construction noise levels would comply with both the 1987 and 1999 versions of NZS6803.

Overall, on the basis of the type of works proposed and distances involved (including screening by the rail embankment), we consider it a reasonable finding that proposed works would comply with the construction noise limits of NZS 6803: 1999 “*Acoustics - Construction Noise*”.

Regarding vibration, predictions are based on a vibratory roller operating on the site during earthworks. Quoted measurements indicate received vibration on a from a vibratory roller would measure approximately 1.6 mm/s Peak Particle Velocity (PPV) at 20 m from the works. This is a perceptible effect, however the actual distance to the closest residences is in the order of 60 to 63 metres. This will ensure construction vibration effects would generally not be perceptible at the closest residences, and would be received at vibration levels well below caused by passing trains.

Overall, we concur that construction noise and vibration effects of the likely nature and scale that would result in acceptable effects at the closest sensitive receiver sites.

8 Discussion

8.1 Appropriate Noise Limits

As identified above, the T&T report has failed to recognise district plan Rule 14C 2.1(d) which requires the night time noise limit (LA10 40 dB) be applied during daytime on Sundays. As above, the daytime predicted LA10 levels will exceed this limit on Sundays. However, ambient sound level monitoring has shown average background sound levels present at residential sites in the area on Sundays measure around 44 dB. This means an LA10 40 dB noise limit applying at residential sites could not be measured or assessed during daytime on Sundays. Importantly, the effects of noise received from the proposed activities operating up to 50 dB during daytime on Sundays is considered to be less than minor given the existing environment.

Below we recommend proposed noise-related conditions of consent, should the application be approved that incorporate the following;

1. The daytime noise limit for Sundays be consistent to the daytime noise applying during daytime across all other days of the week;
2. Noise levels be measured and assessed using the LAeq the noise unit and be measured and assessed subject to the following NZ Standards;
 - New Zealand Standard 6801:2008 *Acoustics – Measurement of environmental sound*
 - New Zealand Standard 6802:2008 *Acoustics – Environmental noise*
 - New Zealand Standard 6803:1999 *Acoustics – Construction noise*
3. It is considered appropriate, in noise effects terms, to set the proposed noise limits using the LAeq unit, as recommended by the above Standards. It is recommended this limits be set at the same numerical values (50 dB and 40 dB) adopted within the operative district plan for activities taking place in in the Rural General zone. These limits would be consistent with the current approach of the district plan whilst falling within the 1999 World Health Organisation guidelines and would result in noise emissions being capped at levels generally compatible with residential activities in the area.

4. The T&T report implies district plan noise limits for the Rural General Zone apply “*at the notional boundary of any occupied dwelling*”. However, we can find no reference to ‘notional boundary’² in the district plan Noise Chapter. The compliance assessment location according to district plan Rule 14C 2.1.10 (Rural Activity Area noise limits) is “measured anywhere beyond the site on which the activity takes place” which we also do not agree with. This would require compliance within the state highway 2 boundary or the rail corridor. We recommend a compliance location that protects the nearby sensitive residential zone. We have recommended noise limits apply “*within the boundary of any residentially zoned site*”;

8.2 Special Audible Character

There is no discussion within the T&T report on the likelihood ‘special audible characteristics’ within the sounds emitted from the site and received within sensitive receiving sites. It is common ground that sounds possessing ‘special audible characteristics’ are more annoying (at the same level) compared to sounds without such characteristics (e.g. bangs, crashes, or hum, etc). Both versions of NZS 6802 (2008 and the 1991 versions) require a 5 dB ‘penalty’ adjustment for special audible characteristics be included before determining compliance by comparing the measured level with the stated noise limit.

While the T&T noise assessment omits to assess the potential for sensitive receivers to experience sounds from the site possessing special audible characteristics, we consider this issue can be adequately addressed via conditions of consent. In particular, via a specific condition dealing with maintaining yard surfaces free from potholes and surface irregularities which avoids crash/bang impulsive type sounds. Also, should activities on the site generate sounds containing special audible character, the reference within the recommended noise limit condition to assessing noise using NZS6802:2008 will ensure these effects, if present, will be adequately taken into account when determining compliance with the stated noise limits.

9 Noise Mitigation Measures

The provisions of Sections 16 and 17 of the Resource Management Act require that activities adopt methods to avoid, remedy or mitigate potential adverse noise effects. s.16 in particular is explicit in requiring the adoption of the “best practical option” to avoid unreasonable noise. s.17 requirements must also be adopted whether or not an activity complies with the District Plan, which includes compliance with the Hutt City District Plan noise limits.

The T&T report is not forthcoming in describing noise mitigation measures incorporated into the proposal. We consider the most effective way to ensure the operation includes suitable noise mitigation measures is to require the consent holder to prepare a “Noise Management Plan” for the site and activity, and that this plan be submitted to Council for approval prior to operations commencing on the site. A separate condition of consent is recommended below which requires all operations on the site to be carried out in accordance with the approved noise management plan.

10 Recommendations

Noise effects associated with the proposed waste handling facility have been adequately described within the T&T report in our view. We summarise our assessment of noise matters associated with the application as follows;

- (a) Completeness of Information – we consider the information supplied to be sufficiently complete to enable assessment to consider potential noise effects to be generally understood. Apart from the ‘daytime Sunday’

² The notional boundary is up to 20 m from the closest point of the dwelling, but not beyond the property boundary.

noise issue (resolved via recommended conditions) and the omission of any assessment of 'special audible character' within received noise, we are satisfied with the information and assessment of the noise effects provided;

- (b) We agree with the consultants methodology although the predictions remain for T&T to justify, if needed;
- (c) We agree the presence of significant ambient noise in the area will lessen the impact of noise from the proposed facility, if approved.
- (d) We agree potential noise effects of the proposal can be appropriately managed through compliance with conditions recommended below which while based around district plan noise standards, include reference to more recent NZ Standards and deals satisfactorily with the 'daytime Sunday' noise issue .

While we have made certain comments regarding missing information and express some reservations around the assessment provided, we conclude, overall we are generally satisfied with the noise assessment methods adopted and in the findings around compliance with the stated noise criteria (except for the Sunday 'daytime' issue). We consider the application, if granted and operated as per the information provided, would not be likely to cause unreasonable noise effects within the nearby sensitive residential environment. On this basis, Council may approve the application on noise grounds subject to attaching the following noise-related conditions of consent;

1. *The consent holder shall ensure that all activities on the site (except construction activities) do not exceed the following noise limits at any point within any residentially zoned site during the following time frames:*
Daytime (0700 - 2200 hours): 50 dB LAeq (15 min)
Night-time (2200 - 0700 hours): 40 dB LAeq (15 min) and 75 dB LAFmax
Noise shall be measured and assessed in accordance with New Zealand Standards NZS 6801:2008 "Acoustics - Measurement of environmental sound" and NZS 6802:2008 "Acoustics - Environmental noise", respectively.
2. *Construction must be planned and managed in accordance with New Zealand Standard NZS 6803:1999 "Acoustics – Construction Noise" and comply with the noise limits set out in Tables 2 and 3 of that Standard.*
3. *Not less than 20 working days prior to commencing site operations, the Consent Holder shall submit an operational Noise Management Plan (NMP) to the Hutt City Council's Compliance and Planning Manager for certification that it complies with the conditions of this consent ten working days prior to the commencement of works authorised by this consent. The NMP must be prepared by a suitably qualified person and include the following:*
 - a) *Hours of operation and applicable noise limits;*
 - b) *Person(s) responsible for implementing the NMP;*
 - c) *Measures to be employed onsite to reduce the potential for, and frequency of, impulsive noise or tonal emissions related to the operation of any vehicles, loaders and plant operating on the site; and*
 - d) *A noise complaint management procedure setting out requirements for recording and procedures for responding and investigating any noise complaints received.*
4. *Once constructed, all on-site operations shall be undertaken in accordance with the certified NMP.*
5. *For noise control purposes, vehicle speeds on-site shall not exceed 20 km/hour. Signs advising of the speed limit restriction shall be erected in two conspicuous locations near the site entrance.*
6. *In order to avoid impact sounds from vehicles and loaders operating on site, the consent holder shall ensure travelled surfaces are maintained to a reasonable standard free from pot holes or other surface irregularities.*

Malcolm Hunt

30 March 2023