SUPPLEMENTARY STATEMENT OF EVIDENCE – BRIAN CLARKE (ACOUSTICS)

COURT DETAILS	
Court	Land and Environment Court of New South Wales
Class	1
Case numbers	10928 of 2010
TITLE OF PROCEEDINGS	
Applicants	**DELLARA PTY LTD**
First Respondent	**MINISTER FOR PLANNING**
Second Respondent	**PENRITH CITY COUNCIL**
PREPARATION DETAILS	
Prepared for	Applicant
Legal representative	Debra Jean Townsend, Mallesons Stephen Jaques
Legal representative reference	DST:MMA: 02-5504-2135
Contact name and telephone	Michelle Astridge T 9296 2951
SIGNATURE	
Signature	Nicola Gillies
Capacity	The Respondent's solicitor by her employed solicitor Nicola Maree Gillies
Date of signature	16/2/12

ACOUSTICS AND AIR

ORCHARD HILLS WASTE & RESOURCE MANAGEMENT FACILITY

MINISTER FOR PLANNING & PENRITH CITY COUNCIL
ATS DELLARA PTY LTD
- LAND & ENVIRONMENT COURT
PROCEEDINGS NO. 10928 OF 2010

SUPPLEMENTARY STATEMENT OF EVIDENCE RESPONSE TO MATTERS RAISED IN THE JOINT REPORT

BY

BRIAN CLARKE

REPORT NO. 09154-FM

WILKINSON MURRAY

ORCHARD HILLS WASTE & RESOURCE MANAGEMENT FACILITY

MINISTER FOR PLANNING & PENRITH CITY COUNCIL
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FEBARUARY 2012

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BY

BRIAN CLARKE

PREPARED FOR

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ACOUSTICS AND AIR

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph overleaf, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

dB(A) – A-weighted decibels. The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.

Frequency – Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.

Impulsive Noise – Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.

Intermittent Noise – The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10^{th} percentile (lowest 10^{th} percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

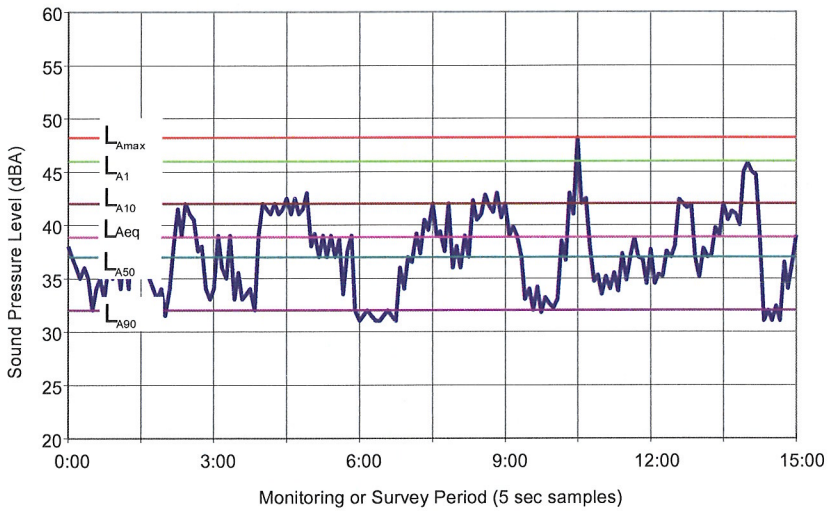
Sound Absorption – The ability of a material to absorb sound energy through its conversion into thermal energy.

Sound Level Meter – An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure level.

Sound Pressure Level – The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.

Tonal Noise – Containing a prominent frequency and characterised by a definite pitch.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

Wilkinson Murray Pty Ltd, as part of the Further Modified Project Preferred Project Report (FMPPR) for the proposed Orchard Hills Waste and Resource Management Facility, conducted noise modelling of the facility based on 4 operational noise models/scenarios. The noise models were prepared to represent the "worst case" operational stages of the proposed facility and the associated resultant noise emissions at surrounding identified residential receivers.

Following the submission of the FMPPR, a joint conference relating to resource extraction / utilistation was held between Mr Greg Thompson (VGT Pty Ltd), Mr Stuart Dever (GHD Pty Ltd) and Mr Phil Grace (Phil Grace Contracting Pty Ltd). An outcome of the conference was that the height of equipment in the contingency stockpile area should be raised to RL 53-54 m.

As a result of this finding the four noise models presented in the FMPPR were modified to reflect this finding. The noise models were then re-run and the results are presented in this report.

Additional noise modelling has been also conducted as a result of the joint conference between the acoustic experts, being Mr Brian Clarke (Wilkinson Murray) and Mr Steven Cooper (The Acoustic Group). The findings of the joint conferencing are detailed in the report submitted to the Land and Environment Court of New titled:

Joint Conference Report - Minister for Planning & Penrith City Council ats Dellara Pty Ltd - Land & Environment Court Proceedings No. 10928 of 2010 dated 22 December 2011.

Item 5 of the above joint report titled- Project Staging (relates to part of 6.4b of Second Respondents amended Statement of Contentions) identified disagreement between the experts whereby Mr Cooper was of the opinion that;

"without acoustic assessment and specification of all stages of the current application it has not been demonstrated that compliance with the noise criteria in Item 4 will be achieved at all times. As the noise controls for operational purposes have only come to light during the joint conferencing processes and the practicality of such controls has not been demonstrated what is required for the stages not assessed is unknown. Such a situation is unacceptable for a project of this magnitude that has been changed so many times during the court process with still unknown noise controls."

Whilst Mr Clarke considers that the four noise FMPPR scenarios are sufficient to demonstrate that compliance with established site specific noise criteria is achievable it was determined that additional noise modelling of six other operational stages should be conducted to address this area of disagreement. These additional noise models were developed by GHD and as such reflect the contingency stockpile area equipment heights as determined in the joint conference relating to resource extraction / utilistation.

2 FURTHER MODIFIED PREFERRED PROJECT REPORT (FMPPR)

As previously detailed, a supplementary noise assessment has been prepared for the operation of the proposed Orchard Hills Waste Facility for Dellara Pty Limited with respect to proposed modification detailed in the Further Modified Project Preferred Project Report (FMPPR). This assessment supplements the noise assessment which was included in the Modified Preferred Project Report as Appendix 2.

3 OPERATIONAL NOISE CRITERIA

Applicable operation noise criteria at surrounding receivers, as identified from site inspections and joint conferencing, have been derived from long term noise logging and established in accordance with the NSW Office of Environment and Heritages' Industrial Noise Policy. The noise criteria are detailed in Table 3-1.

Table 3-1 Site Specific Operational Noise Criteria – $L_{Aeq(15minutes)}$

Residence	Daytime Noise Criterion dB(A)
9 Verdehlo Way	39
3 Chablis Pl	39
15 Cabernet Cct	39
11 Cabernet Cct	39
Bates Residence – "Roughwood Park"	39
Newham Residence	39
210 Luddenham Rd	42
216 Luddenham Rd	42
230 Luddenham Rd	42
262 Luddenham Rd	42
229 Luddenham Rd (Next to the Croatian Club)	42

Site specific noise criteria detailed in Table 3-1 remain unchanged from previous applications and assessments.

4 OPERATIONAL NOISE MODELLING

Operational noise levels throughout the life of the Project have been determined through computer modelling using the Environmental Noise Model (ENM) software with the principal input variables being topography within and surrounding the Project Site, equipment noise levels and seasonal meteorological conditions. This section reviews each of these variables and how they have been incorporated into the modelling through the nominated noise scenarios.

- **Topographic information used in noise modelling** – The topographical information for the Project Site and the surrounding land used in the noise modelling was provided by R.W. Corkery & Co Pty Ltd (Noise Models 1-4) and GHD Pty Ltd (Noise Models 5-10).
- **Equipment Noise Levels Used in Noise Modelling –** Table 4-1 lists all equipment included in noise modelling and the assumed sound power levels. These noise levels are the same as previously used in the noise assessment of the facility.

Table 4-1 Modelled Equipment & Sound Power Levels

Equipment	Source Description	$L_{Aeq,15min}$ SWL dB(A)[3]
Truck [1]	Truck (no mitigation) in motion	107
	Water Truck with noise mitigation	104
Compactor [1]	Compacting earth on final landform Fitted with noise mitigation	106
FEL [1]	Earthworks & loading trucks Fitted with noise mitigation	108
Scraper [1]	Earthworks Fitted with noise mitigation	104
Excavator[1]	Earthworks	102
Bulldozer [1]	Earthworks Fitted with noise mitigation	112
Jaw Crusher[2]	Processing recyclable materials Crusher housed in acoustic enclosure	111
Impact Crusher [2]	Processing recyclable materials	117
Trommel[2]	Processing recyclable materials Trommel housed within enclosure	100
Shredder[2]	Processing recyclable materials	112
Picking Stn[2]	Small conveyor used for sifting/sorting	100

Notes:
(1) Sound power levels for acoustically-treated mobile plant were determined by Hushpak Engineering Pty Limited based on plant inspections and noise measurements undertaken in January 2011, and reductions nominated by them to be achievable.
(2) Sound power level based on realistically-achievable values, as advised by the Proponent. Where the equipment is in a full enclosure, a 10dB reduction is assumed.
(3) The sound power levels detailed in Table 6.1 are the same for the MPPR and FMPPR.

- **Seasonal Meteorological Conditions** – The INP requires that in predicting operational noise levels, wind speed and direction should be taken into account if wind speeds of up to 3m/s in the source to receiver direction occur more than 30% of the time in any season. In cases where consideration of meteorological conditions is required, Wilkinson Murray has developed a procedure for addressing meteorological conditions which is considered to be consistent with the intent of the INP, and is more realistic than the procedure of adopting a single condition for assessment (although more difficult to implement). This involves calculating the noise level exceeded for 10% of all day, evening or night periods in each season, using the range of meteorological conditions present at the site. The highest of these 10% exceedance values for any season is taken as the value to be compared with the intrusiveness criterion.

  This procedure has been accepted by OEH in previous assessments, and is used in this report and previous assessments for this project, to calculate noise levels from the Project Site.

5 OPERATIONAL NOISE MODELS

Operational noise impacts from the Further Modified Preferred Project were modelled for ten scenarios. That is, four scenarios representing typical worst-case periods during the proposed operations of the Facility which were presented with the FMPPR submission and a further 6 models that reflect other stages of the development.

The latter six stages have been developed by GHD to correlate to the revised operational staged presented in Appendix F of the Overview Report prepared for the FMPPR. The following Table 5-1 details the additional noise models and their correlations with the Staging plans for the project.

Table 5-1 Relationship between Noise Models and Operational Stages

Noise Model	Operational Stage*
1	Approximately Stage 3
2	Approximately Stage 6
3	Approximately Stage 8
4	Approximately Stage 10
5	Stage 0
6	Stage 2
7	Stage 4
8	Stage 5
9	Stage 7
10	Stage 9

*Noise models 1-4 were prepared to assess "typical worst case" noise scenarios from the facility and, as such, are not identical to the operational stages presented in the FMPP overview report. These models have been reviewed with respect to the project operational stages to determine the stages to which they are most similar, hence the term "approximately'.

Noise models 1 to 4 are the same noise models as presented in the FMPPR with a modification to the height of equipment in the contingency stockpile area. This height of equipment in the contingency stockpile area has been changed to reflect the findings of the joint conference relating to resource extraction / utilisation. That is, the equipment has been raised in height from RL 46 m to RL 54 m.

Appendix A details these models. Changes in height of equipment in the contingency stockpile area have been highlighted in yellow. A description of noise models 1 to 4, as previous advised in the FMPPR, are detailed as follows:

Model 1:

This scenario represents the beginning of extraction in Cell 2B, in combination with deeper extraction in Cell 2A and filling in Cell 1. The filling is at a level close to the final landform, and therefore this scenario represents worst-case impacts from both filling in Cell 1 and extraction in Cell 2B. The central acoustic mound extends in front of the filling operation. Equipment in the filling area must be no more than 50m from the central acoustic bund at any time. This means the central bund will be relocated as operations move to the south.

Model 2:

This represents the beginning of extraction in Cell 3B, in combination with deeper extraction in Cell 3A and filling in Cell 2. The central acoustic mound extends in front of the filling operation. Note that the western section of the 'Southern Acoustic Mound' shown in Appendix A was added after our modelling was completed. The result of this is expected to be minor and would be expected to reduce noise levels if anything.

Model 3:

This represents the beginning of extraction in Cell 3A, in combination with deeper extraction in Cell 3B and filling in Cell 3C. The central acoustic mound has been removed and the southern acoustic mound is located in front of the filling and extraction operations.

Model 4:

This represents filling in Cell 3A, after the cessation of extraction operations. The southern acoustic mound is located in front of the filling operations. The eastern face (at RL 57) will be in place until filling operations finish. The eastern face will ultimately need to be removed from behind (that is the facility side), as for all other bunds.

In the case of Noise Models 5-10 the models are as per the stages detailed in Table 5-1. These models were developed by GHD and as such reflect the contingency stockpile area equipment heights as determined in the joint conference relating to resource extraction / utilistation.

Noise levels were calculated using the same procedures as described in the MPPR, including calculation of the 10th percentile exceedance value over all meteorological conditions for each receiver. Results are shown in Table 5-2 as follows.

Table 5-2 Predicted $L_{Aeq(15\ minute)}$ Operational Noise Levels (daytime period, 7am to 6pm) - dBA.

Receiver	Address	Noise Model 1	Noise Model 2	Noise Model 3	Noise Model 4	Noise Model 5	Noise Model 6	Noise Model 7	Noise Model 8	Noise Model 9	Noise Model 10	Noise Criterion (reference Table 3.1)
		Stage 3*	Stage 6*	Stage 8*	Stage 10*	Stage 0	Stage 2	Stage 4	Stage 5	Stage 7	Stage 9	
1	9 Verdelho Way	38	38	38	37	36	36	36	34	34	35	39
2	3 Chablis Pl	38	37	38	36	36	37	37	37	35	35	39
3	15 Cabernet Cct	38	37	39	38	37	37	37	36	36	35	39
4	11 Cabernet Cct	39	38	39	38	37	37	37	35	36	36	39
5	Bates Residence - "Roughwood Park"	39	39	39	37	39	39	38	38	38	38	39
6	Newham Residence	38	39	39	38	39	38	38	38	38	38	39
7	210 Luddenham Rd	35	36	36	34	34	34	34	34	34	34	42
8	216 Luddenham Rd	36	36	36	34	34	34	34	34	34	34	42
9	230 Luddenham Rd	31	32	31	30	29	30	29	29	30	29	42
10	262 Luddenham Rd	30	31	30	29	29	29	29	29	29	29	42
11	229 Luddenham Rd	38	39	38	37	36	35	36	35	36	35	42

Notes: * Noise Models 1 – 4 are those previously assessed and presented in the FMPPR that have been modified to reflect changes in equipment heights, these approximate to operational Stages 3, 6, 8 and 10 respectively.
New additional noise models 5 to 10 are based exactly on GHD Stages 0, 2,4,5,7 and 9 as supplied.

The calculated noise levels are within applicable noise criteria in all cases, provided procedures established in the FMPPR assessment and joint conferencing, as described below in this report, are adopted.

5.1 Construction Noise during Site Establishment

There will be a construction period of approximately six months during which shaping of the northern and eastern faces will occur, as well as other works within the site. Procedures used during this process will be as described for the construction period in the MPPR acoustic assessment, including the use of 4m high movable barriers to shield any plant working outside the northern face, with plant working only at ground heights up to 1m above the ground height beneath the barrier, and barriers being moved sequentially as shaping progresses.

Worst-case noise levels during this process will be consistent with those modelled for the construction scenario in the MPPR.

5.2 Traffic Noise Impacts

No change is proposed to the number of vehicles accessing the site, and hence impacts from off-site traffic noise will not alter as a consequence of the FMPPR.

5.3 Summary of 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 4-1.

- 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

In addition to the above controls, 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 4-1.

- 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.

6 CONCLUSION

As a result if the Joint Conferencing between the acoustic experts additional noise modelling of operational scenarios has been conducted with respect to staging of the project. The additional noise models are based on the operational stages developed by GHD.

It has been determined that the calculated noise levels for all operational scenarios are within applicable noise criteria in all cases, provided procedures, as described in Section 5.3, are adopted.

Acknowledgment
I acknowledge that I have read the Expert Witness Code of Conduct that is Schedule 1 to the Land & 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 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

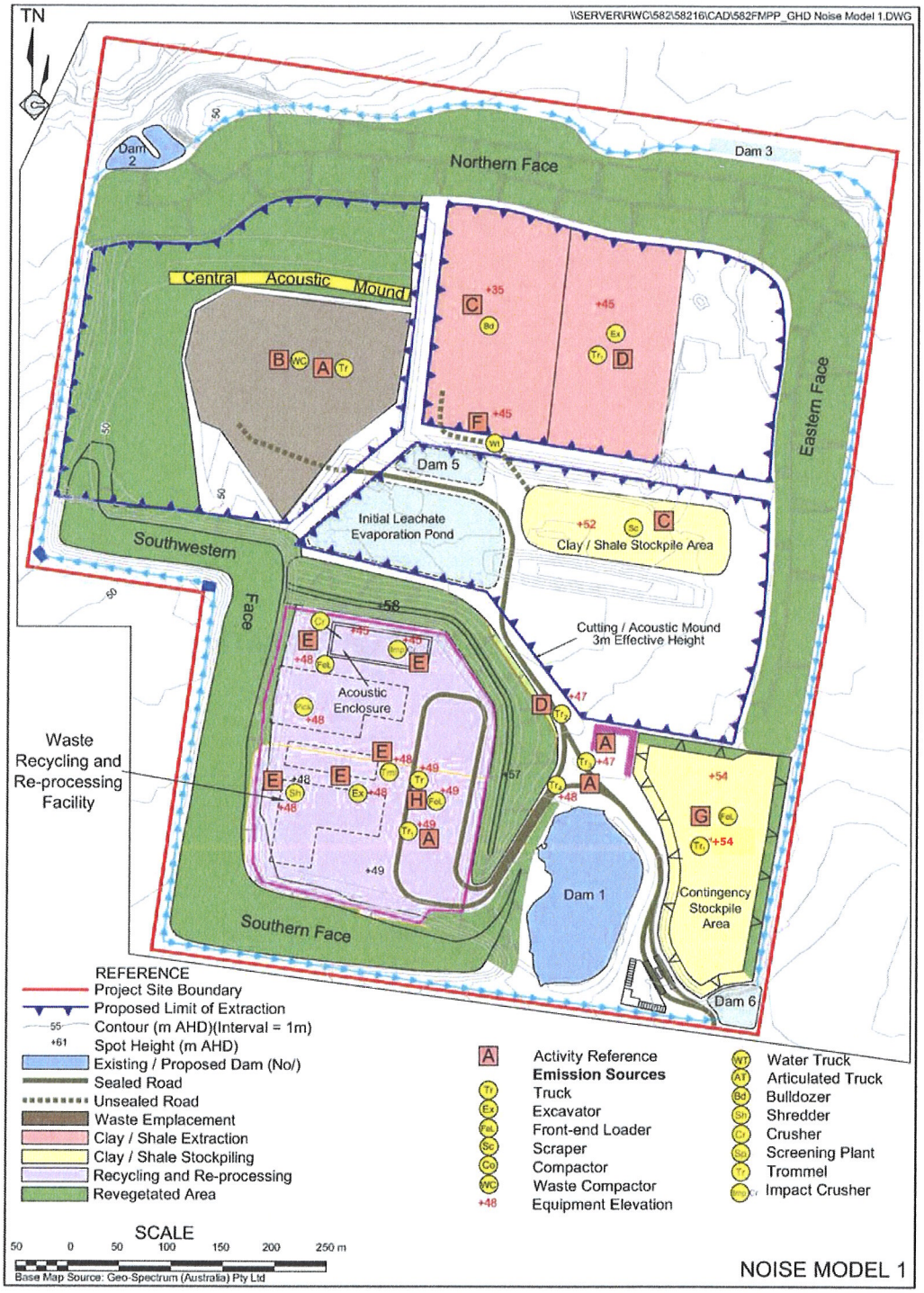
Quality Assurance
We are committed to and have implemented AS/NZS ISO 9001:2008 "Quality Management Systems – Requirements". This management system has been externally certified and Licence No. QEC 13457 has been issued.

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).

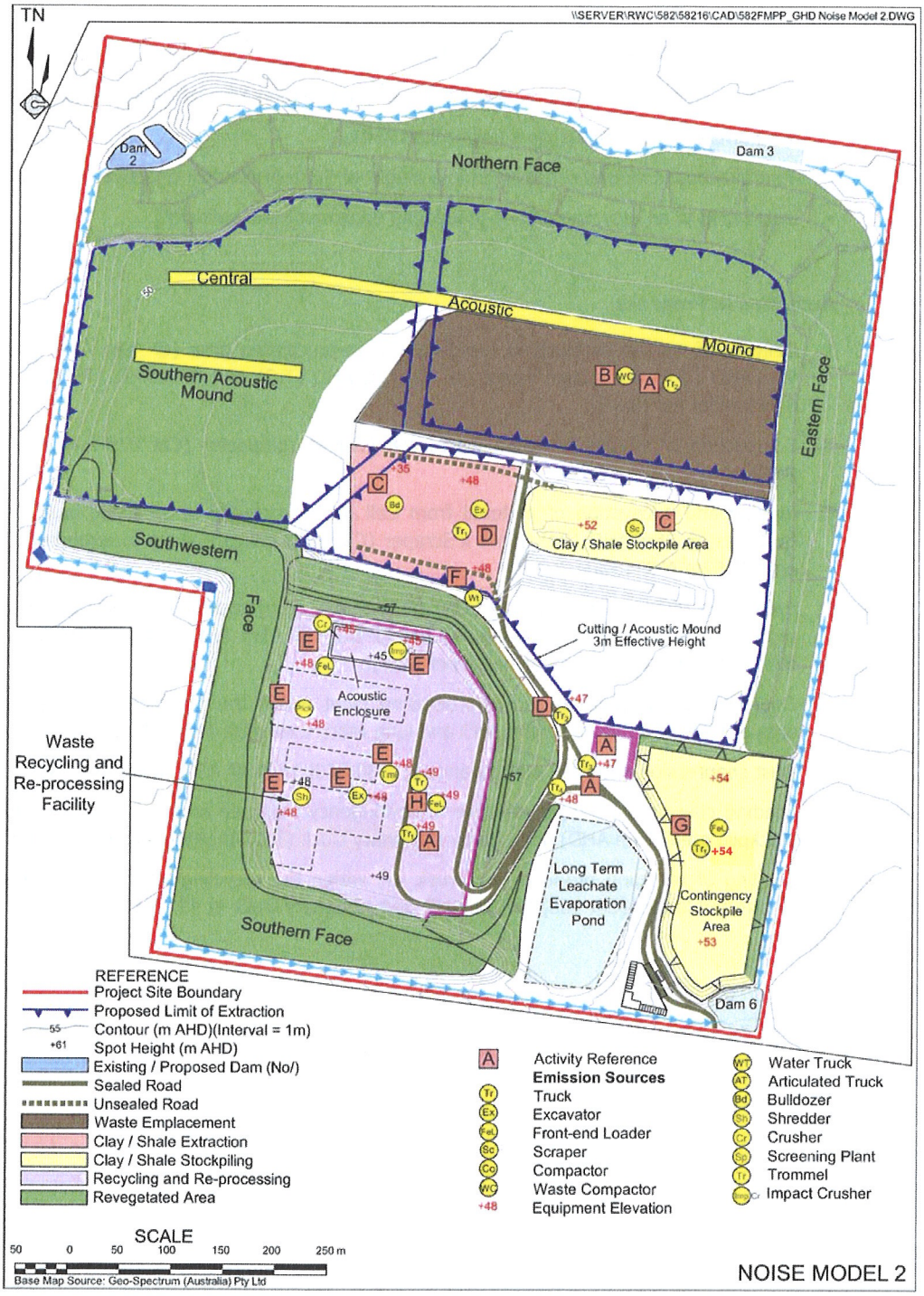
E. Operation of all recycling and re-processing plant within the recycling and re-processing area at various levels 45m/48m AHD and long reach excavator (15t) @ 48m AHD (Ex)].

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).

NOISE MODEL 2



Noise Model 2

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 across the 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 @ 52m 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 3A 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) @ 48m AHD (Ex)] and loading clay at ground level in Cell 3C into trucks for despatch off site [1 truck @ 48m AHD (Tr1) / 1 mobile truck @ 47m AHD (Tr2) (8 truck movements per hour).

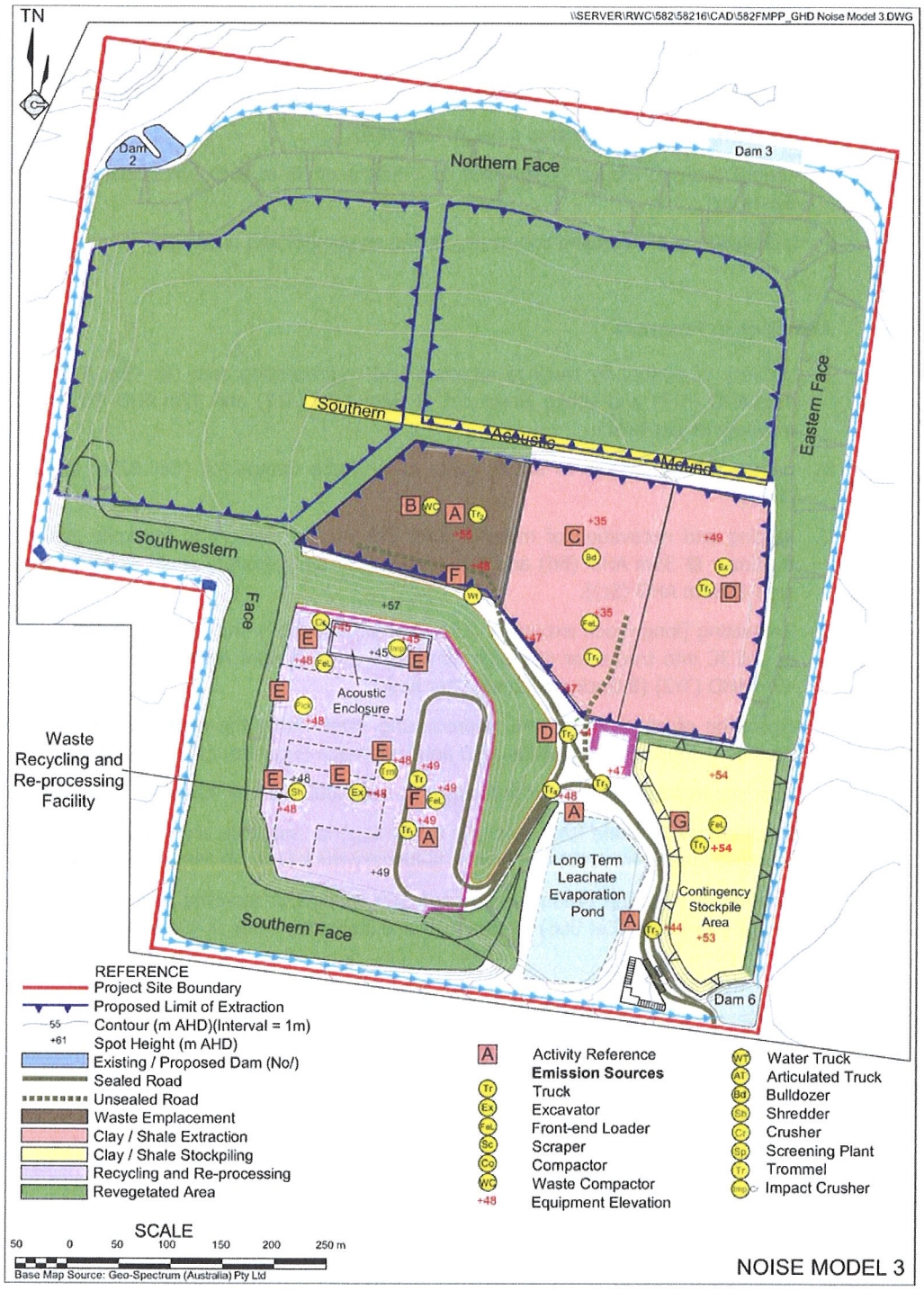
E. Operation of all recycling and re-processing plant within the recycling and re-processing area at various levels 45m/48m AHD and long reach excavator (15t) @ 48m AHD (Ex)].

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).

NOISE MODEL 3



Noise Model 3

Activities Completed and Noise Mitigation Installed

- Audio-visual mound around the recycling and re-processing area to a height of 57m AHD.
- Southern acoustic mound constructed to a height of 56m AHD across the north of active waste cell.
- Installation of all recycling and re-processing equipment and buildings.

Note: Northern face and central acoustic mound removed.

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 @ 55m AHD (Tr2) and 44m AHD (Tr3)). [16 truck movements per hour].

B. Compaction of wastes in active waste cell [Waste Compactor (Cat 825H @ 55m AHD) (WC)].

C. Ripping and pushing of material from Cell 3B and loading by front-end loader into trucks [1 x D11 Bulldozer @ 35m AHD (Bd) and 1 x FeL @35 m AHD and 1 mobile truck @ 35m AHD].

D. Excavating [long reach excavator (15t) @ 49m AHD (Ex)] and loading clay at ground level in Cell 3A into trucks for despatch off site [1 truck @ 49m 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 @ 48m AHD (entering active waste cell).

G. Loading clay or shale from stockpile in contingency stockpile area – FeL @ 54m AHD behind 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).

NOISE MODEL 4