Appendix E

Noise Modelling Report

Wilkinson Murray

WILKINSON MURRAY

7 September 2011

WM Project Number: 09154-FM
Our Ref: NG 060911 BC LTR6.doc
Email: nicola.gilles@mallesons.com.au

Nicola Gillies
Mallesons Stephens Jaques
Level 61, Governor Phillip Tower
1 FARRAR PLACE

Dear Nicola

Re: Orchard Hills Waste and Resource Management Facility – Supplementary Noise Assessment.

Wilkinson Murray (Sydney) has conducted a supplementary noise assessment of the operation of the proposed Orchard Hills Waste Facility for Dellara Pty Limited with respect to proposed modification detailed in the Final Modified Project Preferred Project Report (FMPPR). This assessment supplements our initial noise assessment which was included in the Modified Preferred Project Report as Appendix 2.

Residences that are potentially affected by operational noise from the project, and relevant criteria, are described in the Modified Preferred Project Report (MPPR), and remain unchanged for the analysis in the FMPPR.

The modifications to the Project include:

1 Reduction in height of the final landform:

- a reduction in the finished level of the northern face from 55m AHD to approximately 44m AHD, 3-4m above the pre-existing ground levels (the interim acoustic mound would be at 53m AHD for acoustic purposes);
- a reduction in the elevation of the northern face to a 5% slope profile to integrate more closely with the existing ground level; and
- the substantial removal of the south-western, southern and eastern bund walls and the forming of part of the final landform during the course of the project, to reduce visual impacts.

2 Increased extraction of clay/shale resources (as outlined in the Alternate Draft Conditions in Reply - Shale/Clay Resources filed with the Court):

- extraction of additional clay/shale resources in Cell 2 by increasing the level of extraction from RL37 to RL28;
- no emplacement of waste in Cell 4. Cell 4 is to be backfilled with clay/shale.

3 Contingency stockpile:

- a new contingency stockpiling area, which would be located in the south-eastern corner of the site, enabling stockpiles of clay and shale destined for export to be stored as far from residents as possible; and

- consequential relocation of the site office.

4 The modifications of which the Court granted leave to the proponent to rely upon on 19 July 2011 as outlined in the Overview of the Amendments to the Modified Preferred Project) dated July 2011.

Operational Noise

Operational noise impacts from the Further Modified Preferred Project were modelled for four scenarios, representing worst-case periods during the proposed operations of the Facility. The scenarios represent the following models. Details of the operations in each model, including diagrams, are in Attachment 1. Full noise modelling data are provided in electronic form together with this document.

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.

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.

Noise levels were calculated using the same procedures as described in the MPPR, including calculation of the 10^{th} percentile exceedance value over all meteorological conditions for each receiver. Results are shown in Table 1 below.

Table 1 Predicted L_{Aeq} Operational Noise Levels Exceeded for 10% of 15-Minute Periods (daytime periods, 7am to 6pm).

Residence	Operational Noise Level at Residence ($L_{Aeq,15min}$ dB(A))				Daytime Criterion dB(A)
	Scenario 1	*Scenario 2*	*Scenario 3*	*Scenario 4*	
9 Verdehlo Way	38	37	37	37	39
3 Chablis Pl	37	37	38	37	39
15 Cabernet Cct	38	37	38	38	39
11 Cabernet Cct	38	37	38	38	39
Bates Residence	38	38	38	36	39
Newham Residence	38	39	39	38	39
210 Luddenham Rd	35	36	36	37	42
216 Luddenham Rd	33	35	34	35	42
230 Luddenham Rd	31	32	32	33	42
262 Luddenham Rd	30	31	30	32	42

The calculated levels are within applicable noise criteria in all cases, provided procedures, as described below in this letter, are incorporated.

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 as summarised below, 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.

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.

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. In many cases these were also proposed in the MPPR.

- The waste recycling and re-processing facility is sited on the Project Site at the furthest distance from residences, as shown in Attachment 1.

- Earth mounding is used on the northern, eastern and southern boundaries of Site, as shown in Attachment 1, 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 Attachment 1.

- 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 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.

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 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.

Table 2 Sound Power Levels for Equipment

Equipment	Source Description	$L_{Aeq,15min}$ SWL dB(A)
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

Yours faithfully
WILKINSON MURRAY

Brian Clarke
Senior Associate

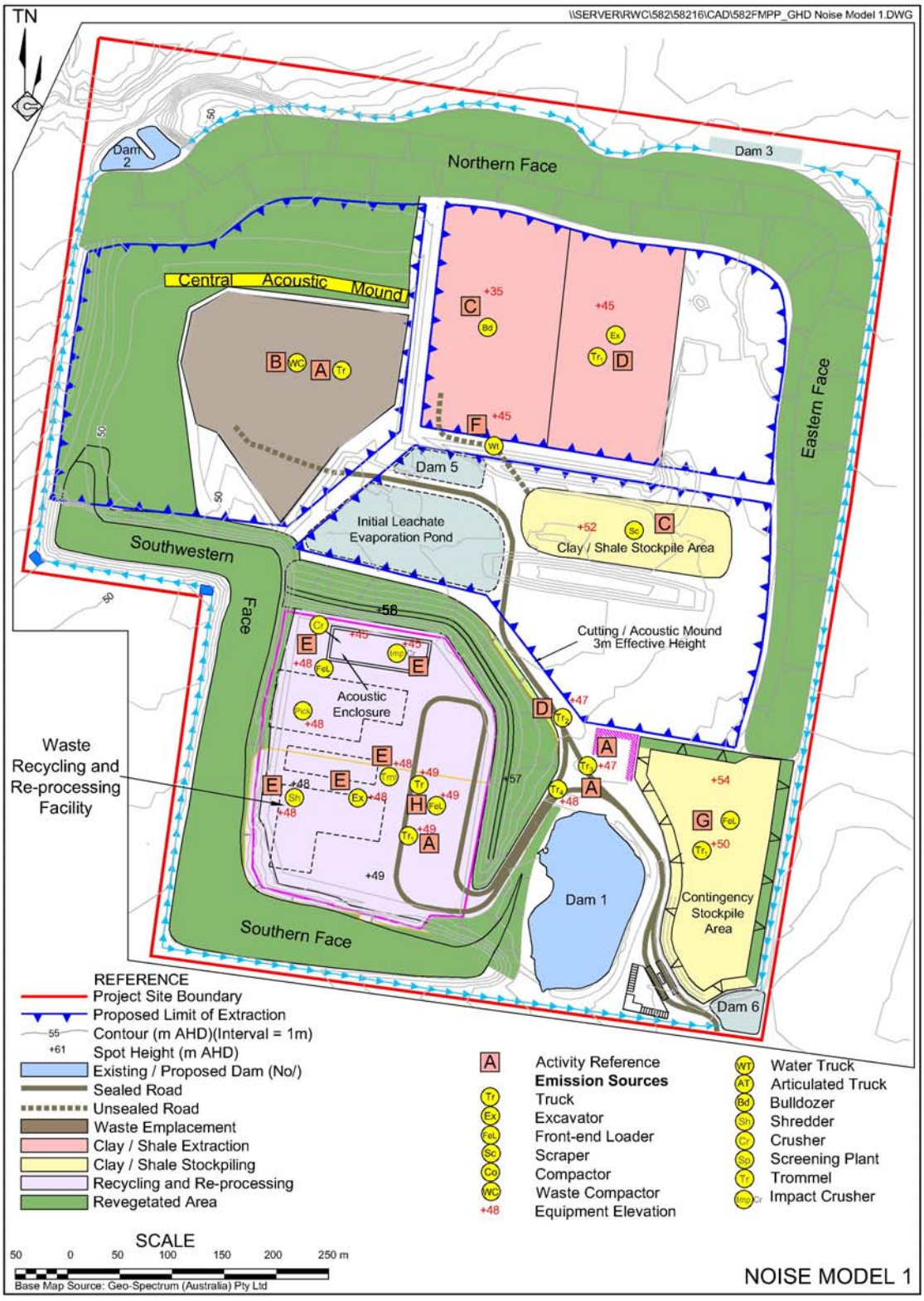
Note
All materials specified by Wilkinson Murray (Sydney) Pty Limited have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose. The information contained in this document produced by Wilkinson Murray is solely for the use of the client identified on the front page of this report. Our client becomes the owner of this document upon full payment of our **Tax Invoice** for its provision. This document must not be used for any purposes other than those of the document's owner. Wilkinson Murray undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.

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.

ATTACHMENT 1 – DETAILS OF OPERATIONS IN EACH MODEL

NOISE MODEL 1



NOISE 1 MODEL

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)].

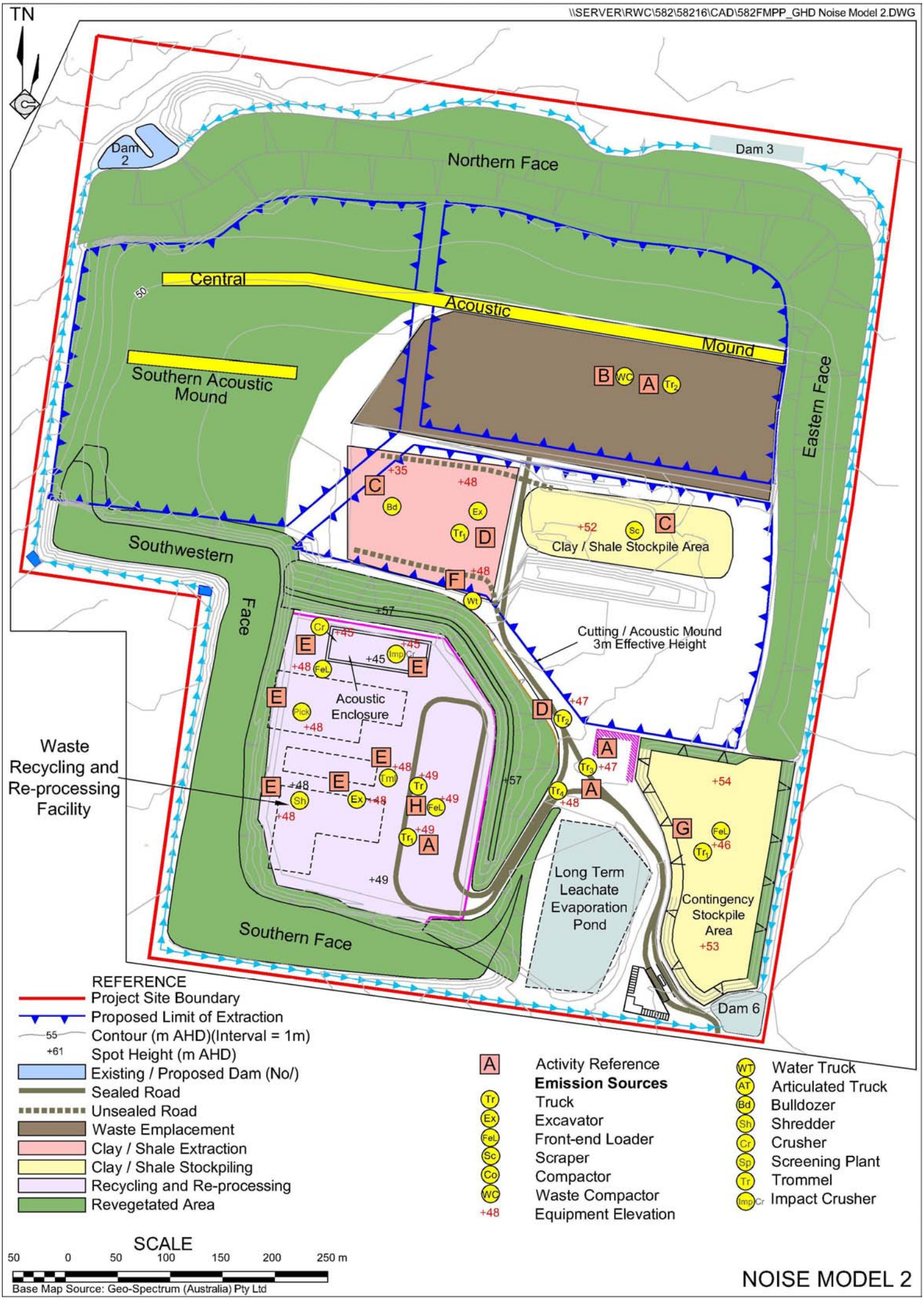
D. Excavating [long reach excavator (15t) @ 45m AHD (Ex)] and loading clay at ground level in Cell 2B into trucks for despatch off site [1 truck @ 45m AHD (Tr1) / 1 mobile truck @ 47m AHD (Tr2) (8 truck movements per hour).

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 @ 46m AHD behind stockpile area (54m AHD) and nearby stationary truck (Tr1) @ 50m 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).


TN
\\SERVER\RWC\582\58216\CAD\582FMPP_GHD Noise Model 2.DWG
Dam 2
Northern Face
Dam 3
Central
Acoustic
Mound
Southern Acoustic Mound
Eastern Face
Southwestern
Face
Clay / Shale Stockpile Area
Cutting / Acoustic Mound
3m Effective Height
Acoustic Enclosure
Waste Recycling and Re-processing Facility
Long Term Leachate Evaporation Pond
Contingency Stockpile Area
Southern Face
Dam 6
REFERENCE
Project Site Boundary
Proposed Limit of Extraction
Contour (m AHD)(Interval = 1m)
Spot Height (m AHD)
Existing / Proposed Dam (No/)
Sealed Road
Unsealed Road
Waste Emplacement
Clay / Shale Extraction
Clay / Shale Stockpiling
Recycling and Re-processing
Revegetated Area
Activity Reference
Emission Sources
Truck
Excavator
Front-end Loader
Scraper
Compactor
Waste Compactor
Equipment Elevation
Water Truck
Articulated Truck
Bulldozer
Shredder
Crusher
Screening Plant
Trommel
Impact Crusher
SCALE
50 0 50 100 150 200 250 m
Base Map Source: Geo-Spectrum (Australia) Pty Ltd
NOISE MODEL 2

NOISE 2 MODEL

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)].

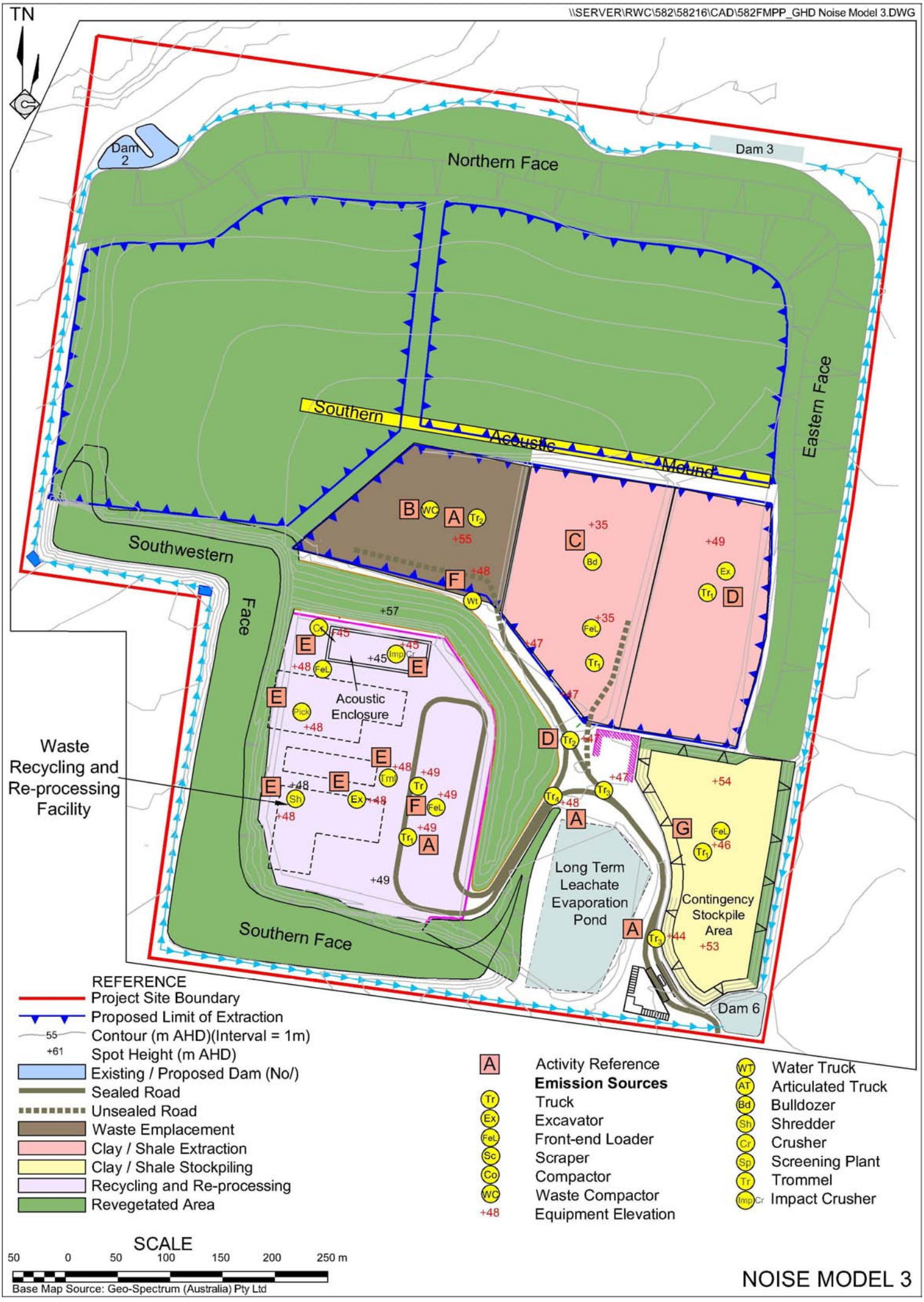
D. Excavating [long reach excavator (15t) @ 48m AHD (Ex)] and loading clay at ground level in Cell 3C into trucks for despatch off site [1 truck @ 48m AHD (Tr1) / 1 mobile truck @ 47m AHD (Tr2) (8 truck movements per hour).

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 @ 46m AHD behind stockpile area (54m AHD) and nearby stationary truck (Tr1) @ 50m 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).


TN
\\SERVER\RWC\582\58216\CAD\582FMPP_GHD Noise Model 3.DWG
Dam 2
Northern Face
Dam 3
Eastern Face
Southern Acoustic Mound
Southwestern Face
Southern Face
Waste Recycling and Re-processing Facility
Acoustic Enclosure
Long Term Leachate Evaporation Pond
Contingency Stockpile Area
Dam 6
REFERENCE
Project Site Boundary
Proposed Limit of Extraction
Contour (m AHD)(Interval = 1m)
Spot Height (m AHD)
Existing / Proposed Dam (No/)
Sealed Road
Unsealed Road
Waste Emplacement
Clay / Shale Extraction
Clay / Shale Stockpiling
Recycling and Re-processing
Revegetated Area
Activity Reference
Emission Sources
Truck
Excavator
Front-end Loader
Scraper
Compactor
Waste Compactor
Equipment Elevation
Water Truck
Articulated Truck
Bulldozer
Shredder
Crusher
Screening Plant
Trommel
Impact Crusher
SCALE
50 0 50 100 150 200 250 m
Base Map Source: Geo-Spectrum (Australia) Pty Ltd
NOISE MODEL 3

NOISE 3 MODEL

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)].

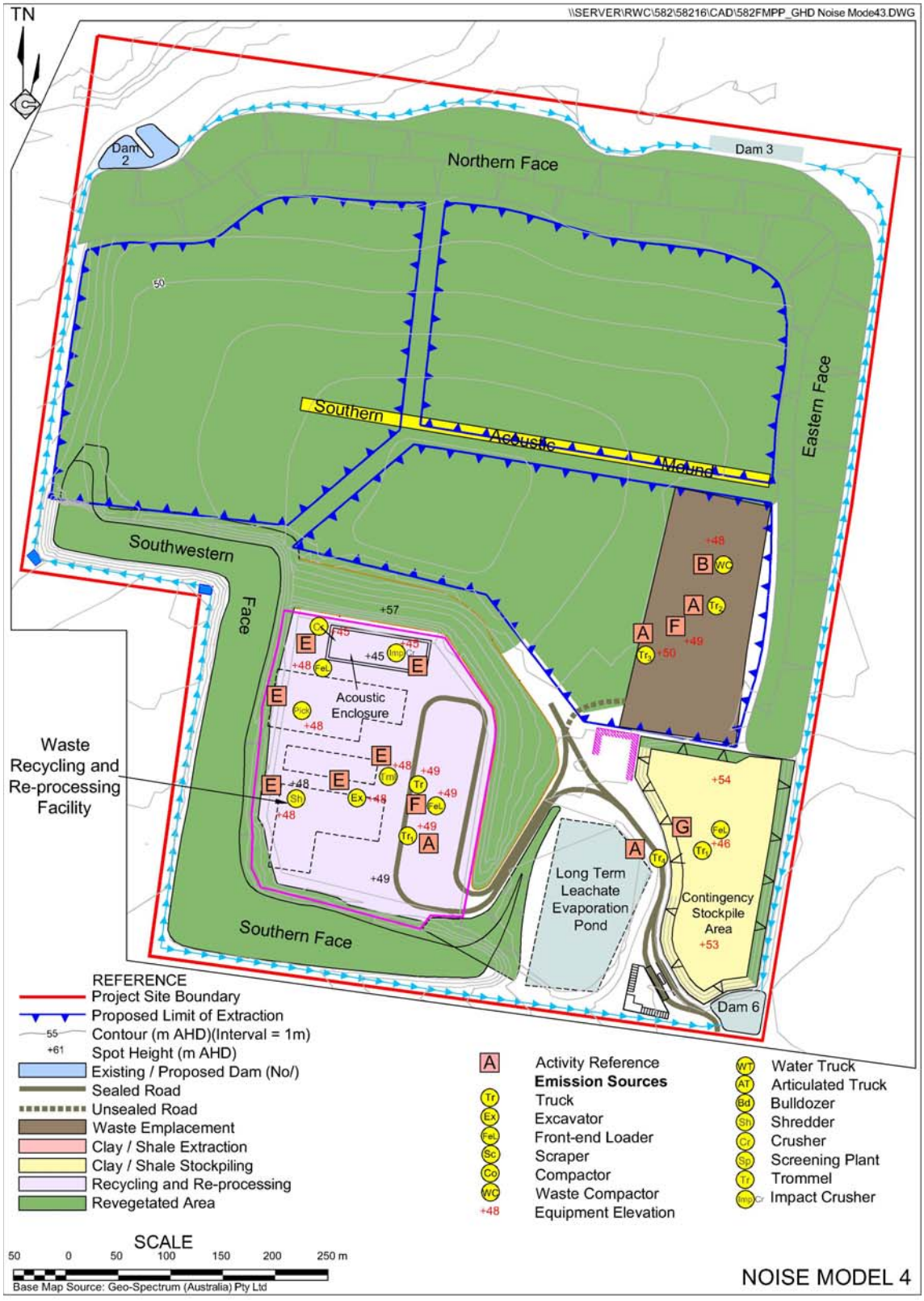
E. Operation of all recycling and re-processing plant within the recycling and re-processing area at various levels 45m/48m AHD and long reach excavator (15t) @ 48m AHD (Ex)].

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 @ 46m AHD behind stockpile area (54m AHD) and nearby stationary truck (Tr1) @ 50m 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



NOISE 4 MODEL

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 to 60m AHD across the north of active waste cell.
- Eastern mound reinstated by WM to 57m
- 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 @ 48m AHD (Tr2) and 50m AHD (Tr3)). [16 truck movements per hour].

B Compaction of wastes in active waste cell [Waste Compactor (Cat 825H @ 48 m AHD) (WC)].

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) @ 48 m AHD (Ex)].

F Dust suppression and road maintenance [1 x 30 000L truck @ 49m AHD (entering active waste cell).

G Loading clay or shale from stockpile in contingency stockpile area - FeL @ 46m AHD behind stockpile area (54m AHD) and nearby stationary truck (Tr1) @ 50m 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).

Appendix F

Staging Plans (Revised)

Stages 1-11

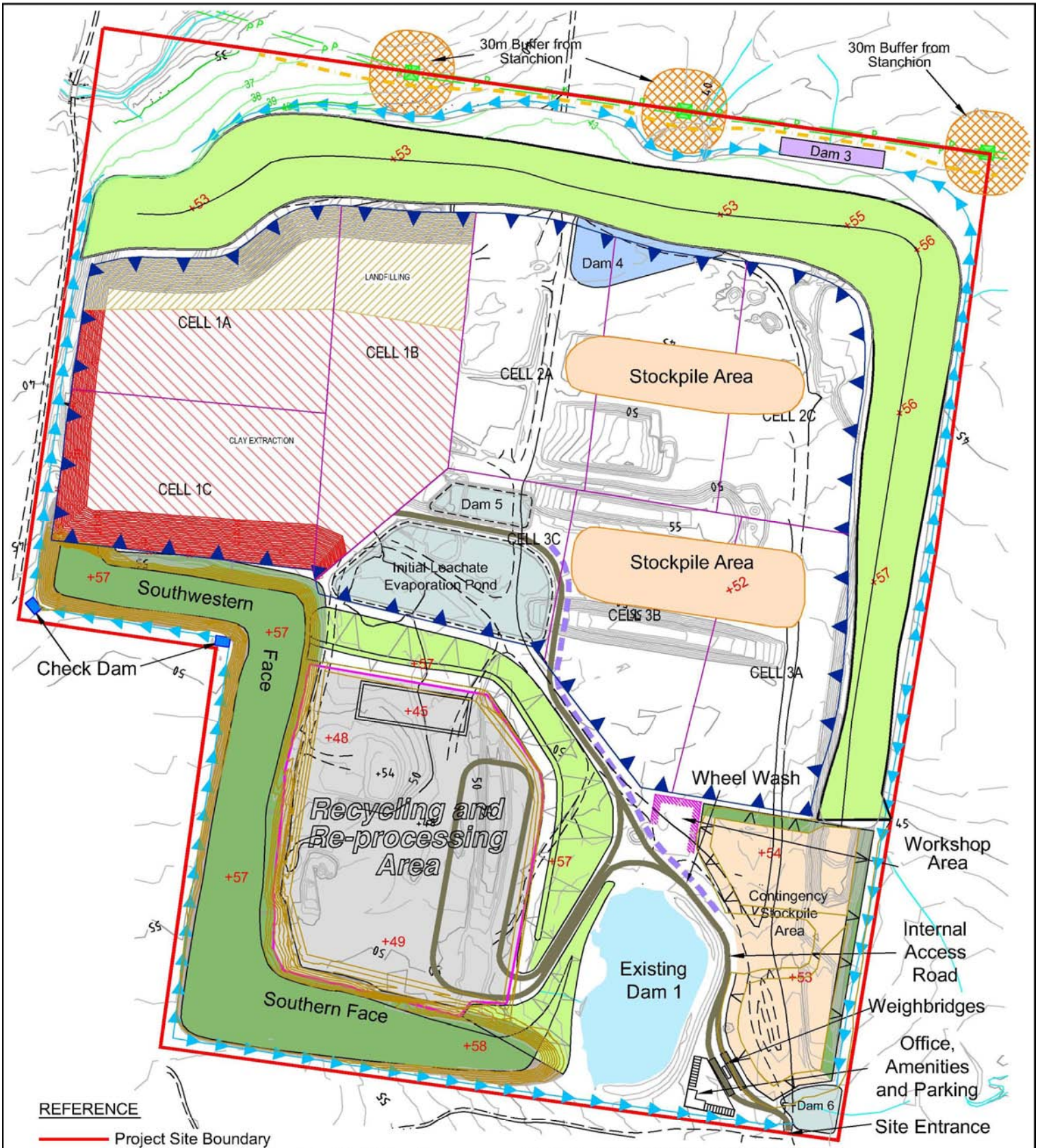


Figure 2.10a
STAGE 0 OPERATIONS (AMENDED)

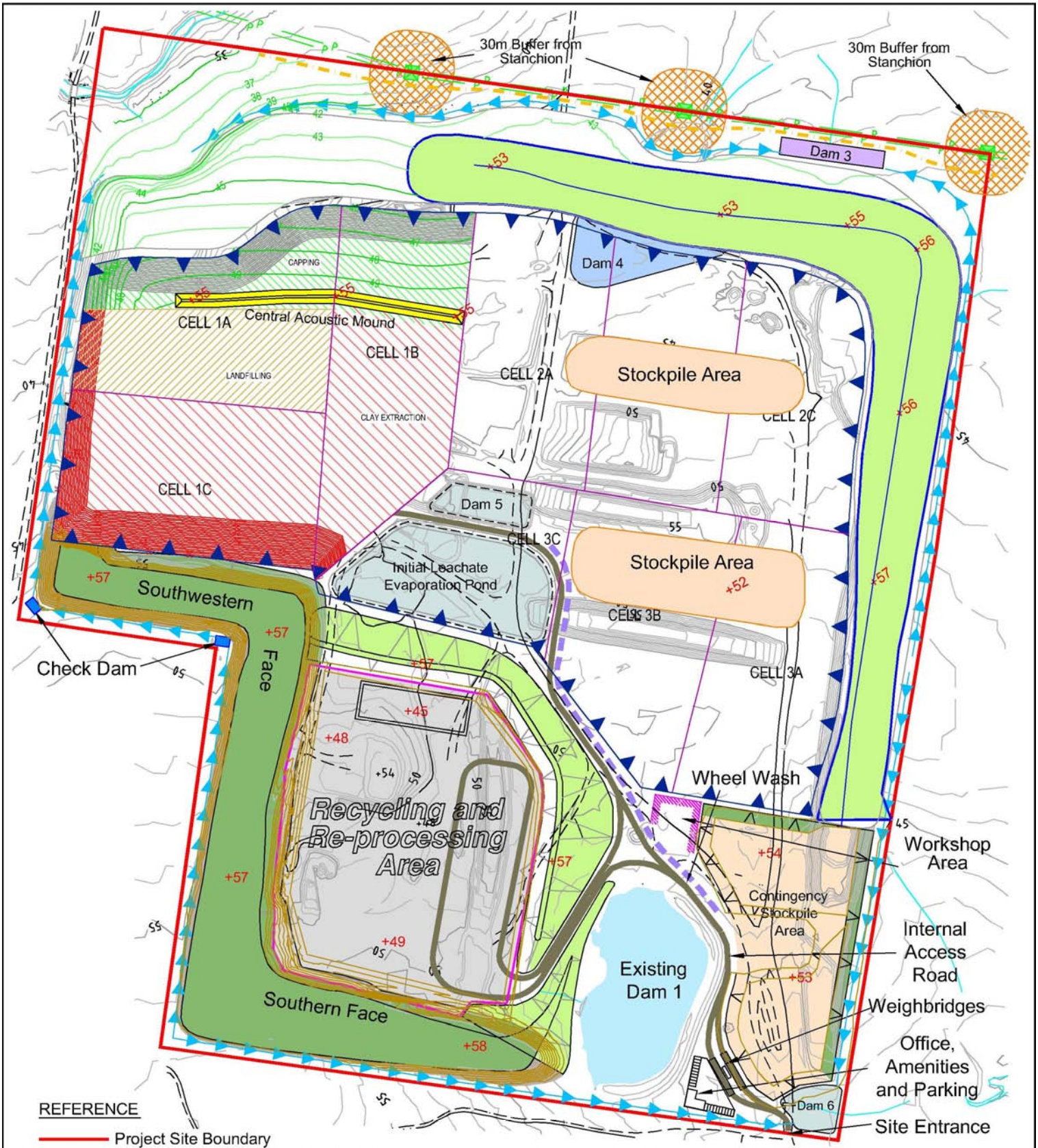


Figure 2.10b
STAGE 2 OPERATIONS (AMENDED)

REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

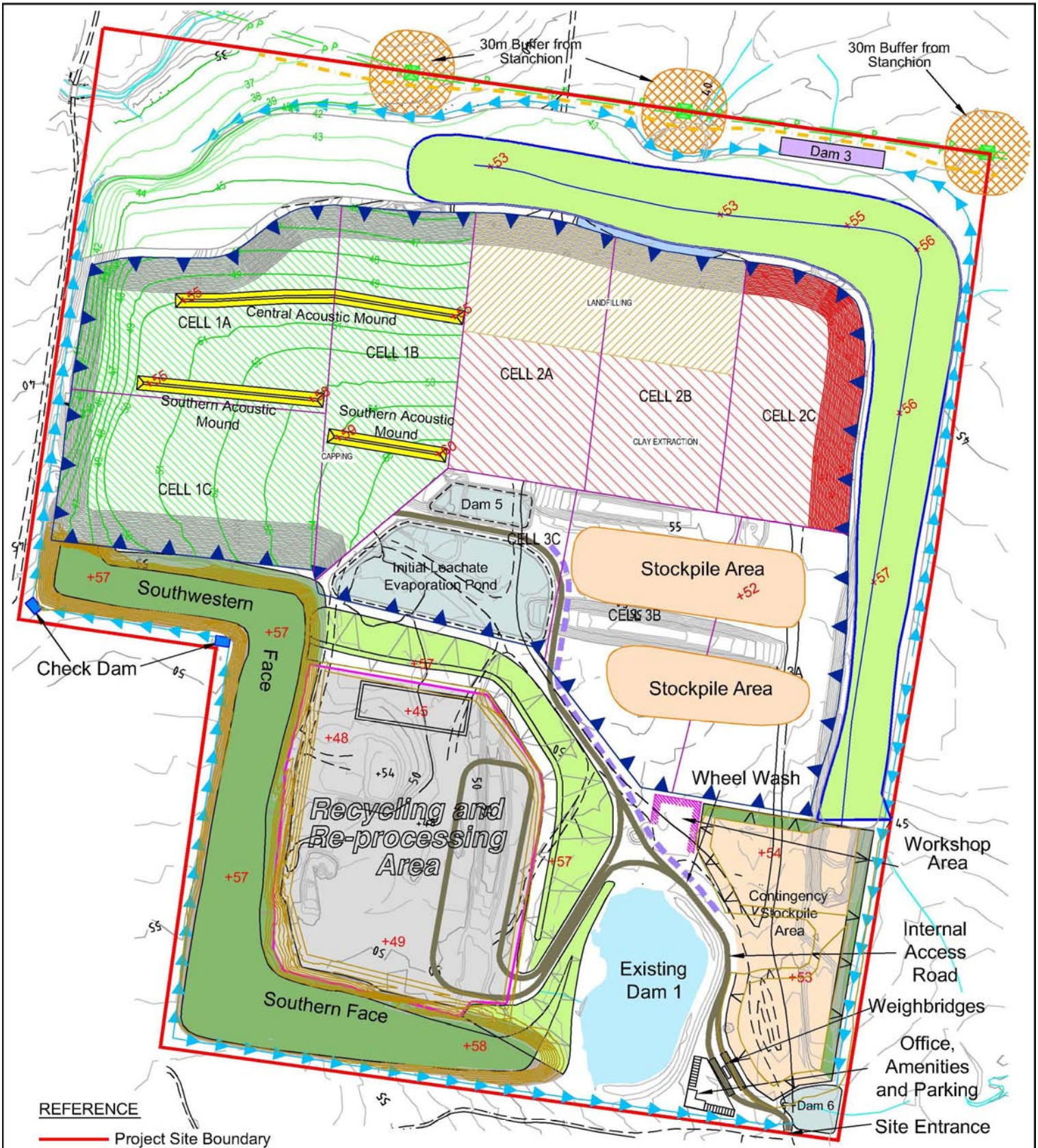
0 30 60 90m

GHD DRG No. 21-20649-Y003
STAGE 3

SCALE 1:1500 AT ORIGINAL SIZE (A1)

Note: The base contours used for this figure reflect existing topography

Figure 2.10c
STAGE 3 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

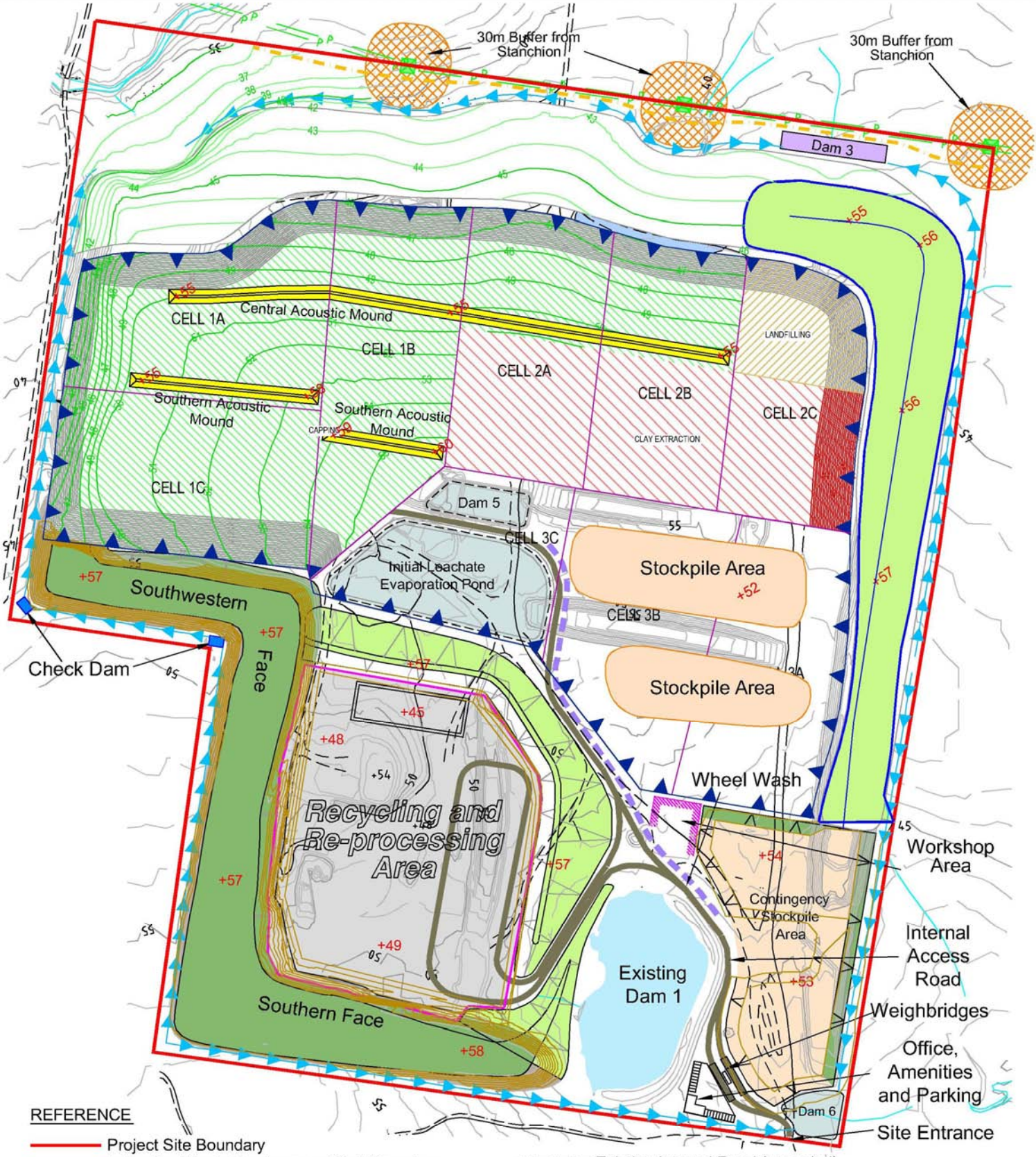
0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y004
STAGE 4

Note: The base contours used for this figure reflect existing topography

Figure 2.11a
STAGE 4 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap

- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

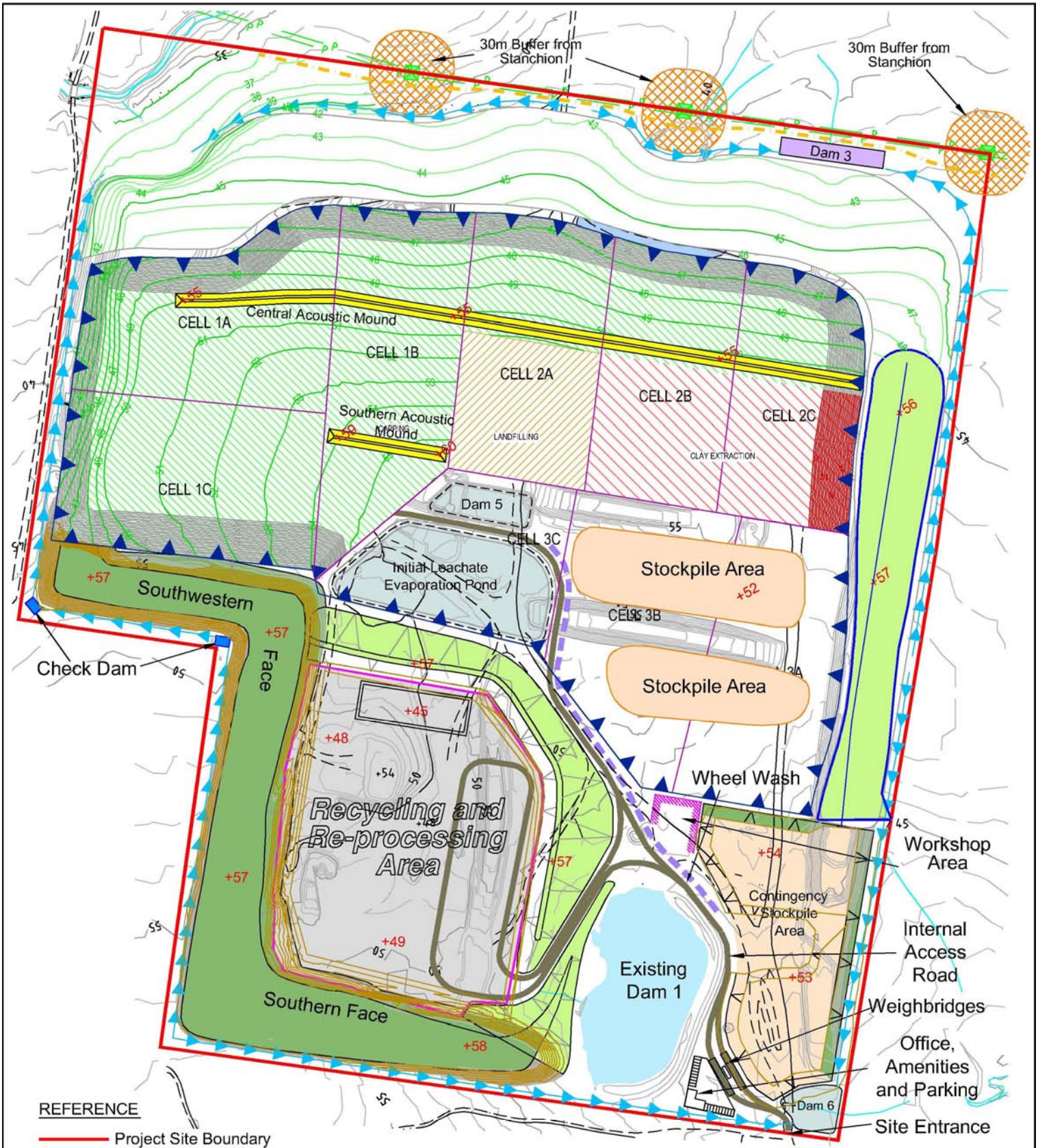
0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y005
STAGE 5

Note: The base contours used for this figure reflect existing topography

Figure 2.11b
STAGE 5 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y006
STAGE 6

Note: The base contours used for this figure reflect existing topography

Figure 2.11c
STAGE 6 OPERATIONS (AMENDED)

REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

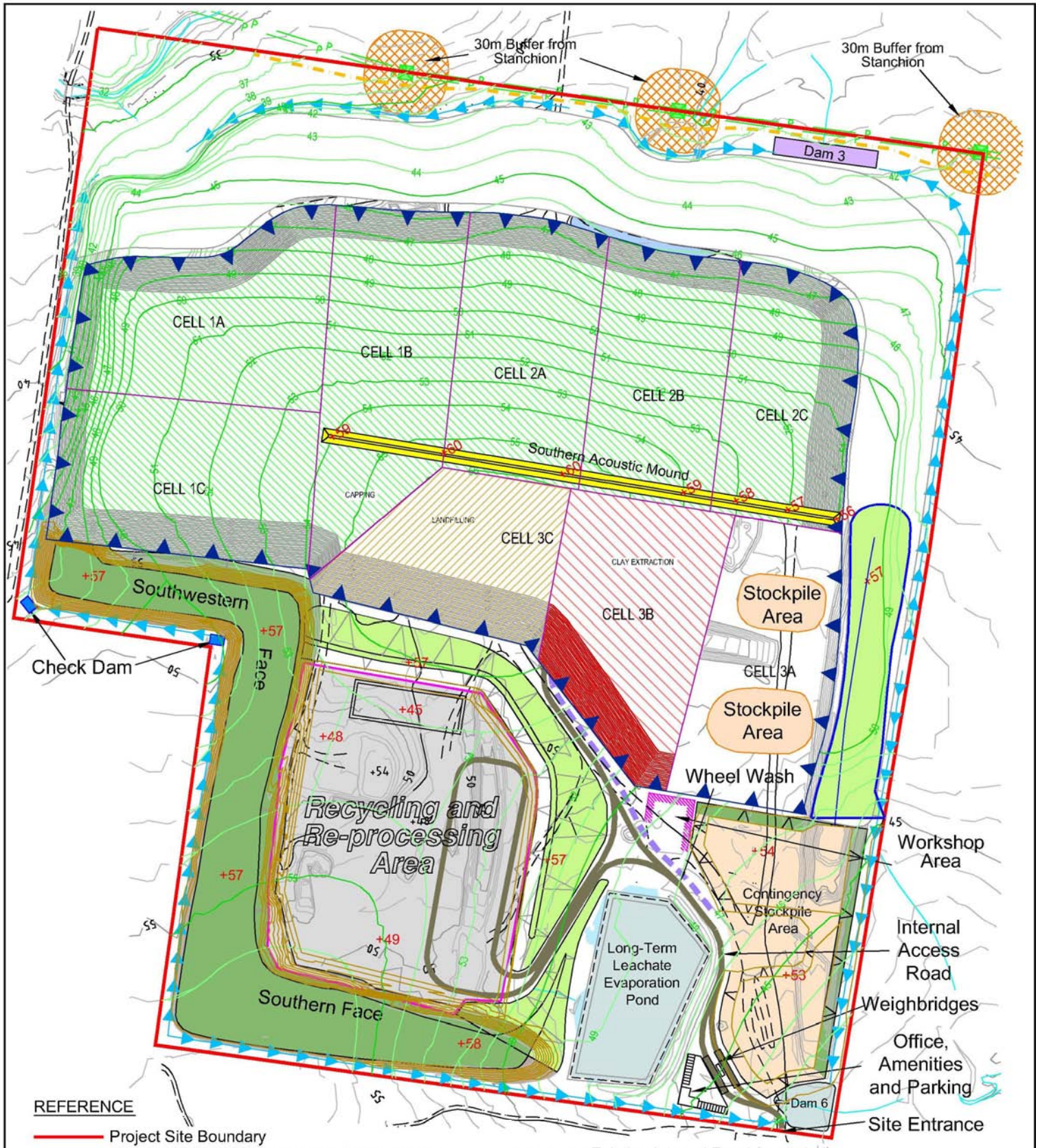
0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y007
STAGE 7

Note: The base contours used for this figure reflect existing topography

Figure 2.11d
STAGE 7 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

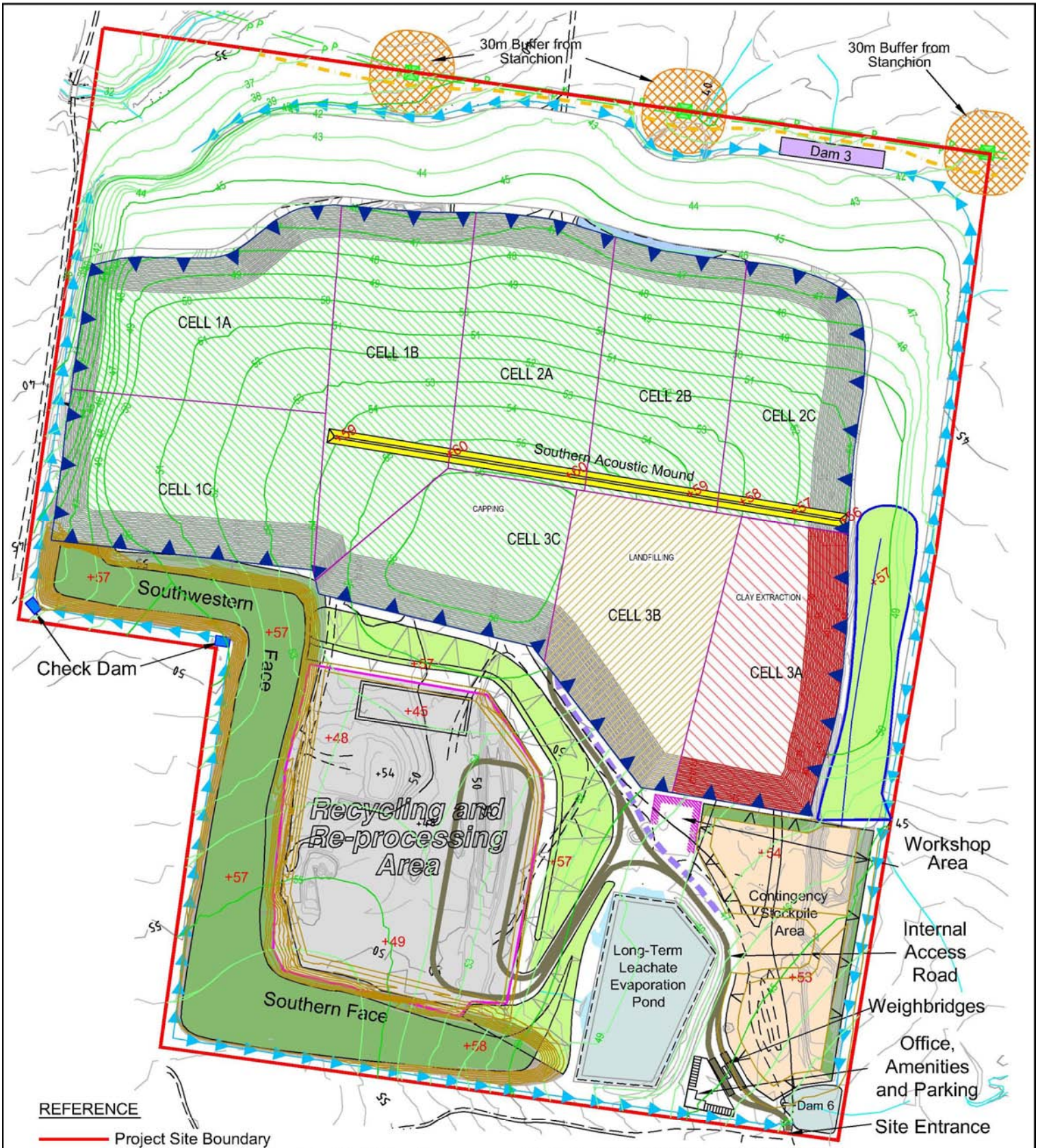
0 30 60 90m

GHD DRG No. 21-20649-Y008
STAGE 8

SCALE 1:1500 AT ORIGINAL SIZE (A1)

Note: The base contours used for this figure reflect existing topography

Figure 2.12a
STAGE 8 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

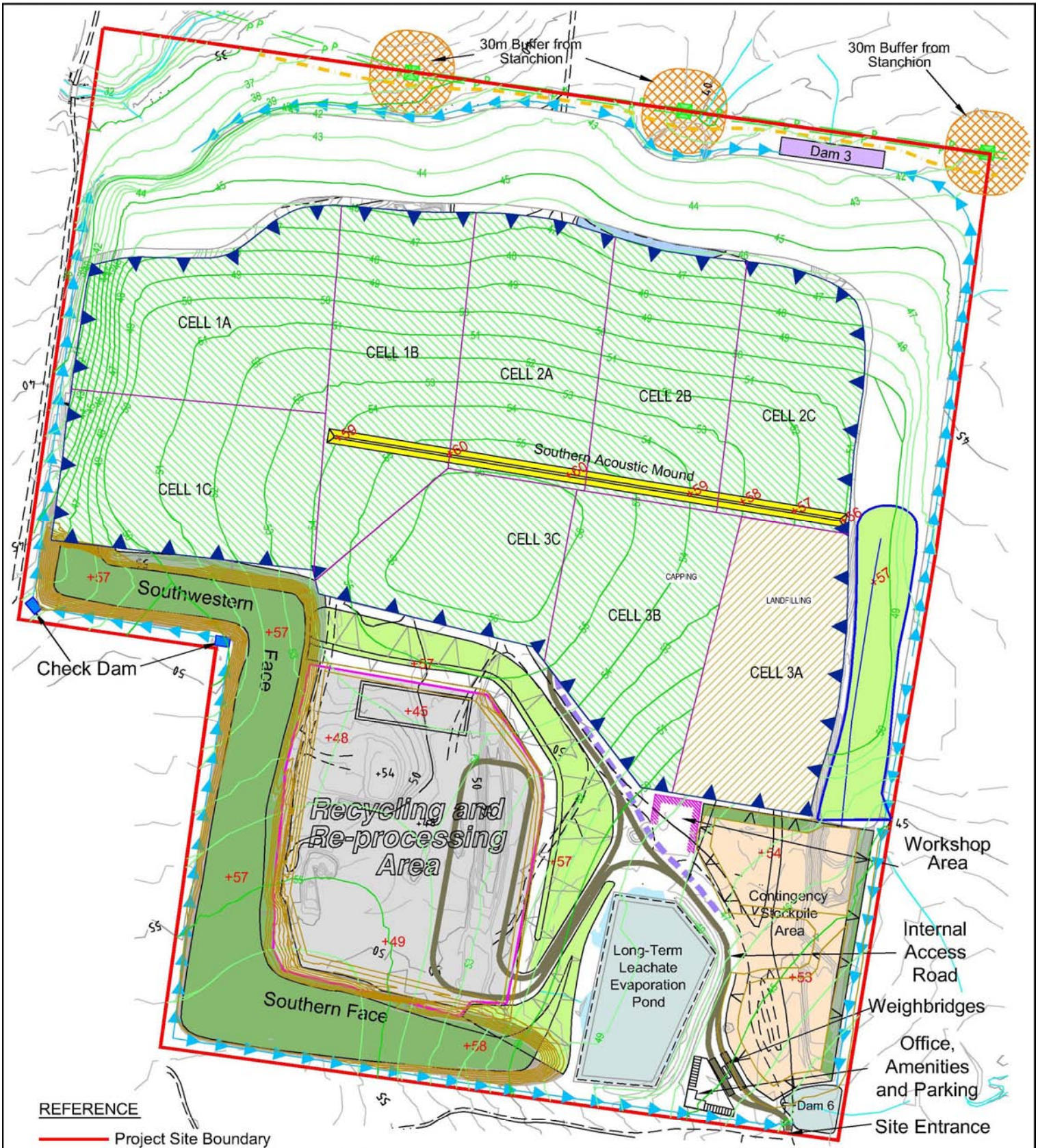
0 30 60 90m

GHD DRG No. 21-20649-Y009
STAGE 9

SCALE 1:1500 AT ORIGINAL SIZE (A1)

Note: The base contours used for this figure reflect existing topography

Figure 2.12b
STAGE 9 OPERATIONS (AMENDED)



REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap
- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access
- Temporary Acoustic Mounds

0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y010
STAGE 10

Note: The base contours used for this figure reflect existing topography

Figure 2.12c
STAGE 10 OPERATIONS (AMENDED)

REFERENCE

- Project Site Boundary
- Indicative Waste Emplacement Cell Boundary
- Proposed Limit of Extraction (Clay/Shale)
- Proposed Limit of Recycling and Re-processing Area
- 55 Existing Contour (m AHD)(Interval = 1m)
- 55 Proposed Contour (m AHD)(Interval = 1m)
- +57 Existing Elevation Spot Height (m AHD)
- +57 Proposed Elevation Spot Height (m AHD)
- Dam 1 Existing Dam (N°)
- Proposed / Enlarged Dam
- Cutting / Acoustic Mound 3m Effective Height
- Proposed Clay Extraction
- Proposed Filling
- Proposed Cap

- Existing Internal Road (unsealed)
- Proposed Internal Road (sealed)
- Proposed Internal Road (unsealed)
- Proposed Face Treatment
- Proposed Acoustic Earth Mound
- Contingency Stockpile Area
- B Leachate Riser (and Reference) (approximate only)
- Boundary of Workshop Area
- 330kV Power Line (and Staunchion)
- Drain / Check Dam
- Track for Transgrid Access

0 30 60 90m

SCALE 1:1500 AT ORIGINAL SIZE (A1)

GHD DRG No. 21-20649-Y011
STAGE 11

Note: The base contours used for this figure reflect existing topography

Figure 2.13
STAGE 11 OPERATIONS (AMENDED)

Appendix G

Additional Information

Responses to Ministers and Council Questions

24 September 2011

WM Project Number: 09154-FM
Our Ref: NG 240911 BCmk 5 .doc
Email: nicola.gilles@mallesons.com.au

Nicola Gillies
Mallesons Stephens Jaques
Level 61, Governor Phillip Tower
1 FARRAR PLACE

Dear Nicola

Orchard Hills Waste and Resource Management Facility
Penrith and Anor ats Dellara – Land and Environment Court Proceedings 10928 of 2011
Response to Request for additional information in relation to the Further Modified Preferred Project Report (FMPPR)

Wilkinson Murray (Sydney) conducted a supplementary noise assessment of the operation of the proposed Orchard Hills Waste Facility for Dellara Pty Limited with respect to proposed modification detailed in the Supplementary Noise Assessment. This assessment supplemented our initial noise assessment which was included in the Modified Preferred Project Report as Appendix 2.

In response to this submission Penrith Council has requested additional information on noise issues in correspondence from Gadens Lawyers dated 16 September 2011, with which the Minister of Planning concurs in the letter dated 16 September 2011 and another letter from Gadens Lawyers dated 20 September 2011. The following sections detail our response to the issues raised in these letters.

Letter of 16 September 2011 – Reference 8199029.1 MDS MDS

In response the following information is provided:

Clarification of the noise criteria upon which the acoustic assessment of Wilkinson Murray dated 7 September 2011 is based.

The noise criteria upon which the supplementary noise assessment was based are the same INP derived noise criteria used in previous Modified Preferred Project Report, as detailed in the following Table 1.

Table 1: **Site Specific Noise Criteria -** (Extracted from the Supplementary Noise Report and Amended)

Residence	Operational Daytime Criteria dB(A) – $L_{Aeq(15\ minute)}$
9 Verdehlo Way	39
3 Chablis Pl	39
15 Cabernet Cct	39
11 Cabernet Cct	39
Bates Residence	39
Newham Residence	39
210 Luddenham Rd	42
216 Luddenham Rd	42
230 Luddenham Rd	42
262 Luddenham Rd	42
229 Luddenham Rd*	42

*Residence next to the Croatian club

Explanation of the changes in noise levels applied to adjacent residences including a break down of the 'Bates Property" and the individual noise levels applied to each dwelling.

The changes in noise levels at residences are a result of revised topography / mounding on site and associated equipment location with respect to the four operational noise models/ Scenarios. The details of these models are presented in the supplementary noise assessment.

The modelling is based on the same methodology, equipment noise levels and modelling technique as presented in previous assessments and as discussed in the "Joint Report" of Robert Bullen and Steven Cooper dated 27 July 2011.

In the case of detailed noise levels from each noise source it was noted in the Supplementary Noise Report that full noise modelling data was provided in electronic form to the Minister and Council together with the FMPPR. In the noise modelling data the Bates residence is specified as residence number 5. This allows a detailed review of the noise model data to determine individual noise contributions from equipment to each residence.

Noise levels proposed for the Croatian Club, included as a result of the Joint Acoustic Report.

Noise predictions were conducted at number 229 Luddenham Rd which is the residence identified by Mr Cooper in the Joint Report as next to the Croatian Club. However the results were unintentionally omitted from Table 2 in the supplementary noise report. The results of Table 2 are reproduced, with results for this location as follows:

Table 2 **Predicted L_{Aeq} Operational Noise Levels Exceeded for 10% of 15-Minute Periods (daytime periods, 7am to 6pm).** (Extracted from the Supplementary Noise Report and Amended)

Residence	Operational Noise Level at Residence ($L_{Aeq,15min}$ dB(A))				Daytime Criterion dB(A)
	Scenario 1	*Scenario 2*	*Scenario 3*	*Scenario 4*	
9 Verdehlo Way	38	37	37	37	39
3 Chablis Pl	37	37	38	37	39
15 Cabernet Cct	38	37	38	38	39
11 Cabernet Cct	38	37	38	38	39
Bates Residence	38	38	38	36	39
Newham Residence	38	39	39	38	39
210 Luddenham Rd	35	36	36	37	42
216 Luddenham Rd	33	35	34	35	42
230 Luddenham Rd	31	32	32	33	42
262 Luddenham Rd	30	31	30	32	42
229 Luddenham Rd*	38	39	38	39	42

*Residence next to the Croatian club

It is noted that the predicted noise levels associated with all operational scenarios are within applicable noise criteria at all residences including 229 Luddenham Rd.

Further detail of the activities and acoustic implications of the 6 month construction and establishment period.

The methodology for the construction stage of the development is consistent with approach adopted in the initial assessment whereby "temporary fixed barriers" are used to shield surrounding receivers from noise associated with construction. The method is consistent with the findings of Item 6 of the Joint Report "**Practicalities of Using the Proposed "Movable" Noise Barriers".**

The principal noise mitigation measures proposed (reference; Supplementary Noise Report page 4 in the section "Summary of Noise Control Measures") include:

- The waste recycling and re-processing facility is sited on the Project Site at the furthest distance from residences, as shown in Attachment 1.
- Earth mounding is used on the northern, eastern and southern boundaries of Site, as shown in Attachment 1, 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 Attachment 1.
- 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 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.

In addition, it is proposed that the Proponent will develop a series of Noise Management Plans throughout the life of the Project which will prescribe specific design and operational procedures and mitigation measures designed to minimise the noise exposure of surrounding residences to works at the site. The initial Noise Management Plan for the site establishment phase will specify in detail, the staging of the vertical development of the northern and eastern faces and final landforms in relation to the positioning of acoustic barriers so as to screen works sufficiently at all times. Each Plan will also tailor the Project's noise monitoring program to the approved work schedule during the period covered by the plan to maintain the relevance of monitoring results. Real-time noise monitoring will provide continual feedback on noise emissions, ensuring ongoing compliance with the site's noise criteria.

The lower mound / barrier design will result in reduced construction works at the northern face of the site. Accordingly diagrams have been prepared to illustrate the process that is proposed during construction (refer Attachments: *Indicative Construction Sequence for the Northern Face* and *Indicative Sequence for Construction of the Northern Acoustic Mound Sections A and E*). There diagrams are consistent with previous methodologies which utilise "temporary fixed barriers on the northern side of the site. In addition, due to the revised height and location of the mounds a large component of the construction works will be conducted on the project side of the mound.

In my opinion the adoption of the proposed measures detailed above will result in compliance with established noise criteria at all identified receivers.

Detailed staging diagrams and explanations of the moveable barriers, central acoustic mound and southern acoustic mound.

The figures attached to the Supplementary Noise Report show temporary acoustic mounds as follows:

- Model / Scenario 1 – The northern bund which serves to act as a northern acoustic mound.
- Model / Scenario 2 - Central acoustic mound constructed on the North Western side of the site.
- Model / Scenario 3 - Central acoustic mound constructed extended across the northern side site.
- Model / Scenario 4 - Central acoustic mound removed and a Southern acoustic mound constructed extended across the middle of the site.

The proposed method of movements is detailed in Item 7 of the Joint Report "**Practicalities of Using the Proposed 5m Earth Mounds".** The method described in that section is proposed to be adopted on the site**.**

Attached are relevant figures of the 'moveable barriers", being:

- Figure A (Amended) – Showing revised sections across the northern mound (sourced from the Statement of Evidence of Dr Robert Bullen and the Joint Report).
- Indicative Sequence for Construction of the Northern Acoustic Mound Sections A and E – Prepared in response to Council's request for additional information showing the construction process for the north eastern bund wall.
- Figure B Final Capping Sequence – (sourced from Statement of Evidence of Dr Robert Bullen)
- Figure C (Amended) – Detail of Site Establishment Scenario (sourced from the Statement of Evidence of Dr Robert Bullen).

These have been prepared to illustrate the methodology to be adopted to control noise emissions associated with construction works. Whilst the locations of the barriers and the topography change from previous assessments, the proposed methodology of barrier location and movements have not.

Further information on the progressive removal of mounds can be found in the detailed staging plans of the FMPPR. The following Table 3 relates the noise model / scenarios with the staging plans:

Table 3 Noise Model / Scenario relationship with Staging Plan

Noise Model / Scenario*	Staging Operation Number**
Noise Model 1	Stage 2 (Amended)
Noise Model 2	Stage 6 (Amended)
Noise Model 3	Stage 8 (Amended)
Noise Model 4	Stage 10 (Amended)

*Reference Supplementary Noise Report
** Reference Further Modified Preferred Project Report (FMPPR).

We note that it appears that Mr Clarke has failed to consider the Joint Acoustic Report in which a number of significant amendments and suggestions were incorporated into the acoustic design. Please confirm whether Mr Clarke considered this report.

In circumstances where Mr Clarke has not considered the Joint Report please provide a further report that incorporates the Joint Report's findings."

This is to conform that I have read and considered the Joint Acoustic Report and the Supplementary Noise Assessment is consistent with the Joint Report. The recommendations and findings of the report have been taken into account. The findings and recommendations of this report are valid and should be incorporated in any approvals for the development.

Letter of 20 September 2011 – Reference 8208099.1 MDS MDS

In response the following information is provided:

Confirmation of methods adopted by the applicant in relation to use of mobile barriers; and Progressive bunding

The proposed methodology for use of mobile barriers in the Supplementary Noise Report is consistent with the MPPR Noise Assessment and the recommendations of the Joint Report. As previously mentioned, diagrams of the bunding and barriers are attached.

Clarification of the relationship between models 1, 2, 3 and 4 and scenarios 1, 2, 3 and 4 under the heading "Operational Noise" in the acoustic report dated 7 September 2011.

The operational Scenario 1 relates to the noise Model 1. Similarly Scenario 2 relates to noise Model 2. Scenario 3 relates to noise Model 3 and Scenario 4 relates to noise Model 4.

The daytime criteria applicable in Table 1 of the acoustic report dated 7 September 2011 and its compliance with OEH criteria.

Table 1 detailed in the Supplementary Acoustic Report dated 7 September 2011 has been derived using the procedures described in the OEH Industrial Noise Policy (INP). These criteria are derived from the intrusiveness criterion, set at the Rating Background (RBL) plus 5 dBA. This is the method agreed in item 1 of the Joint Report.

In addition, amenity criteria are the second set of applicable project specific noise goals derived from the INP. The daytime amenity criterion for a rural classification is 50 dBA. As this criterion is less stringent than the intrusiveness criterion at each receiver it is the intrusiveness criterion that governs the Project's overall operational noise criteria.

As a result the criteria presented in Table 1 are the more stringent intrusive noise criteria derived in accordance with the OEH's INP.

Mounding Diagrams

The attached figure "Indicative Sequence for Construction of the Northern Acoustic Mound Sections A and E" has been prepared to illustrate the acoustic mounding methodology. This diagram relates to the northern mound however that same principle applies to all other acoustic mounds.

Yours faithfully
WILKINSON MURRAY

Brian Clarke
Senior Associate

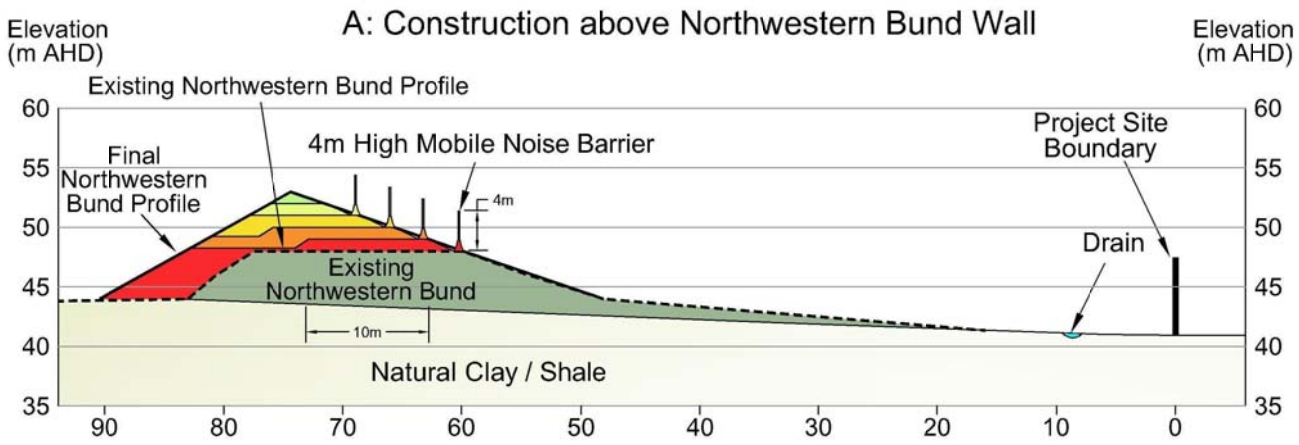
We are committed to and have implemented AS/NZS ISO 9001:2008 “Quality Management Systems – Requirements”. This management system has been externally certified and Licence No. QEC 13457 has been issued.

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.

ATTACHMENT 1 – DETAILS OF MOUNDING

\\SERVER\RWC\582\58210\CAD\582Base_Noise Figure 1.DWG



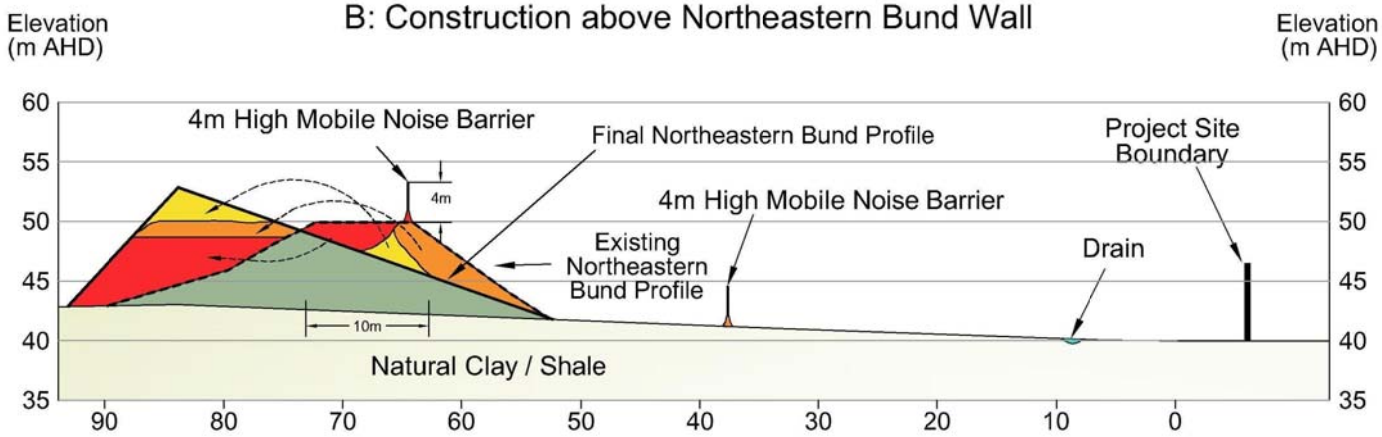
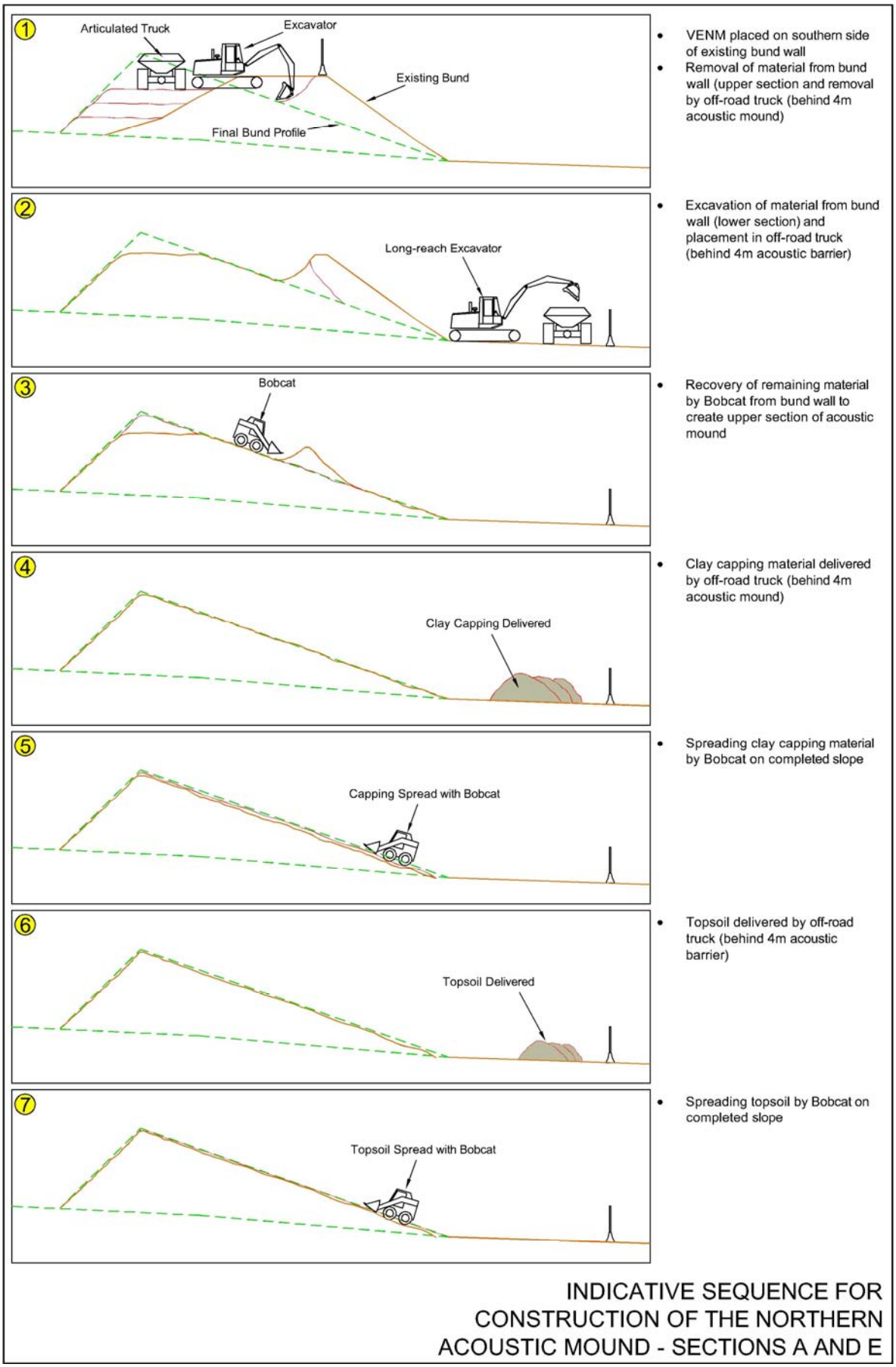


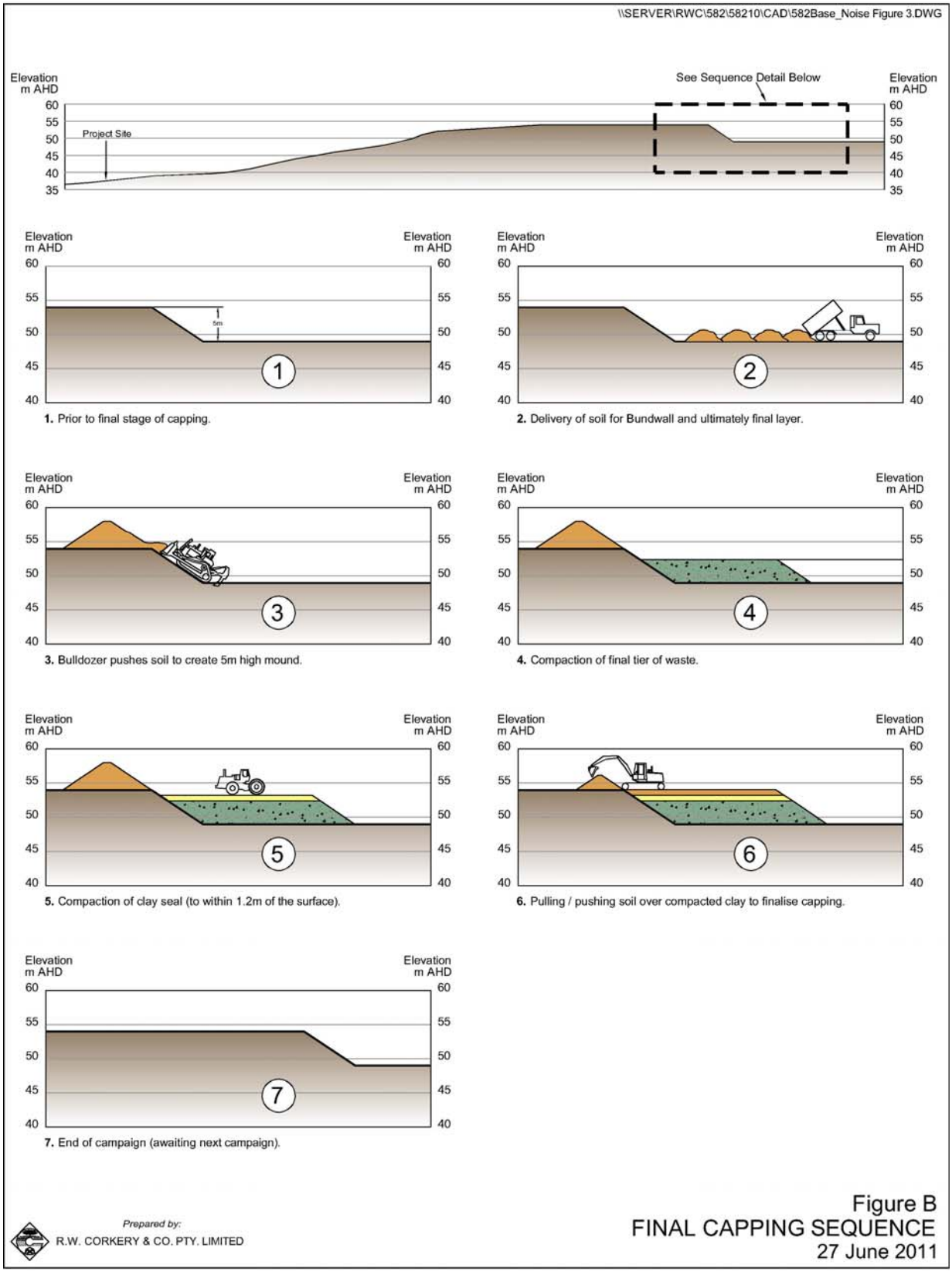
Figure A (amended)
INDICATIVE CONSTRUCTION SEQUENCE FOR NORTHERN FACE
21 September 2011

Prepared by:
R.W. CORKERY & CO. PTY. LIMITED



- VENM placed on southern side of existing bund wall
- Removal of material from bund wall (upper section and removal by off-road truck (behind 4m acoustic mound)
- Excavation of material from bund wall (lower section) and placement in off-road truck (behind 4m acoustic barrier)
- Recovery of remaining material by Bobcat from bund wall to create upper section of acoustic mound
- Clay capping material delivered by off-road truck (behind 4m acoustic mound)
- Spreading clay capping material by Bobcat on completed slope
- Topsoil delivered by off-road truck (behind 4m acoustic barrier)
- Spreading topsoil by Bobcat on completed slope

INDICATIVE SEQUENCE FOR CONSTRUCTION OF THE NORTHERN ACOUSTIC MOUND - SECTIONS A AND E



1. Prior to final stage of capping.

2. Delivery of soil for Bundwall and ultimately final layer.

3. Bulldozer pushes soil to create 5m high mound.

4. Compaction of final tier of waste.

5. Compaction of clay seal (to within 1.2m of the surface).

6. Pulling / pushing soil over compacted clay to finalise capping.

7. End of campaign (awaiting next campaign).

Prepared by:
R.W. CORKERY & CO. PTY. LIMITED

Figure B
FINAL CAPPING SEQUENCE
27 June 2011

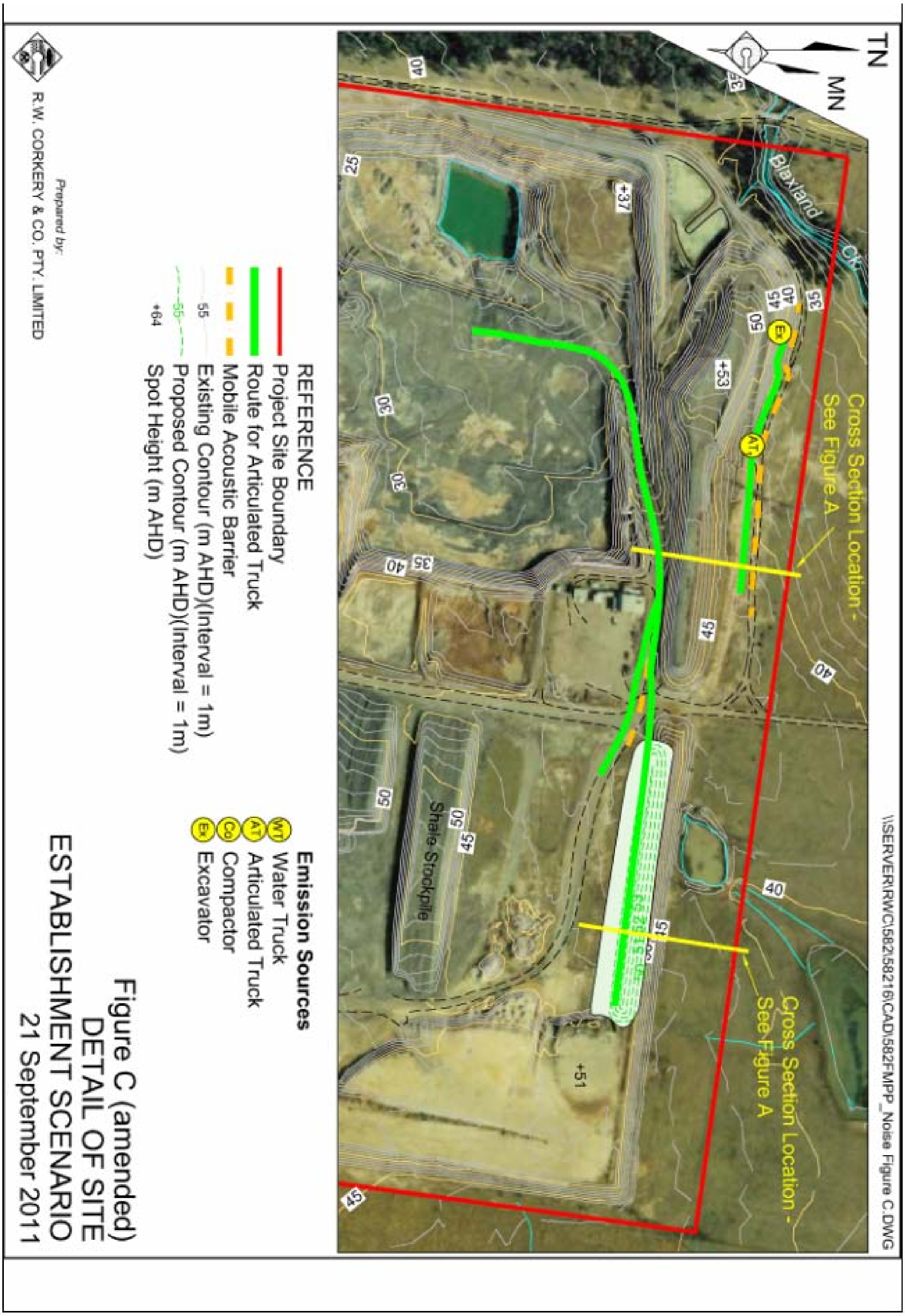


Figure C (amended)
DETAIL OF SITE
ESTABLISHMENT SCENARIO
21 September 2011

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
96 Hermitage Road
West Ryde NSW 2114
PO Box 472
West Ryde NSW 1685
Phone (02) 9809 0666
Fax (02) 9809 4095

Mallesons Stephen Jaques
Level 61 Governor Phillip Tower
1 Farrer Place
Sydney NSW 2000

Project 71102.03 Rev 2
28 September 2011
JMN:jlb

Attention: Ms. Michelle Astridge

Dear Sirs

Dellara Pty Ltd v Minister of Planning & Penrith City Council
Land and Environment Court Proceedings No 10928 of 2010
Property: 123-179 Patons Lane, Orchard Hills

Response to Penrith City Council's and the Minister for Planning's Issues on the Proposed Orchard Hills Waste Management and Recycling Facility

1. Introduction

This letter has been prepared by Mr J M Nash of Douglas Partners Pty Ltd in response to issues raised by Penrith City Council, in their letter dated 16 September 2011, as set out in the section entitled 'Northern bunds' (pp. 3). Issues raised by the Minister for Planning in a letter dated 16 September 2011, as set out in the section entitled 'Amenity bunds' (pp. 3) are also addressed herein.

The author has read the Expert Witness Code of Conduct as set out in Section 31.23 of the Uniform Civil Procedures Rules 2005 and has prepared this report accordingly.

2. Response to Penrith City Council's Issues

2.1 Detailed description of the re-contouring of the Northern bunds and use in the construction of the Northern face

This point has been addressed in the letter prepared by Mr David Gamble, Mr Phil Grace and Mr Rob Corkery in response to Council's letter.

2.2 Description of the measures proposed to satisfy SEPP 55 and the *Protection of the Environment Act* 1997 in relation to contamination, treatment and use of current bunds.

The proposed amendments as set out in the FMPRR do not impact on the appropriateness of the remediation measures being undertaken on the bunds as discussed below.

The proposed project measures involve the removal of the known area of asbestos in the eastern bund, in the vicinity of Test Bore 12 and validation of this area as outlined in the draft report entitled 'Report on Asbestos Management Plan, Orchard Hills Waste and Resource Management Facility, Patons Lane, Orchard Hills', (ref: 71102.01) dated May 2010 prepared by Douglas Partners (AMP) (which may be found at Tab 5(e) to the Application Class 1). Furthermore, and as outlined in Section 2.9.2 (4) of the Further Modified Preferred Project Report (FMPPR), dated September 2011:

> *'Sufficient C&D waste would be removed to allow up to 1 m of clay to be placed (and compacted) above the remaining materials to achieve the final landform'* (FMPPR, pp 59)

This approach in its own right provides a suitable cap for asbestos impacted materials, notwithstanding that any remaining construction and demolition (C&D) waste exposed in the bund surfaces prior to the clay cap being placed would be cleared for asbestos by an Occupational Hygienist. It is further noted that the Australian Department of Health and Ageing, 'enHealth: Management of Asbestos in the non-occupational environment', 2005 guidance states the following with respect to the thickness of capping layers for asbestos impacted material:

> *'0.5 m may be sufficient where activities are limited to gardening'* (enHealth, 2005, pp. 24)

With respect to the detected chemical contaminants, given the results have indicated that the detected exceedances of the human health investigation levels (HILs) are statistically insignificant, and have low leachability characteristics, as outlined in the report entitled 'Report on Preliminary In Situ Waste Classification Assessment', (ref: 71102) dated August 2009 prepared by Douglas Partners (Preliminary *In-Situ* Waste Classification Assessment) (which may be found at Tab 4(a) to the Application Class 1), the risk posed by the chemical contaminants to human health and the environment are considered negligible. The chemical contaminants are not considered to pose an unacceptable risk under the proposed landuse and therefore do not warrant remediation as set out in Section 3.5.3 of the Managing Land Contamination Planning Guidelines SEPP 55-Remediation of Land, NSW DUAP and EPA, 1998.

Furthermore, it is also outlined in the Australian and New Zealand Environment and Conservation Council, 'Guidelines for the Assessment of On-Site Containment of Contaminated Soil', 1999 that:

> *'If all contaminants are effectively immobile…. and only physical separation is required, it may be sufficient to provide a thickness of soil that is unlikely to be penetrated by future users on the site. A minimum soil cover thickness of about 0.5 m is commonly adopted'* (ANZECC, 1999, pp. 24)

The proposed works as outlined above are considered conservative and appropriate remediation measures for the bunds and meet the requirements of Section 4.3 'Remediation of Contamination' as set out in the Guidelines for the NSW Site Auditor Scheme (2nd Edition), NSW DEC 2006, SEPP 55 and the *Protection of the Environment Operations Act (NSW)* 1997 (POEO Act).

2.3 Further details of measures by which waste in the existing bund walls will be managed in accordance with the *Protection of the Environment Act* 1997.

The results of the preliminary *in-situ* testing have indicated that the material is classified as General Solid Waste (non-putrescible). The materials impacted by asbestos are classified as Special Waste (Asbestos) as outlined in the Preliminary *In-Situ* Waste Classification Assessment. The material identified as Special Waste (Asbestos) will be placed in a containment cell at the toe of Cell 1 in accordance with Section 6 of the AMP and Section 2.9.2 of the FMPPR. Furthermore, given that any material containing C&D waste is to be verified as General Solid Waste (non-putrescible) as outlined in Section 2.9.2 (4) of the FMPPR (extract below), this will allow for appropriate management and reuse and/or disposal of the material from the bunds.

> *'For those sections of existing bund walls where construction and demolition wastes are encountered during re-shaping of the bunds, the Proponent would adopt a procedure to confirm the materials are general solid waste (non-putrescible). This material would be loaded into a site haul truck and transported either to a raw feed stockpile area within the recycling and re-processing plant or the active waste emplacement area for burial in conjunction with incoming wastes'* (FMPPR, Section 2.9.2 (4), pp 59)

The issue of concern regarding material impacted by C&D is the potential for the presence of asbestos. Therefore, the general procedure to deal with this will involve stockpiling of the C&D impacted material and subsequently obtaining an asbestos clearance of the material by an accredited Occupational Hygienist. Appropriate handling protocols for asbestos impacted materials as outlined in the AMP will be implemented. This includes light spraying or covering of the stockpile and air monitoring until the material is cleared. If asbestos is identified to have impacted the stockpile then the material will be placed with the impacted material from the eastern bund in the containment cell in accordance with the AMP. The procedure and protocols for managing and disposal of materials from the bunds, in particular asbestos impacted materials, is in accordance with the POEO Act. The proposed amendments as set out in the FMPPR do not impact on this.

2.4 Details of any further testing proposed to be undertaken on the bunds and contamination contained therein

As outlined below, it is the author's opinion that the amendments to the project, as addressed in the FMPPR do not impact on the sampling requirements which remains adequately addressed in the AMP.

Testing of the bund walls has been undertaken on two occasions by Douglas Partners as reported in:

- Preliminary In-Situ Waste Classification Assessment, dated August 2009 (referred to below in this section as the first report); and 0
- Factual Letter Report on Supplementary Asbestos Assessment, dated July 2010 (referred to below in this section as the second report) (which may be found at Tab 4(d) of the Application Class 1).

The first and second reports (investigations) involved drilling and sampling of 28 test bore and test pit locations through the full thickness (in most cases) of the bund walls. All four bunds were tested.

When combined the two investigations involved the analysis of a total of 83 soil samples for a wide range of possible contaminants. The overall purposes of the two investigations were to:

- Provide a preliminary *in-situ* waste classification against criteria set out in the DECC Waste Classification Guidelines, dated April 2008 as revised in July 2009;
- Delineate the extent of asbestos contaminated soils in the eastern bund wall; and
- Assess the materials against the human health investigations levels (HILs) which are made or endorsed under the Contaminated Land Management Act, 1997.

Field observations from the previous investigations by Douglas Partners noted that large tracts of the bund walls contained no evidence of contamination and largely comprised excavated natural materials and that where present the contaminated materials comprised mostly C&D waste which are mostly inert.

The results from the samples analysed indicated only a few samples with marginal exceedances above the human health investigation levels (HILs) for commercial and industrial land uses (as set out in the Guidelines for the NSW Site Auditor Scheme (2nd Edition), NSW DEC 2006). However, the 95% upper confidence levels for the mean concentrations of all contaminants tested were below the published criteria and accordingly were assessed to pose no significant risk to human health under the proposed land use scenario.

Moreover, capping of the bund wall materials (as is proposed) will render the bund wall materials inaccessible to normal exposure pathways and will further reduce the potential for infiltration and any related contaminant leaching as well as reducing the potential for particulate runoff. Accordingly, the potential for risk to human health or impact on the local environment is likely to be negligible.

In addition, 10 samples showing the highest reported contaminant levels were analysed as part of the first report in order to determine potential leachability. The adopted testing method was the toxicity characteristic leaching procedure (TCLP) and the results showed generally non detectable to low levels of contaminant leachability.

Accordingly, from the results obtained, it is the author's opinion that there is a very low likelihood that dissolved contamination will leach from the bund walls, or impact on runoff quality to the extent that it could contaminate nearby waterways e.g. Blaxland Creek. Similarly, the likelihood that contaminants could leach from the bund wall materials to any significant degree and subsequently cause any impact on local groundwater quality by infiltration is also considered to be negligible.

On the above basis it is considered that sufficient testing has in fact been undertaken to adequately characterise the extent of contamination within the bund walls and to determine the waste classification according to the prevailing guidelines.

It is noted that some asbestos sampling and testing will be undertaken in accordance with the requirements of the AMP and as outlined in Section 2.3 above. Furthermore, if in the unlikely instance that grossly impacted materials were encountered during the excavation of the bunds then this material would be stockpiled separately and re-assessed by an appropriately qualified environmental consultant to confirm its General Solid Waste (non-putrescible) classification and subsequent disposal

to the operational cell. It should, however, be highlighted that such materials have not been encountered during the course of DP's investigations and therefore such an occurrence would be considered an unexpected find.

2.5 Draft Asbestos Management Plan for removal and/or handling of asbestos contained in northern bunds

The proposed amendments to the project as outlined in the FMPPR do not impact on the AMP prepared for the original proposal as discussed below.

As outlined in the Preliminary *In-Situ* Waste Classification and the Supplementary Asbestos Assessment, asbestos has only been detected above the reporting limit of 0.1 g/Kg in the vicinity of Test Bore 12 located on the eastern bund.

However, as part of good management and practice for the project and as recommended in Douglas Partners Preliminary *In-Situ* Waste Classification, the material impacted by C&D waste that is disturbed during the works should be presumed to be asbestos contaminated until it is cleared. Clearance will be conducted by an accredited Occupational Hygienist during the works. Furthermore, the procedures and protocols for handling and removal of asbestos contaminated material from the area of known asbestos impacted material in the eastern bund (in the vicinity of Test Bore 12) and outlined in the AMP would also apply to other areas if confirmed to be asbestos impacted as referred to in Section 9 of the AMP entitled 'Contingency Plans and Unexpected Occurrences'.

Additionally, as outlined above in Section 2.2 above and in Section 2.9.2 (4) of the FMPRR, up to 1 m of clay will be placed over any remaining C&D exposed in the bund which would be cleared for asbestos by an Occupational Hygienist prior to the clay cap being constructed.

3. Response to the Minister for Planning's Issues

In respect of the amendment bunds to the final landform and amenity bunds, our client is particularly concerned about the disturbance of contaminated material in the bund walls (including asbestos). Please provide:

3.1 An adequate environmental and human health risk assessment of this new aspect of the proposal in accordance with State Environmental Planning Policy No: 55 Remediation of Land

Please refer to response in Section 2.2 above.

It is also noted that given the chemical contaminants are considered to not represent a risk to human health, and asbestos impacted materials will be appropriately remediated in accordance with the AMP and the proposed works, a human health risk assessment is not required or warranted for the proposed project. It is reaffirmed by the author that the proposed works including the amendments to

the final landform of the amenity bunds are still considered conservative and appropriate remediation measures for the bunds and meet the requirements of SEPP 55.

3.2 A draft Asbestos Management Plan prepared by a suitably qualified professional, such as a recognised Occupational Hygienist or EPA accredited site Auditor, in consultation with WorkCover NSW and OEH

As mentioned in Sections 2.2 and 2.5 above, an AMP has been prepared by Douglas Partners. This report has been reviewed by the author who is a NSW accredited Site Auditor (Auditor Accreditation Number 9822). Furthermore, as outlined in the AMP, works are to be conducted in accordance with relevant legislation, regulations and industry guidance, including that set by WorkCover NSW such as the requirement to inform WorkCover NSW seven days in advance of works commencing. Should NSW WorkCover or the OEH be inclined to review the draft report and make appropriate recommendations, then these would be taken into consideration during the finalisation of the report.

It is the author's opinion that the AMP is still suitable for the proposed project as amended in the FMPPR.

3.3 Details concerning where contaminated material will be emplaced and, if emplaced on site, whether it is waste for the purposes of calculating the total waste capacity of the proposal

Please refer to response in Section 2.3 above.

Furthermore, it is the author's understanding that the waste generated from the bunds, and not recycled, will form part of the total waste capacity of the proposal.

It is also noted for clarity, that the amendments made to the final landform and amenity bunds do not in the author's opinion impact on the already proposed procedures and protocols for managing the waste generated from the bunds.

Yours faithfully
Douglas Partners Pty Ltd

J M Nash
Principal

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27th September 2011

Our Ref: RWC14-003 (Lt_RWC14003_FMPP Surface Water Queries from Respondents_27 Sep 2011_ Rev4 FNL)

Privileged & Confidential Communication

Mallesons Stephen Jaques
Ms Debra Townend, Partner
Level 61 Governor Phillip Tower
Farrer Place
Sydney NSW 2000

Transmitted via email

Dear Debra,

Re: Dellara Pty Ltd v Minister for Planning & Penrith City Council Land and Environment Court Proceedings No. 10928 of 2010 - *Further Modified Preferred Project (FMPP) – Queries from Respondents*

I refer to the letters received from the Minister for Planning & Infrastructure dated 16 September 2011, and Penrith City Council dated 16 & 20 September 2011 respectively regarding the *Further Modified Preferred Project Report (FMPP Report)* and the Overview Report to the FMPP Report, September 2011.

Queries raised by the respondents in regards to my area of expertise in surface water aspects in relation to proposed amendments in the FMPP are accordingly addressed within this letter. My responses below should also be read in context with my letter of 2nd September 2011 annexed to the Overview Report and the earlier detailed reports and investigations as referred to in the FMPP Report.

1. Department of Planning & Infrastructure Queries 16th September,2011

Queries Raised:

"Surface hydrology"

"The altered final landform is likely to have consequences in terms of surface water runoff from the whole site and particularly in relation to increased primary flows into Dam 2. Please provide further information as to:

- *whether there is additional hydraulic modelling based on the new and different final land form to support the claim that there would be no additional impacts on surface water runoff from the whole site and particularly in relation to Dam 2 arising from the proposed amendments;*
- *what works are to occur on the site and in relation to Dam 2 to address any increased flow issues; and*
- *what impacts arise in respect of the riparian zone and Blaxland Creek from the proposed amendments."*

Response:

My response below relates to the first two (2) of the three individual points of the query raised above. I understand that the last point in the above query is addressed in letters prepared by other consultants for the Applicant relative to their area of expertise.

The FMPP final landform is not considered to have any significant consequences to existing surface water designs and management controls for the reasons outlined below. Additional hydraulic modelling of the FMPP final landform was not considered necessary for the same reasons, nor would it significantly alter the conclusions of the Surface Water Assessment (GSSE & BMT WBM, February 2010), which may be found at Tab 4(f) of the Application Class 1. These include, but are not limited to the following key reasons:

- Slope changes for the FMPP are well within the very conservative adopted design slopes for Dams 2, 3 and 6 for the final landform, so no change to existing (see note 3 further below);
- Catchment areas can be maintained to sediment dams 2,3 and 6 for the FMPP compared to the MPP (no significant change, see note 4 further below);
- Progressive rehabilitation and appropriate revegetation of the final landform remains a key focus area of final landform design and management to achieve appropriate vegetation cover, minimising runoff and soil loss. Conservative runoff coefficients used remain appropriate (see note 5 and note 2 further below);
- Accordingly dam sizes remain applicable and appropriate, and subsequently water quantity and quality modelling assessments and their findings remain applicable;
- No additional works for any of the dam designs or assessments are considered to be required. Notwithstanding this, for clarity and completeness an outline of works already proposed for Dam 2 as previously described within the original *Surface Water Assessment* (Feb, 2010), which remains applicable, is provided further below (refer Point 7 below);

Further detail to the support and clarify the above statements is provided below:

1. Government design guidelines (the 'Blue Book'[2]) prescribe the sizing and design of sediment dams (all site dams including Dam 2) to comprise two (2) key components:
    a. *Settling Zone (volume required by runoff water)*
    b. *Sediment Zone (volume required by sediment in runoff)*
2. The *settling* zone is primarily determined by a 5-day total rainfall depth to the 90th percentile rainfall, the catchment area and the runoff coefficient for rehabilitated catchment. The runoff coefficient is primarily affected by catchment vegetation cover, which is a key aspect considered for the final landform. These aspects have been considered in the FMPP in my letter 2 September 2011 and as further outlined below in this letter;
3. Slope (grade and slope length) is a key design component of the <u>*sediment zone*</u> component (only) for sediment dams, being a key part of the *Revised Universal Soil Loss Equation (RUSLE)* calculation components of dam sizing. Design calculations (including settling and sediment zone inputs) for all sediment dams for the project are detailed in *Appendix 2* of the Surface Water Assessment (GSSE & BMTWBM, 2010), which may be found at Tab 4(f) of the Application Class 1. GSSE conservatively designed the sizing of sediment Dams 2, 6 and 3 in the original final landform using <u>slopes of 20%</u> for sediment zone calculations (ie 20% conservatively adopted for the *entire* dam catchment area not just batter slope areas, such that the sediment zone is effectively overdesigned). Accordingly, the 'increase' in slope for the FMPP for the upper areas (of ~5%) is still well within this conservative design. As such, the sediment zone remains appropriate and still conservative also for the FMPP final landform.
4. As stated in my letter of 2nd September 2011, catchment areas considered for the original final landform within the Surface Water Assessment (GSSE, BMT WBM, 2010) can be maintained by

the FMPP such that the existing designs, capacities and assessments will not be significantly affected and remain appropriate. Further, contour banks and drop structures can be used to ensure such and that water is delivered in a non-erosive manner to Dam 2 as originally designed within the Surface Water Assessment (BMTWBM & GSSE, 2010).

5. Vegetation cover is a key component for surface water runoff from the site and sediment transport. For the final landform, adequate vegetation cover will be achieved and maintained through a progressive rehabilitation process employed throughout operations through to final landform. Whilst this has been described in project documentation to date, further detail on rehabilitation will be contained within specific management plans required by project approval conditions to the satisfaction of regulators. Appropriate vegetation cover were used in the sediment zone calculations (including for Dam 2) for the final landform such that the resulting sediment zone volume is larger than would be expected *with* adequate vegetation cover from rehabilitation (which is expected).

6. Dam 2 sizing for operations was assessed by the Surface Water Assessment (2010) as needing up to 2.6ML. The size of Dam 2 required for the original final landform was 2.3ML. Modelling assessments were conservatively undertaken for the largest required dam size throughout entire project for all dams (ie at the larger 2.6ML size for Dam 2) as shown in Table 5-2 of the SWA, 2010. These designs and subsequent assessments are considered appropriate for the FMPP as outlined in previous correspondence to the court (including 2 September 2011) and as also reasoned within this letter.

7. Subsequently, no additional works for the FMPP are proposed compared to what has already been proposed and discussed and reviewed (including by the Joint Experts Report to date). For clarity and completeness, existing works required for Dam 2 for the project as already discussed within previous project reports including the Surface Water Assessment (2010) will include but not necessarily be limited to the following key actions:

    i. The existing Dam 2 has not been maintained to date (Blue Book[2] guidelines requires periodic sediment zone maintenance to remove trapped sediment) and the dam requires de-silting as part of site establishment works for the project. This is an internal process and will not require disturbance of the riparian zone below the dam. This process will ensure the dam capacity reaches the 2.6ML required for the project.

    ii. The existing Dam 2 currently does not have a formalised spillway (primary discharge is a low-flow outlet) and requires one to be installed to meet current best practice. Notwithstanding this it is noted that significant overflow of the existing dam causing scouring does *not* appear to have occurred to date, with the dam wall remaining in reasonable condition. Prudently, a suitably sized spillway will be designed and installed to allow stable discharge of high rainfall events beyond the design capacity of Dam 2 into the riparian zone of Blaxland Creek. This forms part of detailed technical designs for the project completed during the next stage following project approval (eg within the Construction Quality Assurance (CQA) Plan and related management plans) to the satisfaction of regulators, prior to commencement of the project. It is noted that Dam 2 works will be undertaken first prior to significant site disturbance works to ensure that it is functional and ready for treatment and discharge of site flows for project construction as required.

    iii. For best practice, a material trash rack will also be installed on low flow outlet of Dam 2 to minimise potential for any floating debris in the dam to exit in site discharges;

    iv. Flow monitoring and environmental performance equipment may be installed where required for the dam to meet regulatory requirements (eg EPL);

In conclusion, it is considered that the sizing and related environmental impact assessments for the dams (including Dam 2) have been conservatively and appropriately undertaken in accordance with the requirements of the relevant government guidelines ('Blue Book'[2]) and already allow for the increased slopes proposed by the final landform for the FMPP. Additional hydraulic modelling of the

FMPP final landform is not considered necessary, nor would it significantly alter the conclusions of the Surface Water Assessment (2010).

2. Penrith City Council Queries 16th September,2011

Queries Raised:

"Leachate"

- *In addition, please provide the following material:*
  a) Re-run of the revised leachate model;
  b) Detailed explanation of contingency measures and their application;
  c) Details of the proposed capping for the northern bund walls during re-contouring of northern face and final landform; and
  d) Details of sediment control measures proposed for the stockpile areas containing recovered clay/shale material."

Response:

My response below relates to item d) of the query raised above. I understand that the other points are addressed in letters prepared by other consultants for the Applicant relative to their area of expertise.

With respect to item "d)" in the above queries raised, the following is noted in relation to the proposed *Contingency Stockpile Area,* located in the south-eastern part of the site north of Dam 6:

- Surface water management for the proposed *contingency stockpiling area* will be designed, installed and managed in accordance with 'the Blue Book' (Volume 2, DECC 2008[2]).
- Erosion and Sediment Control measures will be employed at the source (*contingency stockpile*), during conveyance, and also for end-treatment control and monitoring via the conservative sizing, design, management and monitoring of the sediment dam which will receive runoff from the contingency stockpile area (see also response to Query 3 from Council further below).
- These measures are typically included in detailed designs within the next stage of approval within the management plans required (as outlined in the draft conditions of approval) to the satisfaction of appropriate regulators. Notwithstanding this, a conceptual outline of these is provided in items 1-3 immediately below.

1. Source controls for the *Contingency Stockpile Area* would likely include:
   a. Staged development of the project, in-cell stockpiling and preferential sale offsite or reuse onsite optimise the size of the contingency stockpile area, minimising disturbed area runoff;
   b. Appropriate design of the surface slopes and batters of the contingency stockpile to ensure they are stable/stabilised (eg using hydroseeding) to minimise potential for erosion and soil mobilisation;
   c. Minimisation of slope lengths (eg using cross banks/drains if required);
   d. Vegetated sediment-drains located along the foot of the batters of the contingency stockpiling area which would convey runoff from batters to minor pre-treatment sump(s) (refer (e) below). Minor controls such as sediment fencing/straw bale filters may also be employed where appropriate where required;

e. Minor sediment pre-treatment sump(s) (refer Blue Book[1,2]) downstream of the contingency stockpile to assist in further removing sediment prior to conveyance to sediment Dam 6 (see item 2 below), assisting performance of Dam 5 (see point 3 below);

f. Maintenance and inspection of the above to ensure maintained functional.

2. Conveyance control of residual flows from the contingency stockpile in higher rainfall can then be delivered via vegetated contour banks/ swale to Dam 6. Vegetated conveyance structures such as swales are highly effective as discussed in detail within the Surface Water Assessment (2010).

3. End treatment control & monitoring has been appropriately and conservatively designed for Dam 6 to accommodate sediment flows from its catchment area, for which the *contingency stockpile area* will have negligible effect (see details in Query 3 below). Dam 6 will be appropriately managed and maintained in accordance with the Blue Book[2]. Further, Dam 6 will also be monitored for water quality to ensure that all waters are of appropriate quality for discharge under EPL, and flocculation can also be utilised where required to ensure compliance is met as previously outlined in the Surface Water Assessment (2010)).

Subsequently, with the above approaches in place, I consider that the addition of the contingency stockpile area will be manageable and appropriate with the above controls in place and those detailed in related Query 3 separately below.

3. Penrith City Council Queries 20th September,2011

Queries Raised:

"In addition to the information requested in our letter dated 16th September, the second respondent requires the following further information to be provided:

Leachate

- *Detail of the post-closure plan for the long term leachate evaporation pond;*
- ***Surface Water Runoff Volumes which include the proposed stockpiling arrangements.**"*

Response:

My response below relates to the second point raised by Council in the above query relating to surface water runoff volumes. I understand that other aspects relating to leachate queries are addressed in letters prepared by other consultants for the Applicant relative to their area of expertise.

Surface water management for the proposed C*ontingency Stockpiling Area* will be designed and managed as required in accordance with 'the Blue Book' (DECC 2008[2]). Accordingly, this includes source, conveyance and end treatment and monitoring controls as outlined in responses to queries 1 and 2 earlier above. This includes dam sizing. Surface water runoff volumes have been appropriately considered as follows:

1. With respect to the *Contingency Stockpiling Area*, GHD Pty Ltd have advised me that the maximum surface area of the proposed stockpiling area (if employed to full capacity) will be approximately 2.778ha, and that the previous footprint for the same area (non-stockpiling) was 2.585ha (ie only 0.193ha difference in total surface area). This change represents only 1.57% of the total catchment area of the receiving sediment Dam 6 during operations when the stockpile contingency stockpiling area would be

required, and in my opinion would have little impact on the existing designs as outlined below.

2. Notwithstanding this, I have reviewed Dam 6 sizing calculations (to Blue Book[2] design guidelines) to incorporate the potential additional 0.193Ha added by the stockpile at capacity to assess any significant changes, which showed that the stockpile area changes would increase the surface water runoff volume required by from 3,234m^3 to 3,299m^3. Dam 6 sizing for operations as proposed already is 3.3ML, and for final landform was listed as 1.8ML (with all modelling and assessments also prudently run using the larger 3.3ML). Accordingly, the introduction of the contingency stockpiling area does not present a significant change and stormwater runoff volumes from the area are within the existing proposed dam sizing for Dam 6. It is also noted that a range of conservative factors are used in sizing the dam as outlined within the Surface Water Assessment (2010) and as follows below, which give further assurance to the appropriate sizing of the dam to accommodate the change. The existing designs are further considered conservative and appropriate for the following reasons:

    a. Conservative runoff parameters and coefficients were utilised for the surface area of the existing Dam 6 sizing design (including runoff coefficients, soil erodibility factors, erosion control practice factors etc).

    b. Compared to the existing natural compacted ground surface runoff, the addition of the contingency stockpile would likely act to *absorb* some water (slowing flows before saturation) rather than simply adding to surface runoff, and would not be expected to significantly convey water beyond the level of the original runoff parameters used in the original designs and assessments.

    c. Erosion and sediment control factors/parameters will be appropriately addressed using best-practice techniques to minimise sediment transport. Appropriate erosion and sediment controls (source, conveyance and end treatment) will be employed as discussed earlier above in my response to Query 2.

3. In addition to the above, it is noted that management and monitoring controls for Dam 6 including maintenance and monitoring of water quality to ensure that existing controls are working well and that all waters are of appropriate quality for discharge under EPL (with flocculation utilised where required to ensure compliance), as previously outlined in the Surface Water Assessment (2010) which provides further discussion on these aspects.

With the above considerations in place, the designs in place to receive stormwater runoff volumes from the additional contingency stockpile area (and further noting erosion and sediment controls discussed in query 2 earlier above), the surface water management controls proposed are considered appropriate for the project.

Overall conclusion

Accordingly, as introduced in my letter of 2nd September 2011 and further clarified in this letter, it would not be expected that any significant change or impact will occur as a result of the FMPP with respect to runoff and sediment delivery compared to that assessed and designed for within the original Surface Water Assessment (GSSE and BMT WBM, 2010), which have been conservatively prepared in accordance with the relevant NSW Government guidelines ('Blue Book'[2]), as required by the NSW Office of Environment & Heritage (OEH). This includes the changes to the final landform and contingency stockpiling area. Subsequently the existing sediment dam sizing, management and assessments are considered to remain applicable and adequate for the changes. The existing surface water assessment and evidence and documentation to date provided by myself (including all resulting from the Court proceedings) are deemed appropriate in such case.

We trust this information meets your requirements. Please do not hesitate to contact me with any queries at all.

Regards,

Craig Bagnall

Associate Environmental Engineer

GSS Environmental

References:

1. Landcom (2004), *Managing Urban Stormwater: Soils and Construction – Volume 1, 4th Edition*, (commonly referred to as 'The Blue Book' guidelines, Volume 1);
2. Department of Environment and Climate Change (DECC) (2008), *Managing Urban Stormwater: Soils and Construction'* (commonly referred to as "the Blue Book" guidelines, Volume 2). This includes applicable components from Volume 2b: Waste Landfills and Volume 2e: Mines and Quarries;
3. GSS Environmental (GSSE) and BMTWBM Pty Ltd, February 2010, *'Orchard Hills Waste and Resource Management Facility: Surface Water Assessment',* Specialist Consultant Studies Compendium Volume 1, Part 3 of the Environmental Assessment (2010). The document may be found at Tab 4(f) of the Application Class 1).

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Geoff Cunningham Natural Resource Consultants Pty Ltd
9 The Crest
Killara NSW 2071

27th September, 2011

Ms Michelle Astridge
Senior Associate
Mallesons Stephen Jaques
Level 61, Governor Phillip Tower,
1 Farrer Place,
Sydney NSW 2000

Dear Ms Astridge

Re LAND AND ENVIRONMENT COURT PROCEEDING NO. 10928 OF 2010

I am aware that an alternative proposal for the Dellara Pty Ltd Orchard Hills site contained in the Further Modified Preferred Project [FMPP] has recently been prepared and is proposed to be submitted to the Land and Environment Court.

I understand that the Minister for Planning in its letter dated 16 September 2011 and the Council in the letters from Gadens dated 16 and 20 September 2011, requested further information regarding the FMPP. The Council's letters do not raise any matters relevant to my area of expertise, being ecology. This letter responds to the following matter raised in the Minister's letter relevant to my area of expertise:

'Surface Hydrology

Please provide further information as to:

- ***what impacts arise in respect of the riparian zone and Blaxland Creek from the proposed amendments*.'**

I understand that the FMPP would involve a certain number of modifications to the proposal considered by the Court in the recent hearing. Having regard to the FMPP, which I have read, and my previously prepared Evidence, namely,

- Response to Item 1 [E] in Short Minutes of Order – 12 May 2011 in the Land and Environment Court Proceeding N 10928 of 2010, and

- Expert Statement of Evidence – Geoffrey Mc Iver Cunningham Relating to the MPP for the Proposed Orchard Hills Waste and Resource Management Facility Which is Subject to Land and Environment Court Proceeding No. 10928 of 2010,

I have read the body and conclusions of the letter prepared by Mr Craig Bagnall of GSS Environmental in response to the Minister's and Council's letter, in which he details the likely impact of the modifications proposed by the FMPP report in respect of surface water.

Having regard to this information it is my opinion that, if the proposal for surface water management is implemented according to the process detailed in the FMPP, there would be no deleterious impact on Blaxland Creek and its riparian zone from the amendments proposed in the FMPP.

I am of the opinion that the FMPP proposal, as it stands at today's date, would not result in any different impact on the Endangered Ecological Communities at, and adjacent to, the Project site.

These communities are the Cumberland Plain Woodland [Cumberland Plain Shale Woodland] on the Defence lands and the Sydney Coastal River-flat Forest that occurs on the Defence lands as well as on the Project site.

The latter community is associated with the riparian zone of Blaxland Creek

In my previous Evidence I have been of the opinion that the proposed activities at the Project site would not have any significant impact on these endangered communities if the procedures outlined in the Further Modified Preferred Project proposal with regard to weed, dust, leachate and surface water management are followed. This opinion still stands.

Similarly, I am of the opinion that the FMPP proposal, as it stands at today's date, would not result in any different or significant detrimental impact on the quality of water in Blaxland Creek or on its riparian zone.

Geoff Cunningham B.Sc.Agr.[Hons]; FAIAST
Managing Director and Principal Ecologist
Geoff Cunningham Natural Resource Consultants Pty Ltd

22 September 2011

Nicola Gillies
Mallesons Stephen Jacques
Level 61, Governor Phillip Tower
1 Farrer Place, Sydney, NSW 2000

RE: AIR QUALITY IMPACTS OF PROPOSED FURTHER MODIFIED PREFERRED PROJECT TO DELLARA PTY LTD V MINISTER FOR PLANNING & PENRITH CITY COUNCIL – LAND AND ENVIRONMENT COURT CLASS ONE PROCEEDINGS 10928 OF 2010 – RESPONSE TO MINISTER

Dear Nicola

It is understood that subsequent to the provision of the following documents, additional information has been requested by the Minister for Planning:

- Statement of Evidence of Judith Cox (dated 24th June, 2011)
- Amendments addressed in a letter dated 13 July 2011 prepared by Judith Cox;
- Further amendments detailed in the Further Modified Preferred Project Report (FMPPR) (**R.W. Corkery & Co. Ltd, 2011**); and
- Overview report for the FMPPR dated September 2011 and annexing letter prepared by Judith Cox dated 6 September 2011.

In letter dated 16 September 2011, the Minister for Planning raised the following in relation to air:

> **Contingency stockpile area**
>
> In respect of the proposed contingency stockpile, the information and documentation supplied provides inadequate details. Please provide details concerning the:
>
> - impacts, particularly from dust blow;
>
> **Air**
>
> Please provide further detail and justification (including any modelling that may have been undertaken) to substantiate the conclusion that air quality impacts of the proposal remain unchanged.

The following table provides the further detail and justification of the conclusion reached in my letter dated 6 September 2011 that air quality impacts of the proposal remain unchanged. It is noted that no additional dispersion modelling has been completed in the justification of this conclusion. Instead, the conclusion has been reached based on a comparison of the modifications with the inputs to previous dispersion modelling as presented in **PAEHolmes, 2011**. It is my professional opinion that no further dispersion modelling is required for the purpose of reaching the conclusions regarding the air quality impacts of the proposed amendments. No exceedences of the air quality criteria were predicted during the *operation* phase of the site in **PAEHolmes, 2011**.

PAEHolmes

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BRISBANE

GOLD COAST

TOOWOOMBA

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Queensland Environment Pty Ltd
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ABN: 86 127 101 642

Modification made to the Project since the Modified Preferred Project Report (MPPR)	Justification for conclusion that air quality impacts of the proposal remain unchanged
1. *Reduction in height of the final landform:* - *a reduction in the finished level of the northern face from 55m AHD to approximately 44m AHD, 3-4m above the pre-existing ground levels (the interim acoustic mound would be at 53m AHD for acoustic purposes);* - *a reduction in the elevation of the northern face to a 5% slope profile to integrate more closely with the existing ground level; and* - *the substantial removal of the southwestern, southern and eastern bund walls and the forming of part of the final landform during the course of the project, to reduce visual impacts.*	■ This modification is related to the final landform and is not explicitly related to site activity as assessed through dispersion modelling and presented in the Air Quality Impact Assessment (AQIA) completed for the Modified Preferred Project Report (MPPR) (**PAEHolmes, 2011**). ■ It is important to note that the only exceedence of the air quality criteria predicted in Air Quality Impact Assessment (AQIA) completed for the Modified Preferred Project Report (MPPR) (**PAEHolmes, 2011**), occurred during the *construction* phase when existing background air quality concentrations were included. **PAEHolmes, 2011** also noted that the highest existing background concentration occurred on a day when concentrations were elevated across the region and as such indicates some regional event (e.g. bushfire) contributed to the elevated background concentrations on that day which are not typical of air quality in the area. ■ Further, the proposal includes the installation of a real-time air quality management system, which, as detailed in Section 6 of **PAEHolmes, 2011**, would be used to determine if pre-defined trigger levels have been breached and when action is required. Action levels would require a response from the Site Manager as part of the management system. Associated with each action level is a trigger level or response level, which will determine the course of action taken by the site manager. These actions would be outlined in a detailed management plan that will be prepared in accordance with any relevant conditions of consent. The management plan will include detailed information on how the site is to be managed to minimise the impacts on air quality. The management plan will include details on all control measures to be applied, for example, use of water sprays during crushing, watering of unsealed roads, regular cleaning of all paved areas etc.
2. *Increased extraction of clay/shale resources (as outlined in the Alternate Draft Conditions in Reply - Shale/Clay Resources filed with the Court):* - *extraction of additional clay/shale resources in Cell 2 by increasing the level of extraction from RL37 to RL28;* - *no emplacement of waste in Cell 4. Cell 4 is to be backfilled with clay/shale; and*	■ Whilst more clay/shale will be removed over the life of the project, there will be no increase in the annual amounts to be dispatched from the site (see Table 2.1 of **R.W. Corkery & Co. Ltd, 2011**) and as such this change will have no influence on the predicted impacts presented in the AQIA completed for the MPPR (**PAEHolmes, 2011**). ■ In addition, the clay and shale are high in moisture and their extraction and handling are not considered to be particularly dusty activities. This is demonstrated in the estimated emissions for clay/shale removal (as presented in Table 9 of **PAEHolmes, 2011**) which shows that removal of clay/shale using an excavator and front-end-loader (FEL) represents less than 0.1% of the total

Modification made to the Project since the Modified Preferred Project Report (MPPR)	Justification for conclusion that air quality impacts of the proposal remain unchanged
	emissions from the site. ■ As noted above, there are no predicted exceedences of air quality criteria due to the operation of the site. ■ It is also important to note the dispersion modelling is not sensitive to the relatively minor terrain changes proposed in **R.W. Corkery & Co. Ltd, 2011**.
3. Contingency stockpile: - *a new contingency stockpiling area, which would be located in the southeastern corner of the site, enabling stockpiles of clay and shale destined for export to be stored as far from residents as possible; and* - *consequential relocation of the site office.*	■ The AQIA was conservative in the assessment of emissions due to wind erosion. As such, the new contingency stockpile would not have impact on the conclusions reached in the AQIA: - The new contingency stockpile is approximately 2.5 hectares (ha) in size. The AQIA completed for the MPP (**PAEHolmes, 2011**) assumed exposed areas of 25 ha and a stockpile of 0.4 ha, resulting in the assumption that a total of 25.4 hectares (ha) was releasing emissions due to wind erosion. This is effectively the majority of the site where operations take place and is considered to be extremely conservative. For example, this assumes the entire area where recycling and reprocessing would take place is a constant source of wind erosion emissions. In reality, management plans would be in place to ensure the recycling and reprocessing area is kept swept and clean and as such would not be significant source of dust. The emission estimation also took no account of control measures such as watering that will be applied to exposed areas and stockpiles. ■ The proposed stockpile would be located in the southeastern corner of the site, with the closest residence approximately 1km to the southeast. The prevailing winds in the area are from the south and as such the impact on these residences from the stockpile are considered to be minimal, particularly when the dust control strategies are considered. ■ The relocation of the site office has no influence on the AQIA conclusions.

In summary, the conclusions reached regarding predicted air quality impacts as presented **PAEHolmes 2011** remain unaltered in view of the relatively minor modifications proposed.

Kind regards

PAEHOLMES

REFERENCES

PAEHolmes (2011)

"Supplementary Air Quality Assessment. Modified Preferred Project. Orchard Hills Waste and Resource Management Facility, Air Quality Assessment", 19 May 2011. Prepared by PAEHolmes on behalf of Dellara Pty Ltd.

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29 September 2011

Michelle Astridge
Mallesons Stephen Jaques
Level 60, Governor Phillip Tower 1 Farrer Place
SYDNEY NSW 2000

Our ref: 21/20649/174074
Your ref:

Dear Ms Astridge,

Dellara v Minister for Planning & Anor
Advice on leachate in response to Penrith City Council's and the Minister for Planning's request for further information on the Further Modified Preferred Project

I refer to the letters from Gaden lawyers dated 16 and 20 September 2011 requesting on behalf of Penrith City Council further information be provided in relation to leachate. I also refer to the letter from the Department of Planning & Infrastructure dated 16 September 2011 and note that the Minister for Planning does not seek any further information in relation to leachate.

The purpose of this letter is to address the issues raised by Penrith City Council in relation to leachate in regard to the proposed modifications to the Project detailed in the 'Report for Modifications to Modified Preferred Project – Overview Report' and the 'Further Modified Preferred Project Report' ('the Reports'). Both of the Reports are dated September 2011.

Gaden Lawyers Letter – 16 September 2011.

The following issues were raised under the heading of leachate.

Issue (a) Clarification on the average and actual depth of cells 1, 2 and 3

The average and actual depths of Cells 1 and 3 are not proposed to be varied from the information detailed in the Modified Preferred Project Report. The Reports describe the proposal to lower the floor of Cell 2 by 9 m to an average depth of 28 m AHD to enable the extraction of additional shale/clay. In fact the maximum depth of Cell 2 should be 28 m AHD.

The depth of the cells varies as the floor of the cells are sloped to facilitate leachate drainage and the natural surface elevation also varies.

Appendix 5 of the *Cell Design and Groundwater Assessment (Aquaterra 2010)* (which may be found at Tab 4(e) of the Application Class 1) details the conceptually designed depths of Cells 1, 2 and 3. The figures in this appendix include a series of diagrams that depict the depths of these cells. This work was based on Cell 2 having the same depth as is now proposed in the Reports.

The actual depths of the cells would be established during the detailed design stage for the project and submitted to OEH with the application for the environment protection licence (EPL). The actual depths of the cells would be based on the conceptual design (Aquaterra 2010), the information in the Reports and ensure that the landfill's capacity is not greater than proposed in the Reports.

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In NSW the detailed design documentation for a landfill is submitted with the application for the environment protection licence (EPL). This circumstance is reflected in the comments made in the Joint Expert Conference between Mr A Dixon (GHD) and Ms J Currey (OEH) on 29 July 2011. It was agreed at this Conference that:

- '*Should the proposal be approved, OEH as the Appropriate Regulatory Authority will require the full detailed design, construction, operation, monitoring and rehabilitation and other information (eg Bank Guarantee) to be provided with the application for an Environment Protection Licence'*.

This agreement is consistent with previous advice provided by OEH in its assessment of the Project.

Furthermore, Mr David Ife (Penrith Council's leachate expert) agreed at the Joint Expert Conference (28 and 29 July 2011) and at the expert meeting on 5 August 2011 to the provision of the detailed design documentation at the application stage for the EPL, in accordance with the practice in NSW.

Issue (b) Clarification on the inflow figure of 25 cubic metres per month and the measurements upon which it is based

As stated above, the Reports describe the proposal to lower the floor of Cell 2 by 9 m to a maximum depth of 28 m AHD to enable the extraction of additional shale/clay. The increased depth of Cell 2 would likely result in the floor of Cell 2 being located below the surrounding groundwater level and as such groundwater would be able to enter Cell 2 and contribute to the generation of leachate. However at all stages in the operational and post-closure life of the Project, taking into account the base of Cell 2 extending to 28 m AHD, leachate is predicted to be able to be managed on-site and not result in the pollution of off-site waters.

The revised leachate model as detailed (and provided) in the Statement of Evidence by A Dixon and S Dever (8 July 2011) provides the predicted groundwater inflow volumes for Cells 1 and 3. The predicted groundwater inflow volumes were calculated using the Dupuit Method and Darcy's Law. This methodology was accepted by Mr David Ife, Council's expert at the Joint Expert Conference (28 and 29 July 2011).

The predicted groundwater inflow figure of 25 m^3 per month for Cell 2 is based on the identical methodology as was used for Cells 1 and 3. It is not possible to measure the groundwater inflow into Cell 2 until this cell is excavated.

A further agreement with Mr David Ife that was reached during the expert meeting on 5 August 2011 and embodied in the draft conditions of consent proposed by Penrith City Council is the inclusion of a groundwater depressurisation system. The primary purpose for the inclusion of a groundwater depressurisation system is to enable ease of liner construction and prevent liner uplift until such time as the weight of waste is greater than the groundwater pressure. In the short term it would prevent the inflow of groundwater into the landfilled waste and therefore reduce the generation of leachate. If the groundwater inflow was found to be greater than the modelled predictions the system could be continued to be used to prevent groundwater inflow into the Cell.

Issue (c) Clarification on the design of outer cell system to capture and deal with groundwater inflow

I assume the 'outer cell system to capture and deal with groundwater inflow' means a groundwater depressurisation system as described above.

The detailed design of the groundwater depressurisation system will be included with the application for the EPL. These systems are regularly included in landfill design and construction documentation and I believe it is unnecessary to provide the design information at this stage and is a matter that is able to be conditioned. This view is supported with the comments made in the Joint Expert Conference between Mr A Dixon (GHD) and Ms J Currey (OEH) on 29 July 2011. It was agreed at this Conference that:

- '*Should the proposal be approved, OEH as the Appropriate Regulatory Authority will require the full detailed design, construction, operation, monitoring and rehabilitation and other information (eg Bank Guarantee) to be provided with the application for an Environment Protection Licence'*.

This agreement is consistent with previous advice provided by OEH in its assessment of the Project.

Furthermore, during the expert meeting with Mr David Ife on 5 August 2011, Mr Ife agreed to the provision of the detailed design documentation for the groundwater depressurisation system at the application stage for the EPL, in accordance with the practice in NSW.

Issue (d) Clarification on Figure 2.21 and justification for drainage layer reverting to optional

The reference to Figure 2.21 in Gadens letter of 16 September 2011 appears to be incorrect and should be a reference to Figure 2.20.

The drainage layer is not optional and this is stated in section 2.15.5 of the Further Modified Preferred Project Report (September 2011). This was also agreed with Mr David Ife at the Joint Expert Conference (28 and 29 July 2011) and reflected in the draft conditions of consent proposed by Penrith City Council.

It was an oversight not to remove the word 'optional' from Figure 2.20 of the Further Modified Preferred Project Report (September 2011).

Issue (e) Clarification of the EPA requirements regarding contingency measures

The possible leachate contingency measures are described in points 52 – 56 in the Statement of Evidence by A Dixon and S Dever (8 July 2011). These contingency measures are still relevant for the Project as described by the Reports.

The EPA (OEH) has confirmed that it is in agreement with all aspects of leachate management including contingency measures for the Project. This view is detailed in the Joint Expert Conference Report between Mr A Dixon (GHD) and Ms J Currey (OEH) on 29 July 2011.

In addition please provide the following information

Issue (a) Re-run of the revised leachate model

An electronic copy of the re-run revised leachate model is included with this letter, including the HELP output files with the parameters used in the HELP model agreed with Mr David Ife on 29 July 2011.

This is a re-run of the revised leachate model (Statement of Evidence by A Dixon and S Dever 8 July 2011) and reflects the Project as proposed in the Reports. The re-run revised leachate model also reflects agreements reached with Mr David Ife during the Joint Conference (28 and 29 July 2011) and on 8 August 2011.

Mr David Ife (Penrith City Council's leachate expert) agreed in the Joint Expert Conference Report (28 and 29 July 2011) and on 8 August 2011 that the proposed measures to manage leachate at the site were adequate to prevent leachate polluting off-site waters. This agreement was based on Cell 4 (ie, the Final Cell) being available to dispose of general solid (non-putrescible) waste.

The amendment made to the Project as described in the Reports whereby Cell 4 is no longer planned to dispose of general solid (non-putrescible) waste means that there will be less leachate able to be generated by the Project. The results from the re-run model demonstrate that the proposed measures to manage leachate at the site are adequate to prevent leachate polluting off-site waters.

Issue (b) Detailed explanation of contingency measures and their application

The proposed leachate contingency measures are described in the Statement of Evidence by A Dixon and S Dever (8 July 2011 – points 52 to 56). These contingency measures are still relevant for the Project as described by the Further Modified Preferred Project Report.

These contingency measures were agreed with by Mr David Ife during the Joint Expert Conference on 28 and 29 July 2011 and the draft conditions of consent proposed by Penrith City Council requires them to be included in the Leachate Management Plan for the site.

As stated above, the EPA (OEH) has confirmed that it is in agreement with all aspects of leachate management including contingency measures for the Project. This view is detailed in the Joint Expert Conference Report between Mr A Dixon (GHD) and Ms J Currey (OEH) on 29 July 2011.

Issue (c) Details of the proposed capping for the northern bund walls during re-contouring of northern face and final landform

Section 1.5 of the Report for Modifications to Modified Preferred Project – Overview Report (September 2011) describes the sequencing for lowing the northern bund walls.

The northern bund wall comprises the western and eastern sections. The western section of the northern bund wall was assessed by Douglas Partners (September 2009) as containing excavated natural material. Whereas the eastern section of the northern bund wall was found to contain construction and demolition waste.

Only the extent of bund wall re-contouring has increased, meaning less waste will reside in the bunds after they have been re-contoured. This is because the Reports propose to lower the height of the final landform along the northern boundary of the site. Nevertheless the agreements reached with Mr David Ife (Joint Expert Conference 28 & 29 July 2011) are applicable to capping and revegetating the northern bund walls as detailed in the Reports. These agreements are reflected in the following two paragraphs.

The re-contoured section of the western portion of the northern bund wall should be capped and revegetated during the site establishment phase in accordance with the agreements reached with Mr

David Ife (Joint Expert Conference 28 & 29 July 2011) if waste other than excavated natural material is identified. When the 'northern face' is reshaped and the final landform is constructed the western portion of the northern bund wall would be capped and revegetated if waste other than excavated natural material is identified.

The re-contoured section of the eastern portion of the northern bund wall should be capped and revegetated during the site establishment phase in accordance with the agreements reached with Mr David Ife (Joint Expert Conference 28 & 29 July 2011). When the 'northern face' is reshaped and the final landform is constructed the eastern portion of the northern bund wall would be capped and revegetated.

The draft conditions of consent provided by Penrith City Council reflect the agreements reached with Mr David Ife with respect to capping the bunds and provide the specifications for the capping layer for the northern bunds, including CQA and independent verification that the capping works have been installed in accordance with the specifications.

Issue (d) Details of sediment control measures proposed for the stockpile areas containing recovered clay/shale material.

This issue does not relate to leachate and is a surface water issue addressed in the letter of Craig Bagnall of GSS Environmental.

Gaden Lawyers Letter – 20 September 2011.

The following additional issues were raised under the heading of leachate.

Details of the post-closure plan for the long term leachate evaporation pond

Section 2.15.8 of the Further Modified Preferred Project Report describes the post closure monitoring and management of the site, including in relation to leachate. The amendments made to the Project as described in the Reports do not change any of the requirements to manage leachate following the closure of the landfill. In fact as Cell 4 (ie, the Final Cell) is no longer proposed it is likely that the long term leachate evaporation pond's size would be far greater than needed in the long term after the site is fully capped and revegetated.

The volume of leachate generated and disposed of post closure would be continually assessed to confirm that the long term leachate evaporation pond is able to adequately manage all leachate generated at the site.

The Department of Environment, Climate Change & Water (OEH) on 23 March 2011 recommended as a condition of approval that a Closure Plan be prepared for the site. This plan would include the post closure monitoring, maintenance and management of the long term leachate evaporation pond.

The long term leachate evaporation pond should be managed until such time as no longer required by the EPA (OEH).

Surface water runoff volumes which include the proposed stockpiling arrangements

This issue does not relate to leachate and is a surface water issue addressed in the letter of Craig Bagnall of GSS Environmental.

If you have any questions in regard to the above advice please contact me on 9239 7025.

Yours faithfully
GHD Pty Ltd

Anthony Dixon
Principal Environmental Engineer

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29 September 2011

Michelle Astridge
Mallesons Stephen Jaques
Level 60, Governor Phillip Tower 1 Farrer Place
SYDNEY NSW 2000

Our ref: 21/20649/174092
Your ref:

Dear Madam

Dellara v Minister for Planning & Anor
Response to Council Questions

I refer to the letter from the Gaden lawyers dated 16 September 2011 requesting (on behalf of Penrith City Council) further information be provided in relation to various matters.

This letter provides a response to the issues raised by Penrith City Council in relation to the proposed modifications to the Project relating to the following, as detailed in the Further Modified Preferred Project Report and 'Report for Modifications to Modified Preferred Project – Overview Report' concerning waste. Both of these reports are dated September 2011.

1. Council Issues
    a. Waste
    b. List of Amendments

Waste

- ***Confirmation of the amounts to be recycled, emplaced and removed from site.***

Please refer to the Table 2.9 in the FMPPR.

- ***Detailed explanation of any proposed changes from previous numbers.***

The amount of waste to be emplaced in the landfill has reduced from 4.8 million tonnes in the MPPR to 4.3 million tonnes in the FMPPR.

List of Amendments

- ***In accordance with order 1 of the Courts directions dated 9 August 2011 the second respondent requires a comprehensive list of all changes and amendments the applicant proposes.***

Please refer to Table 2.1 in the FMPPR.

- ***An updated list of documents that comprise the development application. In this regard, we note that a number of assessments have failed to consider expert reports prepared prior to the current amendment.***

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The Development Application is fully defined in the FMPPR. A list of documents comprising the project application was provided to the Court and Respondents on 19 September 2011.

- ***Additional column in all tables separating July amendments from current amendments.***

This has now been included in the FMPPR.

Yours faithfully
GHD Pty Ltd

David Gamble
Service Group Manager - Waste Management
02 9239 7354

29 September 2011

Michelle Astridge
Mallesons Stephen Jaques
Level 60, Governor Phillip Tower 1 Farrer Place
SYDNEY NSW 2000

Dear Madam

Dellara
Response to Minister and Council Questions

We refer to the letter from the Minister for Planning dated 16 September 2011 and the letters from Gaden lawyers dated 16 September 2011 requesting (on behalf of Penrith City Council) further information be provided in relation to various matters.

This letter provides a response to the issues raised by both the Minister and Penrith City Council in relation to the proposed modifications to the Project relating to the following, as detailed in the Further Modified Preferred Project Report and 'Report for Modifications to Modified Preferred Project – Overview Report'. Both of these reports are dated September 2011.

1. Minister's Issues
    - Overview Report
    - Contingency stockpile area
    - Extraction and emplacement
2. Council Issues
    - Extraction
    - Contingency stockpile area
    - Operation and treatment of stockpiles
    - Northern bunds

1. Minister's Issues

Overview Report

Please confirm:

i) what this document is;

The document is an overview of the recent changes made to the project, including both the July 2011 amendments and the proposed September 2011 amendments.

ii) what function it serves;

The Overview Report serves to provide a direct comparison between the Further Modified Preferred Project Report (FMPPR) and the Modified Preferred Project Report (MPPR). It also contains a brief letter report from each of the key environmental consultants effectively providing an update of their respective Statements of Evidence indicating that the environmental outcomes of the Further Modified Preferred Project Report are equal to or better than the Modified Preferred Project. The latest version of the Overview Report also contains responses to issues raised by the Minister and Council, provided by various parties including specialist consultants, including a copy of this letter.

iii) whether GHD Pty Ltd authored it;

David Gamble of GHD authored the document.

iv) why it includes plans that are not contained in the "Further Modified Preferred Project Report" prepared by R.W. Corkery & Co Pty Limited and GHD dated September 2011.

Figure 3 was not included in the FMPPR as it only demonstrates the process of deconstructing the northern bund. Figure 6 was not included in the FMPPR as it just shows a comparison of the final landforms in the FMPPR and the MPPR. Figure 7 was not included in the FMPPR as it simply explains the relative depths of backfill proposed in the area of the former recycling and re-processing area. Of most importance in this area was the final landform.

Notwithstanding this position, Figure 3, Figure 6 and Figure 7 of the Overview Report have now been included in Appendix A of the FMPPR to ensure that the FMPPR contains a consolidated set of all relevant plans.

In respect of figures comparing the FMPPR and the MPPR and illustrative figures explaining the reconfiguration of the northern bund walls in the FMPPR, it was considered inappropriate to include these in the FMPPR as the FMPPR could then be used as the authoritative document to describe the Project and particularly for reference in an approval, should one be issued. Given the likely benefit to the court of the comparative figures, these were incorporated into the Overview Report. Notwithstanding this position, the illustrative figures are now included as an annexure to the FMPPR.

Contingency stockpile area

In respect of the proposed contingency stockpile, the information and documentation supplied provides inadequate details. Please provide details concerning the:

v) procedures for moving stockpiled material;

Prior to commencing operations, an Operational Management Plan would be prepared which would include the management of all traffic entering the site, operating within the site and leaving the site.

All materials to be stockpiled within the site would be moved from the active extraction area with typical earthmoving equipment such as off-road dump trucks or scrapers. The off-road dump trucks would be

loaded by an excavator or possibly a front-end loader. This equipment would use internal haul roads which would ensure, wherever possible, they are separated from vehicles delivering waste. Exceptions may occur but only in relation to the placement of daily cover near the active tipping face.

Clay/shale to be stockpiled within the contingency stockpile area would be transported from the active extraction area via an internal road entering the stockpile area from the north, near the Workshop Area.

The clay/shale materials to be transported off site from the contingency stockpile area would be loaded into truck and dog combinations. The heavy vehicles used for transporting the clay/shale off site would be loaded from within the designated stockpile area using a front-end loader. Loading would be undertaken from within the stockpile area with access directly onto the internal access road.

The emphasis taken when loading trucks within the contingency stockpile area would be to ensure that the eastern and northern sides are retained to provide the required acoustic barrier effect.

vi) contingencies if the resource can not be sold and exported off-site;

The extraction of clay/shale within the site would be programmed such that there would be minimal quantities of materials stockpiled which is destined for brick manufacture. Emphasis would be placed upon dispatching the brick materials as quickly as possible after they are extracted.

Dellara Pty Ltd holds written confirmation from The Austral Brick Co. Pty Ltd that the Company is prepared to accept the clay/shale material from the Project Site for brick manufacture (see Attached Letter – Page 13). This confirmation would provide Dellara with the opportunity to either directly transport material from the active extraction area or from short term blended stockpiles within Cells 2 and 3. Hence, the situation would not arise where excessive quantities of clay/shale would need to be stockpiled on site.

Table 1A provides a modified version of Table 1 from Mr Grace's contribution for the Overview Report. The figures shown in the scenario represented in this table **(which is one of many possible operating scenarios)** allows for export of the 200 000t of clay/shale already stockpiled on site and of the 160 000t of surplus ENM from the deconstruction of the upper levels of the southern and southwestern bund walls.

Under the scenario shown in **Table 1A**, 160 000 tonnes of existing stockpiled clay/shale and surplus clay/shale and ENM would be transported from site during the site establishment period (following the sealing of Patons Lane) and the remaining material would be removed at a rate of 30 000 tonnes per year for the following six years, and 20 000 tonnes per year for the seventh year (see **Table 1A**). Export of this material during this period would require an average of four loads or eight movements per day, all of which would occur within the allowable 250 heavy vehicle movements per day.

Table 1A – Material movements and stockpiling requirements (tonnes)*

Years	Cell Construction Stage	Excavation of clay/shale	Export of newly extracted clay/shale	Export of existing clay and shale in stockpiles and bund deconstruction materials	Daily Cover	Clay Lining of Cells	Capping Material	Total site stockpile requirements
Existing								**360,000**
0	Establishment	100,000	60,000	160,000				**240,000**
1	1A	260,000	160,000	30,000		29,000		**281,000**
2	1B	260,000	160,000	30,000	35,000	30,486	30,000	**255,514**
3		260,000	160,000	30,000	35,000		30,000	**260,514**
4		260,000	160,000	30,000	35,000	56,450	41,724	**197,340**
5	1C	260,000	160,000	30,000	35,000		50,000	**182,340**
6		260,000	160,000	30,000	35,000		53,492	**163,848**
7		260,000	160,000	20,000	35,000	55,712	30,000	**123,136**
8	2A	260,000	160,000		35,000		42,138	**145,998**
9		260,000	160,000		35,000	48,940	40,000	**122,058**
10	2B	260,000	160,000		35,000			**187,058**
11		260,000	160,000		35,000	45,784	49,724	**156,550**
12	2C	260,000	160,000		35,000		40,000	**181,550**
13		260,000	160,000		35,000	44,044		**202,506**
14		260,000	160,000		35,000		43,936	**223,570**
15	3C	260,000	160,000		35,000	40,360	40,000	**208,210**
16		260,000	160,000		35,000			**273,210**
17		260,000	160,000		35,000	52,248	50,748	**235,214**
18	3B	260,000	160,000		35,000		50,528	**249,686**
19		260,000	160,000		35,000	51,740	43,994	**218,952**
20	3A	160,000	50,000		35,000		69,164	**224,788**
21					35,000		45,788	**144,000**
22					20,000		45,000	**79,000**
23					20,000		30,000	**29,000**
24					10,000		19,000	**0**
25								0
		5,200,000	3,150,000	360,000	750,000	454,764	845,236	
Total Quantity Used For Daily Cover, Lining and Capping					**2,050,000**			

Note* This table is a modified version of Table 1 prepared by Mr Phil Grace of Phil Grace Contracting Pty Ltd and contained in the Overview Report

The information provided in **Table 1A** also provides details of the quantities of clay/shale to be stockpiled on site for operational purposes throughout the life of the facility. This quantity is effectively the quantity of material in excess of the quantity taken off site which is to be used on site for the clay lining, daily cover or capping. During waste placement activities in Cells 1 and 2, it is most likely that the bulk, if not all, of the material required for on-site use would be stockpiled closer to the active operational areas and not in the contingency stockpile area.

The contingency stockpile area is most likely to be used principally during the waste placement operations in Cell 3 when it would be necessary to stockpile the on-site clay and shale requirements as well as potentially a quantity of clay/shale for brick manufacture that is in excess of the approved quantity to be transported off site annually.

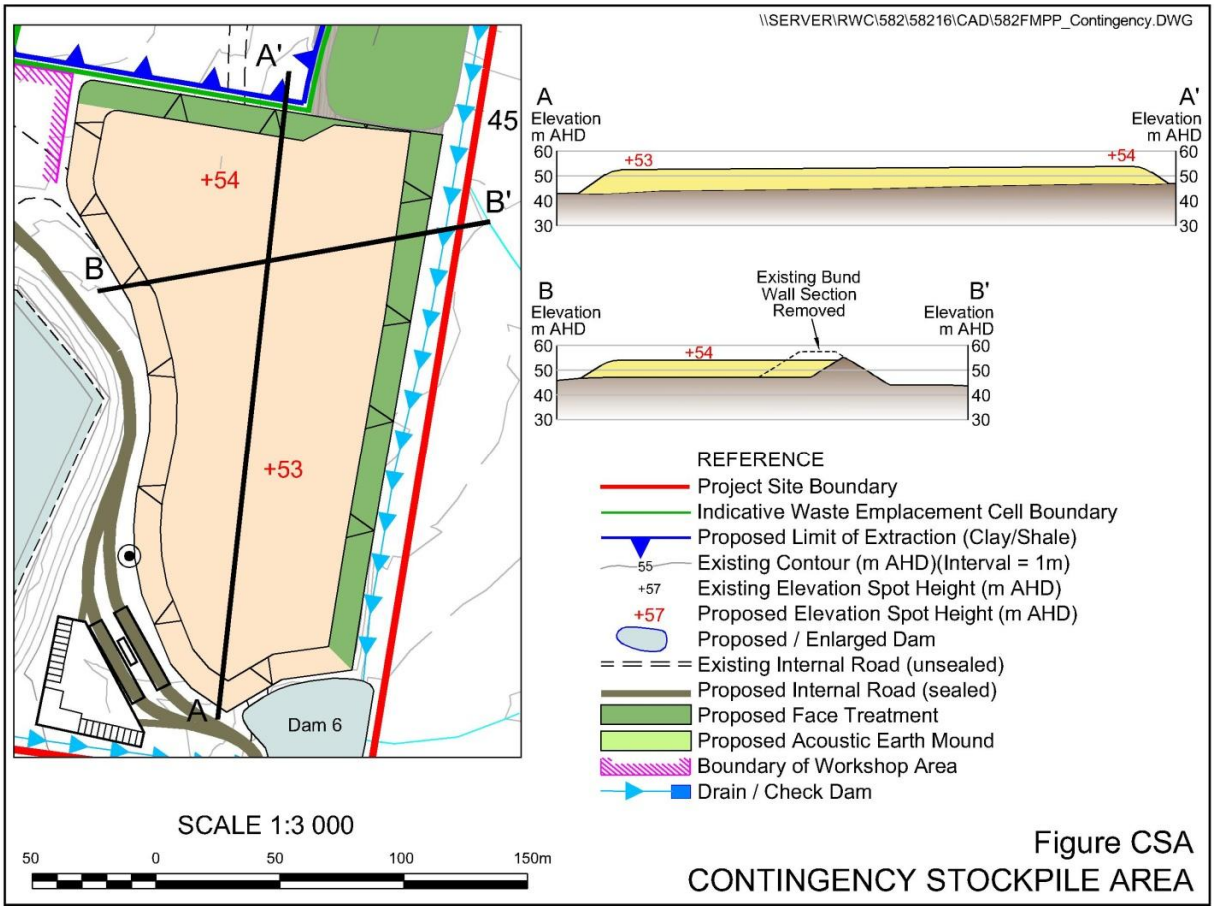
The contingency stockpile area has capacity to store up to 250 000 tonnes of clay/shale. The information on extracted clay/shale stockpile quantities provided in **Table 1A** shows that the quantities of materials to be stockpiled would vary over the life of the facility, and are estimated to be a maximum of 281 000 tonnes in year 1, when large areas of the site are available for stockpiling purposes. Only a small proportion of this material would need to be stockpiled in the contingency stockpile area during the period when extraction is underway in Cells 1 and 2, however stockpiling capacity of at least 350 000 tonnes is available from the commencement of the project up until year 18, in Cell 3 and in the contingency stockpiling area.

When Cell 3A is being extracted, the maximum stockpile size required is approximately 249 686 tonnes (in year 18). This is within the capacity of the contingency stockpile area (250 000 tonnes). In all other years it is considerably lower than this eg 218 952 tonnes in year 19, and reduces after year 20. This would provide a contingency for unforeseen events during operations and for the stockpiling of materials required for on-site use towards the end of backfilling of operations in Cell 3.

vii) heights of stockpiles;

The materials stockpiled within the contingency stockpile area would not exceed the nominated maximum height of 54mAHD as shown in Figure 2.5 of the FMPPR.

Figure CSA below provides a plan and sections of the contingency stockpile area.



viii) treatment of stockpiled material;

The excavated clay/shale would be separated into two categories, namely the valuable clay/shale to be exported off site and the other material which would be stored on site for use in cell construction, daily cover and capping. As mentioned above, the contingency stockpile area would be used mainly during the latter stages of site activities when extraction is underway in Cell 3 although it could also accommodate some of the surplus ENM removed during the site establishment phase.

The principal treatments intended for the contingency stockpile area are:

- the proposed face treatment of the northern area and eastern sides, i.e. treatments involving revegetation of the initial materials placed on those sides of the area that would remain for the life of the stockpile area; and
- watering during placement and once the active section of the stockpile achieves its maximum designated height. At that time, if dry weather conditions prevail, the upper surface of the completed stockpile would be watered by truck.

Treatment and management of the stockpiled material is addressed in the letters prepared by Judith Cox and Craig Bagnall in response to the Minister's letter.

ix) impacts, particularly from dust blow;

Any dust generated from the stockpiled materials would be managed using the on-site water truck. The on-site water truck would provide for dust suppression both on the upper surface where the maximum height of the stockpile is reached and during loading operations (at ground level). It is noted that only a single watering would be required on the final surface of the stockpile as experience has shown that the watering (and ongoing rainfall) causes the upper surface of the clay/shale stockpile to form a 'skin' on its top thereby minimizing the opportunity for ongoing dust lift-off, i.e. whilst ever it is not disturbed by earthmoving equipment.

Details of the management of dust on the site would be provided in the Operational Management Plan with a separate Dust Management Plan dedicated to the management of dust on site.

x) impact amelioration;

The impacts of the construction and use of the contingency stockpile area relate to visual, noise and dust. Each of these issues are addressed in the letters of Brian Clarke and Judith Cox. The visual impacts will be addressed by Richard Lamb.

xi) impacts on waste emplacement and the location and movement of emplacement;

The stockpiling of clay/shale would not have any impact on waste emplacement or the advancement of the cells required for waste emplacement. Planning extraction of clay/shale would be undertaken to ensure that the area required for extraction (and subsequent waste placement) is no longer used to stockpile clay/shale materials so as to not delay the commencement of extraction. The Staging Plans demonstrating the feasibility of the sequence of activities are presented in the FMPPR and the Overview Report.

xii) resource excavated from the site that would be retained and reused as capping and fill material, including the volume of the material extracted in each stage, stockpile location (separate to the proposed contingency stockpile) and methodology of proposed use.

Materials used for the construction process, i.e. cell lining, daily cover and capping, would be stored in various stockpiles adjacent to the active cells in order to reduce transport costs and dust generation. It is in fact feasible that extraction would be programmed that the clay required for cell lining would be extracted and transported directly to the nominated cell without the need for stockpiling.

The stockpiles of operational materials would typically range in size from 5 000 to 15 000 tonnes depending on the work being carried out at the time. Placing the material near the active working area also reduces the number of truck movements around the site.

A stockpile of approximately 500 tonnes of shale would be stored near the active emplacement area for use as daily cover to cover the waste at the end of each day. The compactor would be used to recover cover material from the stockpile, as required.

Annual plans would be prepared for the extraction operations to define the locations of all stockpiles – a practice common in all well managed quarries. Importantly, the extraction would only be undertaken when sufficient area exists in the planned area for stockpiling of materials.

Extraction and Emplacement

xiii) Table 1 in the letter from Phil Grace Contracting Pty Limited, dated 5 September 2011, refers to the extraction of 100,000 tonnes of material and the export of 18,164 tonnes of material in year 0; however, the stockpile size in subsequent years does not appear to account for any extracted material not exported. Please clarify this issue.

It has been established there was one arithmetic error in Table 1 of the letter from Phil Grace Consulting Pty Limited. As a consequence of this, and the fact that the previously extracted clay/shale currently stockpiled on site had not been included, it was considered appropriate to compile **Table 1A** (Page 4).

During the site establishment period and early years of the Project, the 360 000 tonnes of previously extracted clay/shale currently stockpiled on site would be exported off site, i.e. following the sealing of Patons Lane. The 360 000 tonnes of clay/shale comprises 200 000 tonnes of stockpiled clay and shale and 160 000 tonnes of surplus excavated natural material (ENM) recovered from the deconstruction of the southern and southwestern bund wall.

In the scenario shown in **Table 1A**, 160 000 tonnes of existing stockpiled clay/shale and surplus shale would be transported from site during the site establishment phase (following the sealing of Patons Lane). The remaining material (200 000 tonnes) would be exported at a rate of 30 000 tonnes per year for the following six years and 20 000 tonnes for the seventh year (see **Table 1A**). Approximately 100 000 tonnes of newly extracted clay and shale from Cell 1 (excavated during cell preparation works) would be exported during the site establishment period, and this material would be exported at a rate of up to 160 000 tonnes per year during the life of the project, as per the FMPPR.

Export of the existing stockpiled clay/shale and surplus shale at a rate of 30 000 tonnes per year would require an average of four loads or eight movements per day, all of which would occur within the allowable 250 heavy vehicle movements per day. Table 2.9 of the FMPPR illustrates that under the maximum expected scenario (Scenario 1), only 214 heavy vehicle movements per day would occur. This provides sufficient capacity for the above-mentioned four loads per day, without exceeding the 250 heavy vehicle movement limit.

A situation when excessive quantities of material designated for export are stockpiled on site would not arise, because the arrangement with The Austral Brick Co. would allow Dellara to export up to 200 000 tonnes per annum at a rate to suit Dellara. Austral would set aside stockpile areas on its site for Dellara's use. Such flexibility at Austral's sites would enable Dellara to tailor the delivery program around its extraction program and other on-site activities.

2. Council Issues

Extraction

a) Specific details regarding utilization of additional clay/shale extracted.

Table 1A on Page 4 of this response provides details of the quantities of the extracted materials to be used for cell construction, daily cover, capping and temporary stockpiling prior to use on site or despatch off site.

b) Confirmation of types of clay/shale to be re-used on site.

The types of clay/shale to be used on site would be clays, weathered shale and red-firing shale. All light-firing shale would be removed from site.

c) Confirmation of material used to construct internal acoustic bunds and mounds.

Only the less valuable materials would be used for acoustic bund construction, i.e. the clay/weathered shale, red-firing shale and ENM recovered during the deconstruction of the southern and southwestern bund walls.

d) Details regarding movement and positioning of material in current bunds.

Materials in the current bund walls are either C&D wastes or ENM. A proportion of the ENM would be usable clay/shale suited to brick manufacture and/or on-site uses.

Any C&D wastes recovered during the construction of the northern and eastern faces during the site establishment period) would be transported by off-road haul trucks to either:

(i) Cell 1B for temporary storage until the Cell 1A is prepared for waste receipts; or

(ii) the recycling and re-processing area for processing once the plant is commissioned.

Contingency Stockpile Area

e) Details of the layout, height and size of proposed stockpiles.

Figure CSA on Page 6 of this letter provides the requested information.

Operation and Treatment of Stockpiles

f) Details of the operation and treatment of the stockpiles including separation of clays, movement of stockpiles, and access routes.

A number of stockpiles would be created during the life and operation of the Project including:

- Clay/shale stockpiles for export materials;

- stockpiling of material for use in the lining of cells and final capping/revegetation; and
- stockpiling material near the active emplacement area for use as daily cover of the waste.

Clay/shale Stockpiles for Export

The more valuable clay/shale would either be removed directly from the extraction area and transported off site or stockpiled in a blended stockpile and then removed off site. Such blended stockpiles would be able to be removed soon after they are completed given the opportunity for Dellara to deliver the materials to The Austral Brick Co. at any time (within approved operational hours) and at any rate (within the limits of transport movements).

The stockpiles would be created with materials placed either by dump trucks and scrapers using the internal road network.

All internal roads would be sign posted with directional signage and the roads would be regularly graded to maintain the surface.

Cell Construction Stockpiles

Materials to be used for the construction of the cell lining system and for capping/revegetation would be stored near the work zone. It may also be appropriate to directly transfer clay for cell lining from the active extraction area and avoid the need for stockpiling.

These stockpiles would vary in size depending on the work being undertaken at the time but their size would range from 5 000 to 15 000 tonnes. Their height would be limited to the approved height of 54m AHD as per Figure 2.5 of the FMPPR and as outlined in 2.7.3 of the FMPPR.

Daily Cover Stockpiles

Daily cover material would be placed near the active emplacement area and spread over the waste at the end of each day. Up to approximately 500 tonnes of daily cover material would be stockpiled near the active emplacement area at any one time.

Access Routes

The Operational Management Plan would provide details of the overall operation of the site including the location of the access routes needed to transfer material around the site.

The procedure for the operation of a construction/landfill operation is to have separate access routes for the excavated material movement and the acceptance of waste for emplacement. This would be achieved by the proposed layout of the facility.

Vehicles entering the site to dispose of waste would be separated from the earthmoving equipment.

Directional signs would provide delivery drivers with information of where the active emplacement area is located.

g) Justification of space provided to accommodate up to 250,000 tonnes of clay/shale material.

Figure CSA displays the area/sections of the contingency stockpile area. This area has a capacity of 155 000m^3 or 250 000 tonnes (assuming 1.6t/m^3).

h) Details of the machinery used in the stockpile area.

The machinery to be used in the contingency stockpile area would be typical earthmoving machinery namely, excavators, dump trucks, rubber tyred loaders and scrapers.

Equipment supplied by a typical heavy earth moving company such as Caterpillar, would be used at the site. This equipment is used extensively in the construction and mining industries and is designed to meet all of the requirements for handling the quantities typically produced in the excavation and preparation of a landfill.

Any equipment used in the contingency stockpile area would be required to demonstrate that the sound power level of the equipment is equal to or less than that nominated by Wilkinson Murray and used in the noise assessment of the Project.

Northern bunds

i) Detailed description of the re-contouring of the Northern bunds and use in the construction of the Northern face.

The northern bund walls would be recontoured during the site establishment phase and involve a range of activities depending on the location of the existing bund walls and the required final slope.

The western end of the northwestern bund wall would be progressively removed to recover the clay/shale present within the riparian zone of Blaxland Creek. The material from this area would either be transported behind a 4m high mobile noise barrier to its location within the final northern face or relocated southwards beyond Dam 2 to form the section of the northern face immediately north of Cells 1A and 1B.

In areas where the existing northwestern bund wall has a suitable outer slope for its incorporation into the northern acoustic mound, but requires an increase in elevation, the additional material would be transported to the southern side of the bund wall and shaped. Once the material being placed “behind” the existing bund wall approaches the level of the top of the bund wall, 4m high mobile noise barriers would be used to shield the remaining construction of the northern acoustic mound in that area. The remaining material would be placed in 1m high lifts with the 4m high mobile acoustic barriers repositioned at the conclusion of the placement of each 1m lift. This method of placement is detailed in **Figure A** (Amended) dated 21 September 2011 included in Attachment 1 to the letter by Brian Clark of Wilkinson Murray.

In areas where the existing northeastern bund wall has an outer slope steeper than that required for the northern acoustic mound, the outer face of the bund wall would be deconstructed in the manner identified in the indicative sequence presented on Page A3 of Attachment 1 of the letter by Brian Clark of Wilkinson Murray. During the period of deconstruction, the materials excavated would be evaluated to determine whether the materials are excavated natural materials (ENM) or C&D materials. In the event that the C&D materials are suitable for reprocessing, they would be transported by off road truck behind the 4m high mobile acoustic barrier to a stockpile area adjacent to the proposed crushing plant within the recycling and reprocessing area. In the event the C&D material is assessed as unsuitable for reprocessing, it would be transported in a similar manner to Cell 1b where it would be stockpiled until it can be emplaced within Cell 1A.

Yours faithfully

David Gamble - Service Line Leader – Waste Management, GHD

Robert W Corkery – Managing Director, RW Corkery &Co

Phil Grace – Phil Grace and Associates

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Mr Rick Miller
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Dear Rick

Re: Brickmaking Materials at Orchard Hills

I am writing to express our Company's interest in receiving between approximately 160 000 tonnes and 200 000 tonnes of clay and shale per year for approximately 18 years from your Orchard Hills property should it be approved to extract the various types of brickmaking materials. Upon approval, we would be pleased to negotiate a mutually acceptable arrangement for the delivery of the raw materials to our Horsley Park plants. Clearly volumes would be dependent on prevailing market conditions as well as the commercial conditions of any agreement we may reach.

As discussed, the cream-firing shale is of greatest interest to us both in the short term and long term given its low abundance. The light-pink firing shale, red-firing shale and clay whilst currently not in short supply, will over time be used within our Company's Horsley Park plants. I understand that the materials to be supplied would be all of the recoverable cream-firing shale and light pink-firing shale together with the red-firing shale and clay not required for on-site waste management practices.

As discussed, we have a range of storage areas adjacent to our Horsley Park plants for the materials, and as such, won't provide substantial problems through the delivery of variable quantities and raw material types throughout the project life. The materials will contribute to our Company's long term resource base.

We look forward to a lengthy association between our Companies for the supply of raw materials for brick manufacturing.

Yours faithfully

9-9-11

Steve Wall
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Austral Bricks

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