

Table 8.5 Calculation of Noise Levels from Road Traffic

Parameter	Existing Traffic	Additional Project Traffic
Vehicles Per Hour	250	39 (24 heavy + 15 light)
Percentage Heavy Vehicles	7%	62%
Road Surface Correction	+1 dB	+1 dB
Distance to facade	21 m	60 m
Percentage Soft Ground	50%	50%
Calculated $L_{Aeq,1hr}$	60.6 dBA	52.5 dBA

Table 8.5 indicates that a typical existing hourly traffic noise level of 60.6 dBA can be expected at the worst-case receiver, and additional traffic from the project, under worst-case conditions, would create 52.5 dBA. The total traffic noise level is then calculated to be 61.2 dBA, or an increase of 0.6 dB over the existing level, which is within the allowance criterion of +2 dBA. Thus, operational traffic noise levels associated with the Project are predicted to be well within relevant criteria.

8.6 Management of Transportation Noise

With a view to minimising noise from the Project's heavy vehicle movements on public roads, the Proponent will implement a Driver's Code of Conduct for all drivers travelling to and from the Project Site to ensure all issues related to unacceptable driver behaviour would not be tolerated. Relevant noise-related requirements in the code of conduct will relate to:

- strict adherence to the approved hours of operation;
- avoidance of the use of exhaust brakes on Luddenham Road within 500m of the intersection with Patons Lane and at all times whilst travelling on Patons Lane;
- maintenance of vehicles to maintain compliance with RTA noise criteria, and
- avoidance of speeding on roads approaching the Project Site.

It is proposed that the content of the Code of Conduct would be prepared in consultation with the residents near the intersection of Patons Lane and Luddenham Road to ensure that appropriate limitations/expectations are placed on drivers travelling to and from the Project Site. The Code of Conduct would incorporate a penalty clause for the re-offending drivers, ie. three substantiated offences and they would be banned from travelling to the Project Site.

9 NOISE CONTROL MEASURES

The noise control measures assumed in the present assessment, and required in order to achieve the calculated noise levels, are summarised below. The measures have been established based on the FMPPR and joint conferencing.

- The waste recycling and re-processing facility is sited on the Project Site at the furthest distance from residences, as shown in Appendix A;
- Earth mounding is used on the northern, eastern and southern boundaries of Site, as shown in Appendix A, during the periods when operations within the site require them;
- Earth mounds are also provided within the site at the Central and Southern locations within the site at specified times, also as shown in Appendix A;
- Acoustic mounding is used to enclose the waste recycling and re-processing cell;
- The fixed recycling and re-processing equipment – particularly the crushers and the trommel – are housed within acoustic enclosures;
- During the construction phase, 4m-high mobile acoustic barriers would be deployed on the external faces of perimeter faces on both the northern and eastern faces. The barriers would be relocated concurrently with the works as they move from one external area to another on the outer surface of both faces;
- Acoustic treatment would be applied to selected mobile earthmoving and other equipment to be used on site, to achieve the specifications shown in **Table 5.2**;
- Acoustic screening would be used for clay/shale loading operations, specifically in Cell 3, through strategic placement of 4m-high barriers in an east-west orientation across the active stockpile area, so as to always acoustically screen earthmoving equipment during loading operations.
- there should be no operational equipment on top of mounds having a sound power level greater than 106 dBA (unshielded) or 111 dBA (shielded).
- In addition there should be no bobcats, front end loaders or bulldozers working on top of the mounds around the processing plant other than during construction stage

9.1 Practicalities of Using the Proposed “Movable” Noise Barriers

The intent of the FMPPR Acoustic Assessment is for work activities behind the “moveable”/“temporary fixed” barriers to be confined to a specific area that maintained the required acoustic attenuation provided by the barriers.

The agreed procedure, as a result of joint conferencing, for determining and verifying the location of these barriers, and of any work conducted behind them, should be specified in license or approval conditions for this project. This procedure should involve:

- moving barriers to new location;

- marking off an area behind the new barriers at which the RL of the ground is no more than 1m higher than that at the base of the barrier, (or lower at greater distances behind), in general accordance with Appendix A, and within which there is no line of sight to any residence to the side of the barrier. The permitted work area could be marked off with tape, fibreglass poles or similar. This represents the area within which equipment must operate behind the barrier; and
- having an acoustic engineer attend site to formally verify the location of the barrier and the new working area.

No work should be conducted outside the site's perimeter bunds or the temporary fixed barriers during the above process, except that required to actually move the barriers. Diagrams in Appendix B are presented to provide better understanding of the proposed work areas and their relationship to the temporary barriers.

9.2 Practicalities of Using the Proposed 5m Earth Mounds

Proposed earth mounds are to be used to shield equipment working close to the top of the proposed final landform and represent a commonly-used method of controlling noise from such equipment.

A procedure for removing a bund to provide the final landform for the project should be specified in license or approval conditions for the project. This procedure should involve:

- initial removal of the top of the bund from behind (south) using a long-reach excavator; and;
- final shaping of the landform using a bobcat, with a sound power level not exceeding 106 dBA.

No work should be conducted outside the shielded areas of the site during the above process.

Filling of the area containing the waste recycling and reprocessing plant will take place at the end of the project's life, and that during this process no recycling or reprocessing will take place on the site. However, the deposit of fill into the area used for waste recycling and reprocessing will still be required to be conducted behind the appropriate acoustic mounding.

9.3 Compliance Noise Monitoring

The Project will incorporate an ongoing real-time noise monitoring system and separately, an ongoing attended noise monitoring program, as required, throughout its operational life. The program will include both environmental noise monitoring of the site's total noise emissions and on-site of fixed plant and mobile earthmoving equipment auditing. This monitoring will serve to:

- validate the noise predictions presented in this assessment,
- ensure that fixed plant earthmoving equipment noise levels do not exceed the sound power levels presented in **Table 5.2**;
- ensure the effectiveness of the noise mitigation measures included in the Project's design; and

- through the adoption of a real-time noise monitoring system, ensure the ongoing compliance of the site's total noise emissions.

Real time monitoring is environmental best practice given its ability to identify, monitor and record audio samples of specific noise sources and instantaneously (and wirelessly) transmit these to a central console, such that immediate action can be taken on noise from equipment or processes that are approaching or exceed relevant noise criteria.

- Details of the noise monitoring program will be included in a Noise Monitoring Plan (as recommended in the OEH review of the project reference: DOC11/52564) to be prepared following the receipt of project approval. The Plan would address on-site auditing of the major items of plant (as identified in **Table 5.2** or otherwise, as new plant is introduced throughout the Project). It is proposed to establish a real-time noise monitoring system at an agreed location within The Vines Estate.

10 CONCLUSION

This report is a consolidated acoustic report that details how noise emissions from all construction and operational phases of the Further Modified Project Preferred Project Report (FMPPR) of the Orchard Hills Waste and Resource Management Facility will comply with OEH noise criteria.

This assessment also concludes that no exceedance of relevant criteria for off-site traffic noise would occur.

In addition to the recommended ameliorative measures, detailed in the body of this report, the Proponent will develop a Noise Management Plan, consistent with the recommendations of the OEH, throughout the life of the Project which will serve to further reduce the noise exposure at surrounding residences. The Plan would prescribe strategies in detail regarding matters such as the use of real-time noise monitoring, and the staging of the site establishment activities in relation to the re-positioning of the mobile acoustic barrier so as to appropriately screen works at all times. The Plan would re-assess the Project's noise monitoring program and the relevance of its results to future works processes

Acknowledgment

I acknowledge that I have read the Expert Witness Code of Conduct that is Schedule 1 to the Land and Environment Court Expert Witness Practice Direction 2003 and agree to be bound by it.

Yours faithfully

WILKINSON MURRAY



14 February 2012

Brian Clarke

Date

Note

All materials specified by Wilkinson Murray (Sydney) Pty Limited have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose.

Version	Status	Date	Prepared by	Checked by
A	Final	14 February 2012	Brian Clarke	John Wasserman

Quality Assurance

We are committed to and have implemented AS/NZS ISO 9001:2008 "Quality Management Systems – Requirements". This management system has been externally certified and Licence No. QEC 13457 has been issued.



AAAC

This firm is a member firm of the Association of Australian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.

APPENDIX A

DETAILS OF OPERATIONS IN EACH MODEL

NOISE MODEL 1



Noise Model 1

Activities Completed and Noise Mitigation Installed

- Audio-visual mound around the recycling and re-processing area to a height of 57m AHD.
- Northern face (continuous) to a height 52m AHD.
- Central acoustic mound constructed to a height of 56 m AHD north of active waste cell.
- Installation of all recycling and re-processing equipment and buildings.

Activities in Progress

- A. Delivery of wastes by truck to recycling and re-processing area (@ 49m AHD (Tr1) and 48m AHD (Tr4) and active waste cell @ 45m AHD (Tr2) and 47m AHD (Tr3)). [16 truck movements per hour].
- B. Compaction of wastes in active waste cell [Waste Compactor (Cat 825H @ 52m AHD) (WC)].
- C. Ripping and excavation of material from Cell 2A and delivery to stockpile area [1 x D11 Bulldozer @ 35m AHD (Bd) and 1 x Scraper (Cat 637) delivery shale to external stockpile area @ 52m AHD (Sc)].
- D. Excavating [long reach excavator (15t) @ 45m AHD (Ex)] and loading clay at ground level in Cell 2B into trucks for despatch off site [1 truck @ 45m AHD (Tr1) / 1 mobile truck @ 47m AHD (Tr2) (8 truck movements per hour)].
- E. Operation of all recycling and re-processing plant within the recycling and re-processing area at various levels 45m/48m AHD and long reach excavator (15t) @ 48m AHD (Ex)].
- F. Dust suppression and road maintenance [1 x 30 000L truck @ 45m AHD (entering Cell 2A)].
- G. Loading clay or shale from stockpile in contingency stockpile area – FeL @ 54m AHD on stockpile area (54m AHD) and nearby stationary truck (Tr1) @ 54m AHD (idling only).
- H. Loading of recycling products into truck (tr) within the recycling and re-processing area. [Front-end loader (Cat 966) @ 49m AHD and stationary truck at 49m AHD].