STATE PLANNING COMMISSION

Agenda Report for Decision

Meeting Date: 14 October 2021

Item Name	Major Development – IWS Northern Balefill
Presenter	Simon Neldner
Purpose of Report	For decision
Item Number	4.4
Confidential Item (Y/N)	Not Confidential (Release Delayed) – to be released following final determination by the Minister for Planning and Local Government on the proposed variation
Related Decisions	N/A

Recommendation

It is recommended that the State Planning Commission (the Commission) resolves to:

1. Approve the designation of this item as Not Confidential (Release Delayed), with the Agenda Report and Attachments to be released following determination by the Minister for Planning and Local Government (the Minister) on the proposed variation;
2. Note the application for variation to the Northern Balefill Facility Major Development by Integrated Waste Services (IWS); and
3. Agree that no change to the previous Environmental Impact Statement guidelines or Assessment Report is required as a result of the application for a variation to the Northern Balefill Facility Major Development.

Background

On 12 May 2021, MasterPlan SA Pty Ltd, on behalf of IWS, the operator of the Northern Balefill Facility at Port Wakefield Road, Lower Light (5km north of Dublin), sought a variation to their previous major development authorisation under section 115 of the *Planning, Development and Infrastructure Act 2016* (the PDI Act) (**Attachments 1** and **2**).

The current development authorisation is in **Attachment 3**.

The works comprise the construction of a large shed, to be located adjacent to a recently approved bioremediation pad. The building footprint is approximately 100m (L) x 40m (W) x 12m (H), for an overall footprint of 4,000m². The building is similar to a large warehouse, with colour coated metal cladding (green) and a concrete floor. Multiple roller doors will provide access for trucks and other machinery operated on the site.

A copy of the plans are contained in **Attachment 4**.

The purpose of the shed is to improve the process of handling of waste materials from the bioremediation pad, through the use of undercover area for the operation of conveying systems and trommel screens. Sorted materials will continue to be used for beneficial reuse onsite.

No change in process is occurring onsite; rather, the existing process of sorting is being moved indoors; thus, it does not represent a change in land use, but an operational improvement to current practices. This has been confirmed by the Environment Protection Authority (EPA).

[redacted]

[redacted]

Discussion

Legislative Provisions

The original Northern Balefill proposal was the subject of a Ministerial direction under section 46 of the Development Act for an EIS to be prepared in October 1994.

At this time, no declaration was required; however, section 18(7) of the *Statutes Repeal and Amendment (Development) Act 1993* is held to apply, such that future amendments could be considered under section 48 of the Development Act.

On the basis that the development authorisation remains valid and the approved works have not been completed, a variation to the development authorisation of a previously approved major development can be considered under section 115 of the new PDI Act (as if it were a variation previously considered under section 48 of the Development Act).

[redacted]

Noting that the proposed variation is very much a subsidiary part of a much broader 'development' (namely, the solid waste landfill) and there is no change to the volume or nature of processing operations, but rather only an improvement to existing processes, the proposed variation is considered relatively minor and in a procedural sense, 'low risk'.

Adequacy of the Guidelines, EIS and previous Assessment Report

A copy of the original assessment guidelines are contained in **Attachment 5.**

The guidelines required an investigation of likely environmental impacts relating to site constraints, ground and surface water, visual impact, noise and air quality; the future operation and rehabilitation of the site (i.e. sold waste characteristics, leachate control and disposal, traffic, public health); and impacts on flora and fauna, introduction of pests and heritage conservation.

The original EIS was prepared in the mid-1990s, and has been reviewed and updated since that time—the last being an amendment to the EIS to include a multiple waste treatment facility in 2008. This allowed for the receipt and treatment of contaminated waste (i.e. soil, non-liquid industrial residues and process waste, sludge and sediment) via contaminant stabilisation and

bioremediation processes. The amendment was approved, with an undercover sorting and shredding facility, and two outdoor bioremediation pads constructed (the latest in 2020).

A copy of the 'Second Amendment to the Assessment Report for the Environmental Impact Statement Amendment', which was published in August 2009, constitutes the most recent and significant previous review of the project, which considers the multiple waste treatment facility for the receipt, processing and disposal of High-Level Contaminated Waste. This document is contained in **Attachment 6**.

For reference purposes, the original Assessment Report is also contained in **Attachment 7**.

The proposed shed will continue to be operated in accordance with the EPA approved Landfill Environmental Management Plan (LEMP). The potential environmental impacts associated with the operation of the new undercover sorting and processing shed are consistent with previous approvals; essentially, a complementary improvement to current operational practices which utilises existing infrastructure, and is likely to reduce noise and odour impacts.

On this basis, the Department recommends that there is no need to revisit or update the EIS guidelines, as was done previously when a new high contaminated waste stream and processing facility was introduced on the site. It is considered that previous Assessment Reports adequately consider potential impacts, and through various approvals and EPA licensing requirements, adequately and effectively manage site operations.

Consultation with the Environment Protection Authority

The current facility involves the development and operation of a prescribed (waste processing and landfill) activity under the *Environment Protection Act 1993*, and is licensed by the EPA for that purpose. Section 115(5)(e) of the PDI Act requires consultation with the EPA, and for the Minister to have regard to their referral advice before making a decision. The EPA considered the proposal and raised no objection. No additional conditions were recommended (**Attachment 8**).

Consultation with Adelaide Plains Council

The Adelaide Plains Council considered the proposal at its meeting of 4 August 2021 and raised no planning objection to the development (**Attachment 9**). Clarification was sought on a potential loss of screening vegetation due to the turning movement of vehicles entering and exiting the proposed building. IWS advised that these plantings were originally established when the adjoining land was owned by a third party. This land was subsequently acquired by IWS, with the trees now inside the perimeter with other plantings now in place (along the new boundaries). IWS has undertaken to establish new (internal) replacement plantings, which is recommended to be a new condition.

Public Notification

No public notification of the development was undertaken as there is no change to current operational volumes or processes, such that there could be a reasonable interest or objection to the construction of a sorting and processing shed well within the site boundaries of an existing balefill facility, and where the nearest residence is located over 700 metres from the shed.

Consistency with current Planning Policies

State Planning Policies support the provision of land and continued operation of waste and resource recovery infrastructure and other related green industries to maximise resource use, support economic growth and service our communities ('State Planning Policy 9: Employment Lands—Policy 9.13').

The IWS Northern Balefill Facility is located within a Rural Zone under the Planning and Design Code, which is similar to the former Primary Production Zone under the superseded Adelaide Plains Council Development Plan.

The zone supports a range of activities, from primary production to agricultural processing, forestry to renewable energy. Large buildings are also envisaged, on the basis they are well setback from boundaries and use low reflective materials.

It is considered that the proposal complies with these provisions. It is also noted that in certain circumstances, an agricultural building (though, of a smaller size of less than 500m^2) would be a form of 'deemed to satisfy' development (i.e. must be granted consent) within a Rural Zone.

Assessment of potential impacts

There is no change to the volume or nature of existing processing operations on the site.

The only proposed change is the transfer of existing or similar equipment into a large shed, such as conveying systems and trommel screens, to improve the processing efficiency of organic waste material. A number of large sheds for intensive animal keeping are located in close proximity, which, in terms of overall footprint, are two to three times larger than the proposed shed, such that the scale, materiality, setback and colour of the proposed shed is considered appropriate, and in keeping with the rural character of the general locality.

Existing setbacks to sensitive receptors is unchanged, with the shed within existing site boundaries and the approved (outdoor) bioremediation pads being closer to neighbours. Whilst operating times are to remain the same, it is likely that the relocation of portable (outdoor) equipment indoors would assist in reducing noise, dust and rubbish impacts at site boundaries. Staff will also be able to continue working during adverse weather events.

Next steps

On the basis there is no further statutory assessment process to be undertaken, a recommendation will be made by the Department to the Minister that the new storage and processing shed on the IWS Northern Balefill Facility be amended through a variation to the current development authorisation, in accordance with section 115(8) of the PDI Act.

Attachments:

1. Letter from Mr Michael Richardson, MasterPlan SA Pty Ltd—Variation of Major Development Authorisation Sorting Shed – IWS Northern Balefill, Lower Light, 12 May 2021 (#17626607).
2. Further correspondence from Mr Michael Richardson, MasterPlan SA Pty Ltd, 22 June 2021 and 26 August 2021 (#17626606).
3. *Government Gazette* notice, 3 December 2020—Development Authorisation (#17626599).
4. Proposed storage and processing shed plans (#17626603).
5. Original EIS Guidelines (#17849372).
6. Second Amendment to the EIS Assessment Report – IWS Northern Balefill Multiple Waste Treatment Facility, Dublin—*Development Act 1993* (#17807417).
7. Original EIS Assessment Report – IWS Northern Balefill—*Development Act 1993* (#17807416).
8. Advice from the Environment Protection Authority, 4 August 2021 (#17626604).
9. Advice from the Adelaide Plains Council, 11 August 2021 (#17626601).

Prepared by: Simon Neldner

Endorsed by: Sally Smith

Date: 13 October 2021

MASTERPLAN
TOWN + COUNTRY PLANNERS SINCE 1977

12 May 2021

Planning and Land Use Service
Attorney-General's Department
Level 5, 50 Flinders Street,
ADELAIDE SA 5001

Attention: Mr Simon Neldner, Team leader – Crown and Major Developments

Dear Mr Neldner

Re: Variation of Major Development Authorisation
Sorting Shed
IWS Northern Balefill, Lower Light

Our client, Integrated Waste Services ('IWS' or 'our client'), is the operator of the IWS Northern Facility, a significant landfill and resource recovery facility, located approximately 5.0 kilometres south east of the township of Dublin in Lower Light. The facility provides services to much of metropolitan Adelaide and regional South Australia.

We write to request a variation to the current approval for the facility. The letter herein outlines the relevant legislative context for this request, the nature of the proposed variation, and our position on the proposals merit.

Please find **enclosed** with this correspondence the following documents which further details the proposed variation:

Table 1: Documentation List

PLAN TITLE	PLAN REFERENCE	DATE	AUTHOR
Site and Locality Plan	52228-SL1-3B	12/05/2021	MasterPlan
Site Plan	5228-S1-3A	12/5/2021	MasterPlan
Floor Plan	A21-01	22/04/2021	Ahrens Group
Eastern and Northern Perspective	A90-01	22/04/2021	Ahrens Group
Eastern Aerial Perspective	A90-02	22/04/2021	Ahrens Group
Plant Context Schematics	SK01 – REV 2	12/04/2021	CEA

Legislative Context and Process

The operation remains the subject of a major development declaration granted under Section 46 of the *Development Act, 1993*, which has subsequently been repealed by the *Planning, Development, and Infrastructure Act, 2016*. Section 48B of the repealed Act provided for the Governor or the Minister to permit the variation of Major Development authorisations, provided the project remains within the ambit of the Environmental Impact Statement.

We understand that, in accordance with Regulation 11 of the *Planning, Development, and Infrastructure (Transitional Provisions) Regulations, 2017*, Section 48 of the repealed Act continues to apply in relation to the variation of development "*as if a reference to the Governor were a reference to the Minister*". We have therefore prepared this variation in accordance with the requirements of Section 48 of the *Development Act, 1993 ('the Act 1993')*, as the relevant legislation, with the understanding that any decision by the Minister in respect to the variation will have effect as if it were a decision under Section 115 of the *Planning, Development, and Infrastructure Act, 2016 ('PDI Act 2016')*.

The approval for the bioremediation pad was granted pursuant to Section 48 of the *Development Act, 1993* ('Section 48') as a variation of the original Development Approval for the facility by notice in the Government Gazette dated 23 January 2013 ('the 2013 variation'). This variation permitted the establishment of a bioremediation pad on the site, located at the eastern portion of the site, that was subsequently installed and operates on the site presently. As you are aware, the configuration of the bioremediation pad was revised and expanded via approval for a further variation by notice in the Government Gazette dated 3 December 2020.

Proposed Variation

The request herein seeks a variation to the existing approval to provide for the installation of a shed adjacent the bioremediation pad. The shed is proposed to be located to the north east of the bioremediation pad, as depicted in the accompanying site plan prepared by MasterPlan.

The building footprint will be 100 metres by 40 metres, returning a total floor area of 4,000 square metres. The high clearance building will exhibit a total building height (to the ridge) of 12.0 metres. The materiality of the building will comprise of a mixture of precast concrete dado panels and colour coated steel cladding of a green colour to match existing buildings on the site. Multiple roller door entries will provide access for vehicles and machinery, comprising of five (5) roller doors of a dimension of 8.0 metres by 6.0 metres, and one (1) with dimensions of 4.0 metres by 4.0 metres. A series of pedestrian entry doors are also provided in accordance with building requirements on the northern and southern elevations.

The purpose of the proposed shed is to facilitate improvements to the process of handling the material sourced from the bioremediation pads. The shed will house new plant and equipment that comprises of trommel screens and connecting feeder conveyor belts. Material will be transferred from the bioremediation pad into the shed via excavators and fed into the plant for sorting and blending. The sorted material will then be directly transported around the site for beneficial reuse.

The processes proposed to be undertaken within the shed in sorting the material is an existing activity already conducted on the site. Presently, sorting is undertaken by a more manual process using mobile plant and equipment which manually process the material. Presently, this process is undertaken outdoors on the biopads external from any building. The proposed shed will allow for the sorting process to occur internally and in more efficient manner, which further reduces the potential for any external impacts on the locality. We therefore suggest that the proposal does not represent a change to operations on the site, but merely an improvement to the existing and approved operations. As such, it is our position that the only component of the proposal that comprises development is the construction of the proposed shed.

It is considered that the proposed variation represents a relatively minor built form addition to facilitate the existing operations on the site and does not materially change the nature of the activity or the impacts of the operations of the site on the surrounding area.

Environmental Impact Statement

In accordance with Section 48B, we have given consideration to whether the proposed variation remains within the ambit of the Environmental Impact Statement (EIS). The EIS for the facility was originally prepared in 1997 and has subsequently been amended via an addendum in 2008. There are numerous documents relevant to the EIS that have been prepared since its inception. There have also been various licences issued dealing with the day-to-day operation and management of the facility.

The key objectives of the site as defined in the original EIS (1997, pp. 3) were as follows:

- provide next generation of landfill;
- orderly disposal for shredded, baled, inert demo waste in commercially sound manner;
- landfill using recent and efficient techniques; and
- develop and manage site in an environmentally sustainable manner.

The site continues to achieve these key objectives and the more recent waste management and disposal practices conducted on the land, including bioremediation, are consistent with the original intent for the facility to accommodate environmentally sustainable and efficient waste recycling and treatment practices in a commercially sound manner, as evidenced by the Minister's approval of the 2013 variation. Given that the proposed sorting shed will facilitate an improvement to the operations directly related and ancillary to this bioremediation activity, indicates that the proposed variation herein also remains within ambit of the EIS and can appropriately be processed as a variation under Section 48B of the Act.

Closure

We conclude that he proposed sorting shed does not change the use of the land nor does it offend any of the conditions or functional arrangements on the site. The sorting operations that are to occur within the proposed shed are an existing activity presently conducted on the site, that under the proposed scheme will now occur in a more efficient manner and in more controlled environment. Furthermore, the variation is considered to remain within the ambit of the existing EIS for the facility and its subsequent addendums.

With consideration of this and for the reasons set out herein, the proposed variation is considered to be of minor consequence and to warrant approval. Your advice as to any further information required to enable the request for this variation to be processed would be appreciated as soon as possible.

We eagerly await your response. If you have any questions in respect to the information provided, please do not hesitate to contact the writer.

Yours sincerely

Michael Richardson
MasterPlan SA Pty Ltd

enc: Proposal Plans (as listed).
cc: IWS, Att: Mr Colin Mayberry (by email).

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22 June 2021

Planning and Land Use Service
Attorney-General's Department
Level 5, 50 Flinders Street,
ADELAIDE SA 5001

Attention: Mr Simon Neldner, Team Leader – Crown and Major Developments

Dear Mr Neldner

Re: Variation of Major Development Authorisation
Sorting Shed
IWS Northern Facility, Lower Light

On behalf of Integrated Waste Services ('IWS' or 'our client') we refer to the request for a variation of the current approval for the IWS Northern Facility at Lower Light, lodged via correspondence dated 12 May 2021.

By email dated 18 May 2021, you sought clarification on a number of matters associated with the proposed variation. This correspondence responds to your request. Additionally, the proposal plans have been updated to provide further and better particulars in respect of the proposal.

Amended Proposal Plans

Please find **enclosed** the following updated proposal plans prepared by Ahrens Group Pty Ltd for IWS:

•	Drawing A01-01	Cover Sheet	07/06/2021;
•	Drawing A11-01	Site Plan	03/06/2021;
•	Drawing A11-02	Stormwater Plan	07/06/2021;
•	Drawing A21-01	Ground Floor Plan	03/06/2021;
•	Drawing A21-02	Roof Plan	03/06/2021;
•	Drawing A30-01	External Elevations	03/06/2021; and
•	Drawing A30-02	External Elevations	03/06/2021.

Where equivalent plans have previously been submitted, the plans now submitted substitute for the earlier plans.

Points of Clarification

In your correspondence, you requested clarification in respect of six (6) issues, to which we comment as follows.

1. *Confirmation as to external materials and colours of the large shed.*

The elevations now provided detail the colour to match existing sheds on the site, which are understood to be in Colorbond Cottage Green or similar.

2. *Stormwater management - what is proposed here? Do existing arrangements need to be modified?*

Stormwater management is now detailed on a specific proposal plan. It is proposed to collect water from the shed in two (2) 300 kilolitre storage tanks located to the south-west of the shed. Overflow from the tanks will be directed to the existing basin to the south-west of the bioremediation pad.

IWS has a significant, year-round demand for water for various uses including the irrigation of landscaping, dust suppression and the wetting down of waste. This demand will reduce the level of overflow into the dam.

Having regard to the size of the site and the distance of the proposed shed and stormwater management infrastructure from boundaries, it is considered appropriate in the circumstances.

3. *Does this increase volumes to site (or ability to receive and process on the land)?*

No change to existing approvals in respect of the volumes of material received or the intensity of the use is proposed.

4. *Do the site modifications and integration with the previously approved layout of the BR pads require any consequential changes (on its face, the approved site plans would need to be updated in the varied notice), but this is more to do with site arrangement / layout, so assume it's just internal access tracks, manoeuvring areas, site services, etc*

No material changes to the existing arrangements are proposed. Some minor reprofiling of the batters to the northern portion of the existing bioremediation pad will be undertaken to enable direct vehicle access from the pads to the proposed shed.

5. *What is the cost of the proposed works?*

The cost of the works is estimated at $1.5 million.

6. *Assume hours of operation remain unchanged?*

No change to the existing operating hours is proposed.

Closure

We trust this information will enable the assessment of the proposed variation to proceed. Should anything further be required, please contact the writer.

Yours sincerely

Michael Richardson
MasterPlan SA Pty Ltd

enc: Amended Proposal Plans.

cc: IWS, Att: Mr Colin Mayberry (by email).

Neldner, Simon (AGD)

From: Michael Richardson <MichaelR@masterplan.com.au>
Sent: Thursday, 26 August 2021 8:16 AM
To: Neldner, Simon (AGD)
Subject: RE: Also, did you see the minutes from the AP Council meeting - huge agenda that day! (one query re: turning circle and vegetation)

Good Morning Simon

Yes, we did view the video of the CAP meeting online and review the agenda and minutes.

We have no concerns with their recommended condition.

The plantings along the allotment boundary to the north of the proposed shed were originally established when that allotment to the north was owned by a third party and contained the dwelling closest to the facility.

IWS have subsequently acquired that allotment and have demolished the dwelling. With that allotment being acquired, screening of the area of the site where the shed is proposed is now screen from views obtained from the Port Wakefield Highway and further to the north, which is achieved achieved by extensive vegetation on the allotment which IWS have acquired.

In any event, the located of the shed and the turning circle shown on the plan referenced by Council provide a theoretical separation, rather than showing a turning movement that will actually occur in everyday operation. The movements to the north of the shed will typically be straight through the canopy, rather than a turning movement between the shed and the boundary.

This being said, should any of the existing plantings need to be removed at any point, IWS will establish new plantings, most likely on the northern side of the boundary, and would be accepting of a condition being placed on an approval to address the intent of Council's commentary.

Please let us know if anything further is required in this regard.

Kind Regards

Michael Richardson
0417 828 979

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THE SOUTH AUSTRALIAN

GOVERNMENT GAZETTE

PUBLISHED BY AUTHORITY

ADELAIDE, THURSDAY, 3 DECEMBER 2020

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All instruments appearing in this gazette are to be considered official, and obeyed as such

Printed and published weekly by authority of S. SMITH, Government Printer, South Australia
$7.85 per issue (plus postage), $395 per annual subscription—GST inclusive
Online publications: www.governmentgazette.sa.gov.au

STATE GOVERNMENT INSTRUMENTS

DEVELOPMENT ACT 1993

SECTION 48

Decision by the State Commission Assessment Panel as Delegate of the Governor

Preamble

1. On 19 October 1994 the Minister for Housing, Urban Development and Local Government Relations, being of the opinion that a proposed development of a waste management facility in the form of a solid waste landfill (Northern Balefill) near Dublin ('the development') was a development of major social, economic or environmental importance, directed the proponent to prepare an Environmental Impact Statement, pursuant to Section 46 of the *Development Act 1993*.
2. On 22 April 1996 an Environmental Impact Statement for the development was published in accordance with Section 46 of the *Development Act 1993*. Subsequently, the Minister prepared an Assessment Report in accordance with Section 46 of the *Development Act 1993*.
3. By notice in the *South Australian Government Gazette* on 29 January 1998 at page 30 the Governor granted development authorisation to the development, subject to conditions specified in that notice, pursuant to Section 48 of the *Development Act 1993*.
4. Following an application by the beneficiary of the development authorisation for a variation to the authorisation to allow the receipt and disposal of low level contaminated waste, the proposed development was the subject of an Amended Environmental Impact Statement dated June 1998 and an Amended Assessment Report dated December 1998 under Section 47 of the *Development Act 1993* ('the amended Major Development').
5. By notice in the *Government Gazette* on 8 September 2005 at page 3255 the Governor granted provisional development authorisation to the amended Major Development, reserving specific matters for further assessment.
6. Following an application by the beneficiary of the development authorisation for a variation to the authorisation to allow for the establishment of a Multiple Waste Treatment Facility for the treatment and disposal of high level contaminated waste at the existing landfill, the proposed development was the subject of an Amended Environmental Impact Statement dated 24 November 2008 and an Amended Assessment Report under Section 47 of the *Development Act 1993* ('the further amended Major Development').
7. By notice in the *Government Gazette* on 27 August 2009 the Governor granted provisional development authorisation to the further amended Major Development, reserving specific matters for further assessment.
8. By notice in the *Government Gazette* on 2 September 2010 at page 4662 the Minister for Urban Development and Planning, under delegation from the Governor, assessed the matters reserved for further assessment and a variation to the design of the Multiple Waste Treatment Facility and granted development authorisation to the further amended Major Development.
9. Variations to the development authorisation were notified in the *Government Gazette* on 24 January 2013 at page 103 (for the implementation of a '10 Year Masterplan' comprising various changes to the landfill operation and the establishment of a Resource Pad, a Bioremediation Pad and a Litter Net System) and on 14 May 2020 at page 969 (for a modification to the design of the landfill module 3).
10. By letter dated 20 September 2019, Integrated Waste Management Services Pty Ltd, being the beneficiary of the development authorisation, sought a variation to the authorisation to permit the establishment of a Bioremediation Pad (identified as Cell B—eastern extension).
11. I am satisfied that the Environmental Impact Statement (as amended) and Assessment Report (as amended) in relation to the Major Development are appropriate and have had regard, when considering the proposed variation, to all relevant matters under Section 48 (5) of the *Development Act 1993*.
12. For ease of reference the conditions attached to the Solid Waste Landfill (Northern Balefill) near Dublin development authorisation are republished in full hereunder.

Decision

PURSUANT to Section 48 (7a) and (7) (b) (ii) of the *Development Act 1993*; and having due regard to the matters set out in Section 48 (5) and all other relevant matters; and exercising the power of the Governor, I:

(a) vary the Solid Waste Landfill (Northern Balefill) near Dublin development authorisation dated 14 May 2020, subject to the conditions set out below; and

(b) specify under Section 48 (7) (b) (iii) all matters which are the subject of conditions herein as matters in respect of which the conditions of this authorisation may be varied or revoked, or new conditions attached.

CONSOLIDATED VERSION OF CONDITIONS OF AUTHORISATION

General Conditions

1. Except where minor amendments may be required by other legislation or by conditions imposed herein, the proposed Major Development shall be undertaken in strict accordance with the following documents:
   - Development application dated 30 June 2008;
   - Environmental Impact Statement Amendment, Integrated Waste Services Northern Balefill Dublin Multiple Waste Treatment Facility EIS Amendment prepared by Golder Associates, dated 24 November 2008, but in the case of conflict with a specific condition below the specific condition shall apply;
   - Proponent's response to submissions, letter from Connor Holmes to the Department of Planning and Local Government dated 3 April 2009, but in the case of conflict with a specific condition below the specific condition shall apply;
   - Correspondence from Connor Holmes to the Department of Planning and Local Government containing additional information on the proposal dated 27 May 2009, but in the case of conflict with a specific condition below the specific condition shall apply;
   - Correspondence from Integrated Waste Services to the Department of Planning and Local Government applying for approval of reserved matters and variations related to the Multiple Waste Treatment Facility dated 19 May 2010, but in the case of conflict with a specific condition below the specific condition shall apply;
   - Correspondence from Integrated Waste Services to the Department of Planning and Local Government providing additional information to support application dated 11 May 2010, but in the case of conflict with a specific condition below the specific condition shall apply;

- Correspondence from Katnitch Dodd for Stage 1—Civil and Structural Work dated 31 March 2010 and accompanying certified plans;
- Correspondence from Katnitch Dodd for Final Stage—Services and Fitout Works dated 31 March 2010 and accompanying certified plans.
- Application for a variation to the development authorisation from Integrated Waste Services dated 5 October 2012, except as varied by the conditions listed below or to the extent that they are varied by the plans and drawings listed below.
- Application for a variation to the development authorisation from Masterplan (on behalf of Integrated Waste Services P/L) dated 11 March 2020, including plans titled 'Site Layout' (prepared by Golder, dated 2020-02-26), 'Module 3 Cap' (prepared by Golder, dated 2020-02-26) and 'Longsection' (prepared by Golder, dated 2020-02-26).
- Application for a variation to the development authorisation from Masterplan (on behalf of Integrated Waste Services P/L) dated 20 September 2019, including plans titled 'Clearing and Grubbing Layout Plan', (prepared by Golder, dated 2019-09-13), 'Design Layout Plan' (prepared by Golder, dated 2019-09-13), 'Design Surface Top of Subgrade Layout Plan' (prepared by Golder, dated 2019-09-13), Cross Sections—Sheet 1 of 2' (prepared by Golder, dated 2019-09-13), Cross Sections—Sheet 2 of 2' (prepared by Golder, dated 2019-09-13), 'Typical Sections and Details' (prepared by Golder, dated 2019-09-13) and 'Indicative Aeration Pipe Layout Plan and Typical Section' (prepared by Golder, dated 2019-09-13); and the 'Integrated Waste Services—Organics Processing Pad Cell B—Technical Specification' (1654805-020-TS-Rev0) by Golder dated 5 November 2019.

2. Before any building work is undertaken on the site, the building work is to be certified by a private certifier, or by some person determined by the Minister for Planning and Local Government, as complying with the provisions of the Building Rules (or the Building Rules as modified according to criteria prescribed by the Regulations).

Multiple Waste Treatment Facility (MWTF)

3. The design of the MWTF shall be amended to include coloured metal cladding on all sides of the building, so as to enclose the whole of the facility.
4. Designs for the effluent treatment and disposal system shall be prepared to the reasonable satisfaction of the Adelaide Plains Council.
5. Treatment of waste material shall not occur until the construction of the entire MWTF has been completed, to the reasonable satisfaction of the Environment Protection Authority (EPA).
6. High Level Contaminated Waste is not required to be baled or shredded.
7. A truck wash with water sprays shall be installed for the removal of residues from vehicles transporting High Level Contaminated Waste to the site. All transport vehicles shall not leave the site unless they have gone through the truck wash.
8. Treatment of the stored materials shall only commence once the completed MWTF is approved by the EPA to commence operation.
9. Bioremediation and stabilisation are the only treatment processes that shall be used in the MWTF.
10. Pre-remediation trials shall be conducted on all contaminated materials, prior to delivery to the MWTF and the Bioremediation Pad, to determine if treatment methods approved by the EPA would be successful. Trial results shall be submitted to the EPA for assessment, prior to delivery of contaminated materials to the MWTF and the Bioremediation Pad.
11. Post-remediation testing on treated materials shall be undertaken to assess its suitability to be disposed of or reused. Testing results shall be submitted to the EPA for assessment, prior to disposal or reuse.
12. Future treatment options shall undergo pre-trial assessment, to the reasonable satisfaction of the EPA, before they can be adopted.
13. An Environmental Management Plan (EMP) for activities associated with the MWTF, prepared to the reasonable satisfaction of the EPA, must be in place prior to the receival, storage and treatment of contaminated materials.

Solid Waste Balefill

14. The work shall be carried out as shown on the plans (Figures 3.1 to 3.9) in the Development Application Report dated 28 November 1997, included with the Development Application dated 2 December 1997, except as varied by these conditions.
15. Subject to Conditions 16, 17 and 18, all waste received for disposal at the facility shall be shredded and baled.
16. Unbaled commercial/industrial or construction/demolition waste of appropriate particle sizes may by placed and compacted in any voids unavoidably occurring between bales and the inclined surface of the cells in which those bales are placed or within a suitable netting system to the reasonable satisfaction of the EPA and in accordance with any applicable requirements of a relevant environmental authorisation.
17. Waste materials received for disposal at the facility need not be shredded before baling where shredding of those materials is not required for the purpose of producing bales of a density and structural integrity that satisfy the applicable requirements of any relevant environmental authorisation.
18. Non-friable asbestos waste shall not be shredded or baled but shall be disposed of in accordance with the applicable requirements of any relevant environmental authorisation.
19. All perimeter plantings shall be started as early as practicable after the date of this authorisation to achieve maximum amelioration of visual impacts.
20. Screening by suitable plantings where adequate natural screening is not provided, shall be provided for the perimeter fence, all built structures, stockpiles and internal roads (where practicable) using suitable species in accordance with the Vegetation Management and Revegetation Plan proposed as part of the Landfill Environmental Management Plan (LEMP).
21. All firebreaks and external drainage channels shall be located on the inner edge of the vegetation screen and existing stands of native vegetation. In the event that drainage channels are required to be located close to the site boundary, their redesign to form low-lying wetland/saltmarsh communities as part of the vegetation screen shall be undertaken and implemented to the satisfaction of the Environment Protection Authority.
22. A leachate monitoring bore shall be installed within each cell to assist with leachate management, particularly if leachate circulation is incorporated in the Landfill Environmental Management Plan (LEMP).
23. The proponent shall pay all reasonable costs of the detailed design and construction of any public roadworks made necessary by this development. Such works may include the opening and associated left turn deceleration lane from Port Wakefield Road, and the upgrading of the entrance to balefill junction to the satisfaction of the Commissioner of Highways.
24. The proponent shall seal (two coat spray seal) the internal site access road for a minimum of 520 m from the nearest residence.
25. The applicant shall prepare a Vegetation Management and Revegetation Plan (which may be included in the LEMP) to the reasonable satisfaction of the Development Assessment Commission and must implement that Plan once it has been approved by the Development Assessment Commission.

Low Level Contaminated Soil and Liquid Treatment Plant Residues

26. Low level contaminated soil (LLCS) and liquid treatment plant residues (LTPR) are not required to be baled or shredded.

27. The work shall be carried in accordance with the following documents and plans:
    - EIS Amendment, Receipt of Low Level Contaminated Soil and Liquid Waste Treatment Plant Residues at the IWS Northern Balefill, dated July 2003.
    - Response Document on the EIS Amendment for the Receipt of Low Level Contaminated Soil and Liquid Waste Treatment Plant Residues (Revised), dated 30 April 2004.
    - Supplementary Information EIS Amendment Receipt of Low Level Contaminated Soil and Liquid Waste Treatment Plant Residues at the IWS Northern Balefill, dated 26 November 2004.
    - Landfill Environmental Management Plan, dated 2001 or as varied by any applicable requirements of a licence from the Environment Protection Authority.
    - Drawings
        - 3307DO1, 4/11/2004—cell 31 design plan.
        - 3307DO2, Drawn 25/8/2004 and checked 18/2/2005—Section A, liner and sump design.
        - 3307DO3, 10/8/2004—liner design sections and details.
        - 3307DO4, 14/10/2004—cell 31 interim capping design.
        - 3307DO5, 13/8/2004—landfill staging plan.
        - 3307DO6, 13/8/2004—final surface water control.
        - 3307DO8, Drawn 27/8/2004 and checked 26/11/2004—interim surface water control.
        - 3307DO9 P1, Drawn 4/11/2004 and checked 26/11/2004—cell design plan line 2.
        - 3307DO10, Drawn 29/8/2004 and checked 26/11/2004—Sections D and E, swale drain design.

28. Distance to groundwater requirements shall be as follows:
    - Based on groundwater level monitoring results and interpolated highest groundwater levels for Cell 31, including a 0.1 m buffer; the base of the sump shall be at 9.1 m AHD;
    - Notwithstanding the above requirement, a minimum separation distance of 2 m between the underside of the lowest portion of the lining system (including the sump area) and the underlying groundwater shall be maintained at all times.

29. Leachate collection and extraction system requirements shall be as follows:
    - Leachate removal shall implement a system which accommodates the installation of the pumps at the leachate riser access point.
    - Following cell completion and until the entire cell base is covered with a minimum of 1.5 metres of waste, a pump with a flow capacity of a minimum of 40 litres per second shall be installed.
    - After it can be demonstrated that leachate production has declined to less than one litre per second, this pump can be replaced by a pump of lesser flow capacity.
    - A back-up pump with the relevant capacity shall be readily available on site at all time.

30. Leachate treatment requirements shall be as follows:
    - Leachate may be managed and treated by means of:
        - direct extraction into an on-site leachate evaporation pond which shall meet the minimum design specification as follows:
            - composite lining system comprising a one metre low permeability clay liner with k < 1x 10-9m/s compacted to 95% Maximum Dry Density by standard compaction, and a moisture content between 0% and +4% wet of Optimum Moisture Content, overlaid by a 2 mm high density polyethylene (HDPE) liner (welded).
            - minimum of 600 mm freeboard.
            - modelling with HELP or LANDSIM shall consider a one in 25, 24 hour duration storm event.
            - a minimum separation distance of two metres between the underside of the lowest portion of the lining system and the underlying groundwater shall be maintained at all times.
        - Direct extraction into an onsite tank vehicle suitable for the transport of leachate into an onsite leachate evaporation pond.
        - Direct extraction into a licensed vehicle and transported to an off-site Environment Protection Authority licensed Waste Water Treatment Plant.
        - Direct extraction into a suitably designed, temporary on-site storage tank prior to off-site disposal by an Environment Protection Authority licensed vehicle at an Environment Protection Authority licensed Waste Water Treatment Plant or prior to on-site transport to an onsite leachate evaporation pond.

31. Leachate management requirements shall be as follows:
    - The head of leachate on the liner shall not exceed 300 mm (excluding the sump) at all times. To facilitate this, the trigger level for leachate extraction out of the leachate sump shall be set at 290 mm.
    - In addition to automatic leachate data readings, a manual monitoring probe shall be installed and calibrated to allow for direct readings of the vertical elevation of leachate in the riser pipe and conversion to the maximum leachate head on top of the liner.
    - Leachate levels shall be read manually daily and recorded in the onsite operations logbook or as specified otherwise in the Environment Protection Authority licence.

32. Distance between LLCS/LTPR cells and Balefill cells (reference drawing 3307D03, 18/8/2004) shall be as follows:
    - The distance between LLCS/LTPR cells and Balefill cells shall be at a minimum of 5 metres, measured between the toe of the LLCS cell structure (that is where the outer surface of the cap of the completed LLCS/LTPR cell joins the outer surface of the underlying clay liner for the same cell) and the cap of the nearest balefill cell (that is where the outer surface of the cap of a completed balefill cell joins the outer surface of the underlying clay liner).

33. Level 1 Supervision requirements shall be as follows:
    - The construction of the clay liner of the cell shall be carried out under Level 1 Supervision in accordance with AS 3798-1996, Appendix B.
    - The construction of the HDPE liner shall be carried out under the full time supervision of a suitably qualified geotechnical consultant with experience in the construction and supervision of the construction of HDPE lining systems, quality control procedures and testing.
34. 'As Constructed Report' requirements shall be as follows:
    - An 'As Constructed Report' certifying compliance with the approved design for the lining system, including a Construction Quality Assurance Report (CQA) for the HDPE liner and the Level 1 Supervision Report, shall be submitted to the Environment Protection Authority for acceptance prior to the commencement of the receipt and disposal of waste in each cell. No waste shall be received and disposed of prior to written acceptance of the 'As Constructed Report' by the Environment Protection Authority.
35. Coverage of waste requirements shall be as follows:
    - All waste shall be covered as soon as reasonable practicable after the receipt of waste and placement in the cell or at close of business on each business day with at least 150 mm of cover material (waste fill or intermediate landfill cover with the restriction to a maximum particle size of 100 mm).
    - If a load of particularly odorous material is received at the LLCS/LTPR cell, it shall be covered immediately with a minimum of 150 mm cover material.
    - During periods when the LLCS/LTPR cell is not operating, routine monitoring for odorous gases shall be carried out as part of the site monitoring program and may trigger the application of additional cover material.
    - Alternative cover materials may be used after the proponent:
        - has demonstrated to the Environment Protection Authority that the proposed material and placement method result in an equivalent or better performance compared to the approved material; and
        - has received written approval from the EPA prior to the use of alternative materials and placement methods.
36. Groundwater management requirements shall be as follows:
    - An additional groundwater well shall be installed west of cell 30 and the first round of groundwater sampling and testing shall be completed at least two weeks prior to commencement of construction of cell 31.
    - Groundwater level monitoring shall commence at least two weeks before commencement of construction of cell 31; groundwater levels shall be taken weekly and reported to the Environment Protection Authority monthly (datasheet and graph) or as specified otherwise in the EPA authorisation.
    - Four monitoring rounds at three monthly intervals in the first 12 months of operation shall be carried out to establish additional background analyte levels around cell 31.
    - Six monthly monitoring rounds shall be undertaken following the completion of the initial 12 months of groundwater monitoring or as specified otherwise in the Environment Protection Authority licence.
    - Prior to the commencement of construction of any other cell for the receipt of LLCS/LTPR, the groundwater management and monitoring program shall be reviewed and submitted for Environment Protection Authority approval.
37. Surface Water Management requirements shall be as follows:
    - A stormwater management plan shall be developed and submitted for Environment Protection Authority's approval addressing all issues related to the staged construction of LLCS/LTPR cells on site prior to commencement of construction of cell 31.
    - The stormwater management plan shall provide surface water control and management measures for:
        - surface water or stormwater runoff that does not interact with the waste material or other operational areas of the site and is considered to be uncontaminated.
        - surface water that comes into contact with waste materials or is collected from landfill areas or other operational areas and is considered to be contaminated.
        - surface runoff from the final landfill cap which has to be controlled.
        - diversion of surface water runoff from perimeter areas away from the operating cell.
38. Landfill Environmental Management Plan (LEMP) requirements shall be as follows:
    - The new section of the LEMP ('Section 17') shall be completed and incorporated in the revised LEMP document.
    - The complete revised LEMP document shall be finalised and submitted to the Environment Protection Authority for approval prior to the receipt and disposal of LLCS/LTPR on the premises.
39. A wheel wash with water sprays shall be installed ensure removal of residues from the wheels and underside of the vehicles transporting low level contaminated soil and liquid treatment plant residues to the site.

Bioremediation Pad—Cell B (Eastern Extension)

40. The applicant must provide an 'as constructed' report to the reasonable satisfaction of the Environment Protection Authority (EPA) confirming compliance with the design and construction specifications prior to the commencement of any receipt, storage, and treatment of waste at the expanded bioremediation pad.
41. Reuse of treated organic waste derived from mixed waste (including municipal solid waste or commercial and industrial waste) must not be permitted outside of the lined landfill cells.

NOTES TO PROPONENT

Building Rules

- The proponent shall obtain a Building Rules assessment and certification for any building work from either the Adelaide Plains Council or a private certifier (at the proponent's option) and forward to the Minister for Planning and Local Government all relevant certification documents as outlined in Regulation 64 of the *Development Regulations 2008*.

- Pursuant to Development Regulation 64, the proponent is especially advised that the Adelaide Plains Council or private certifier conducting a Building Rules assessment must:
  - provide to the Minister for Planning and Local Government a certification in the form set out in Schedule 12A of the *Development Regulations 2008* in relation to the building works in question; and
  - to the extent that may be relevant and appropriate:
    (i) issue a Schedule of Essential Safety Provisions under Division 4 of Part 12;
    (ii) assign a classification of the building under these regulations; and
    (iii) ensure that the appropriate levy has been paid under the Construction Industry Training Fund 1993.
- Regulation 64 of the *Development Regulations 2008* provides further information about the type and quantity of all Building Rules certification documentation for Major Developments required for referral to the Minister for Planning and Local Government. The Adelaide Plains Council or private certifier undertaking Building Rules assessments must ensure that the assessment and certification are consistent with this provisional development authorisation (including its Conditions and Notes).

Environmental Management Plan for the Multiple Waste Treatment Facility (MWTF)

- An Environmental Management Plan (EMP) covering the operation requirements for the MTWF shall be prepared in consultation with the Environment Protection Authority.
- The EMP shall include an air quality monitoring programme to ensure air emissions from the MWTF do not contain contaminants at levels that may be harmful to nearby residents and land uses.
- The EMP shall include protocols for testing/trialling the suitability and effectiveness of treatment methods for batches of contaminated materials that could potentially be treated at the MWTF, prior to the receival of such material.
- The EMP shall include contingencies for dealing with contaminated materials that cannot meet disposal criteria after treatment.
- The EMP shall include a detailed risk assessment protocol for all contaminated waste types to be treated.
- The EMP shall include a Fire Risk Management Plan.
- The EMP shall include a Hazardous Substances Management Plan.
- The EMP shall include an Occupational Health, Safety and Welfare Plan prepared in consultation with the Department of Health.
- The EMP shall include a financial assurance strategy.
- The EMP shall be amended if new treatment options that have been approved by the Environment Protection Authority, are adopted in the future.
- The current Landfill Environmental Management Plan (LEMP) shall be amended, to the reasonable satisfaction of the Environment Protection Authority, to address the management of soil erosion and stormwater and the upgrading of existing screens and/or mounds or the establishment of new vegetated screens and/or mounds associated with the MWTF.
- The amendment of the LEMP and the upgrading of the site infrastructure, including but not limited to vegetated screens and/or mounds, shall be undertaken prior to commencement of the MWTF operations.

EPA Licensing and General Environmental Duty of Care

- The applicant is reminded of its general environmental duty, as required by Section 25 of the *Environment Protection Act 1993*, to take all reasonable and practical measures to ensure that the activities on the whole site, including during both construction and operation, do not pollute the environment in a way which causes or may cause environmental harm.
- Environmental authorisation in the form of an amended licence will be required for the construction and/or operation of this development. The applicant is advised to contact the Environment Protection Authority before acting on this approval to ascertain licensing requirements.
- It is likely that as a condition of such a licence the Environment Protection Authority will require the licensee to carry out specified environmental monitoring of air and water quality and to make reports of the results of such monitoring to it.

General Landfill Operations

- To provide additional screening and wildlife habitat the following options could be investigated by the proponent, council, community and local landowners:
  - revegetation of the road reserve along Prime Beach Road, in conjunction with the Adelaide Plains Council and the community;
  - revegetation of the road reserve along Port Wakefield Road, in conjunction with the Department of Infrastructure and Transport to further reduce views from the eastern direction;
  - plantings on private property along fence lines adjoining the site, in conjunction with landowners and the community.
- All sedimentation basins, evaporation ponds, and surface water drainage channels should be suitably located, designed and managed to ensure native vegetation (especially low-lying saltmarsh communities) is not adversely affected by construction activities or groundwater mounding and, if possible, the ecological value enhanced.
- A comprehensive Pest Plant and Animal Management Plan must be implemented prior to landfill operations commencing, to ensure the site is free of as many pest species as possible from the onset and adequate monitoring and follow-up control should occur, as discussed in the Assessment Report.
- Whilst not totally within the control of the proponent, monitoring and control programs to reduce the risk of disease transmission between activities in the area may ideally be prepared by adopting a district approach, in co-ordination with the Adelaide Plains Animal and Plant Control Board, Department of Primary Industries and Resources and landowners.
- To minimise and control any onsite soil erosion (particularly of stockpiled material), a Soil Erosion and Drainage Management Plan (SEDMP) as described in the Environment Protection Agency's 'Stormwater Pollution Prevention Codes of Practice', must be prepared and approved as part of the LEMP, before the site becomes operational.
- As part of the LEMP, a Surface Water Management Plan must be prepared by the proponent to the satisfaction of the EPA prior to receipt of any waste. The plan should address the collection and management of all onsite surface water (including any contaminated runoff originating from roadways, carparks and hardstands, the vehicle workshop or wheel washing facility) and management of all surface water flows entering the site from land external to the site, in particular to ensure their final discharge does not impact adversely on any downstream wetlands.

- A monitoring program must be established to record levels of coastal flooding in the western section of the site and, if results indicate a significant risk, a review process be undertaken (ideally through any relevant local community consultative committee) to determine whether to proceed with Stage 9.
- If blasting is required to remove any of the Ripon Calcrete, explosion vibration characteristics and monitoring requirements must be determined in consultation with the Environment Protection Authority and Adelaide Plains Council, prior to commencement.
- The Environment Protection Agency must be provided with all additional data concerning the site geology as it becomes available, as this could necessitate minor changes to landfill design or method of operation and the installation of additional groundwater monitoring bores.
- To enable detailed design of the proposed groundwater protection system, to determine the minimum depth at which the landfill cells should be based and to enable detailed design of the surface water management system; further investigation of groundwater levels and behaviour on the site must be undertaken prior to finalisation of the detailed design of the landfill and preparation of management plans.
- As part of the LEMP, a detailed Groundwater and Leachate Management Plan must be prepared by the proponent to the satisfaction of the Environment Protection Authority, prior to receipt of any waste. The Plan must demonstrate how the method of hydraulic containment proposed can be practically achieved. Further hydrogeological investigations must be carried out prior to the commencement of any landfill construction in order to fully define the dewatering and groundwater disposal requirements and to provide details of how the cells can be dewatered and constructed for full hydraulic containment of leachate. In particular, monitoring of water table levels must commence immediately after the granting of the development authorisation in order that the magnitude of seasonal fluctuations can be fully established prior to construction of the landfill. The Plan may provide for staging of leachate and groundwater management works which may be required as a result of the staging of waste disposal activities upon the site, and should include contingency measures to be implemented in the event of any failure of the leachate management system.
- A more sustainable after-use for the site that will encourage the regeneration and rehabilitation of natural communities must be considered during future post closure planning.
- If appropriate with the desired end use to be determined in more detail at a later stage, the entire landform may be planted with appropriate types of native vegetation cover.
- Determination of interim and post closure land uses of the site, proposed to be undertaken in association with any relevant local community consultative committee, must be undertaken as required by the Environment Protection Authority as part of the LEMP.

Dated: 18 November 2020

REBECCA THOMAS
Presiding Member
State Commission Assessment Panel

GAMBLING ADMINISTRATION ACT 2019

South Australia

Gaming Machines Code of Practice Prescription Notice 2020

under the *Gambling Administration Act 2019*

1—Short title

This notice may be cited as the *Gaming Machines Code of Practice Notice 2020*.

2—Commencement

This notice comes into operation on 3 December 2020.

3—Revocation of existing codes of practice

In accordance with section 15(6) of the *Gambling Administration Act 2019*, the provisions of an advertising code of practice or a responsible gambling code of practice made and in force under the *Gaming Machines Act 1992* are, insofar as they apply to the holder of a licence under the *Gaming Machines Act 1992*, revoked.

4—Code of Practice

The Gaming Machines Code of Practice as set out in Schedule 1 is prescribed under section 15 of the *Gambling Administration Act 2019*, for the purposes of the *Gaming Machines Act 1992*.

Sheet List		
Sheet Number	Sheet Name	Current Revision
A01-01	DRAWING - COVER SHEET	CC
A11-01	DRAWING - SITE PLAN	BB
A11-02	DRAWING - STORMWATER PLAN	BB
A21-01	DRAWING - GROUND FLOOR PLAN	BB
A21-02	DRAWING - ROOF PLAN	BB
A30-01	DRAWING - EXTERNAL ELEVATIONS SHEET A	BB
A30-02	DRAWING - EXTERNAL ELEVATIONS SHEET B	BB

Grand total: 7

Ahrens

PROJECT

PROCESSING SHED

PROJECT NUMBER

DSK21211

CLIENT

IWS

ADDRESS

99 LEMMEY RD, DUBLIN,
SOUTH AUSTRALIA

1 Location Plan
1 : 5000

Ahrens Group Pty. LTD
ABN 76 114 260 230
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ISSUE OF CAD FILE

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Notes

No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21
CC	Amendment	07.06.21

STAGE 2 PROCESSING SHED
99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA
DRAWING - COVER SHEET

Project number	DSK21211
Date	07.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	CC

Drawing Status
DA SUBMISSION

A01-01

North

Scale Bar
0m 50m 100m150m200m250m
VISUAL SCALE 1:5000 @ A1

Scale 1 : 5000

1 Site
1 : 2000

AREAS

PROPERTY	TBC m²	100%
PROCESSING PLANT	4,000m²	TBC%

LEGEND

PROCESSING PLANT

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Notes

APPROX BAY SPACING SUBJECT TO CHANGE

APPROX SITE LOCATION SHOWN

No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21

IWS

STAGE 2 PROCESSING SHED

99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA

DRAWING - SITE PLAN

Project number	DSK21211
Date	03.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status
DA SUBMISSION

A11-01

North

Scale Bar
0m 20m 40m 60m 80m 100m
VISUAL SCALE 1:2000 @ A1

Scale: As indicated

1 Stormwater Plan
1 : 500

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No.	Description	Date
AA	Amendments	03.06.21
BB	Amendment	07.06.21

IWS

STAGE 2 PROCESSING SHED

99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA

DRAWING - STORMWATER PLAN

Project number	DSK21211
Date	07.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status
DA SUBMISSION

A11-02

North

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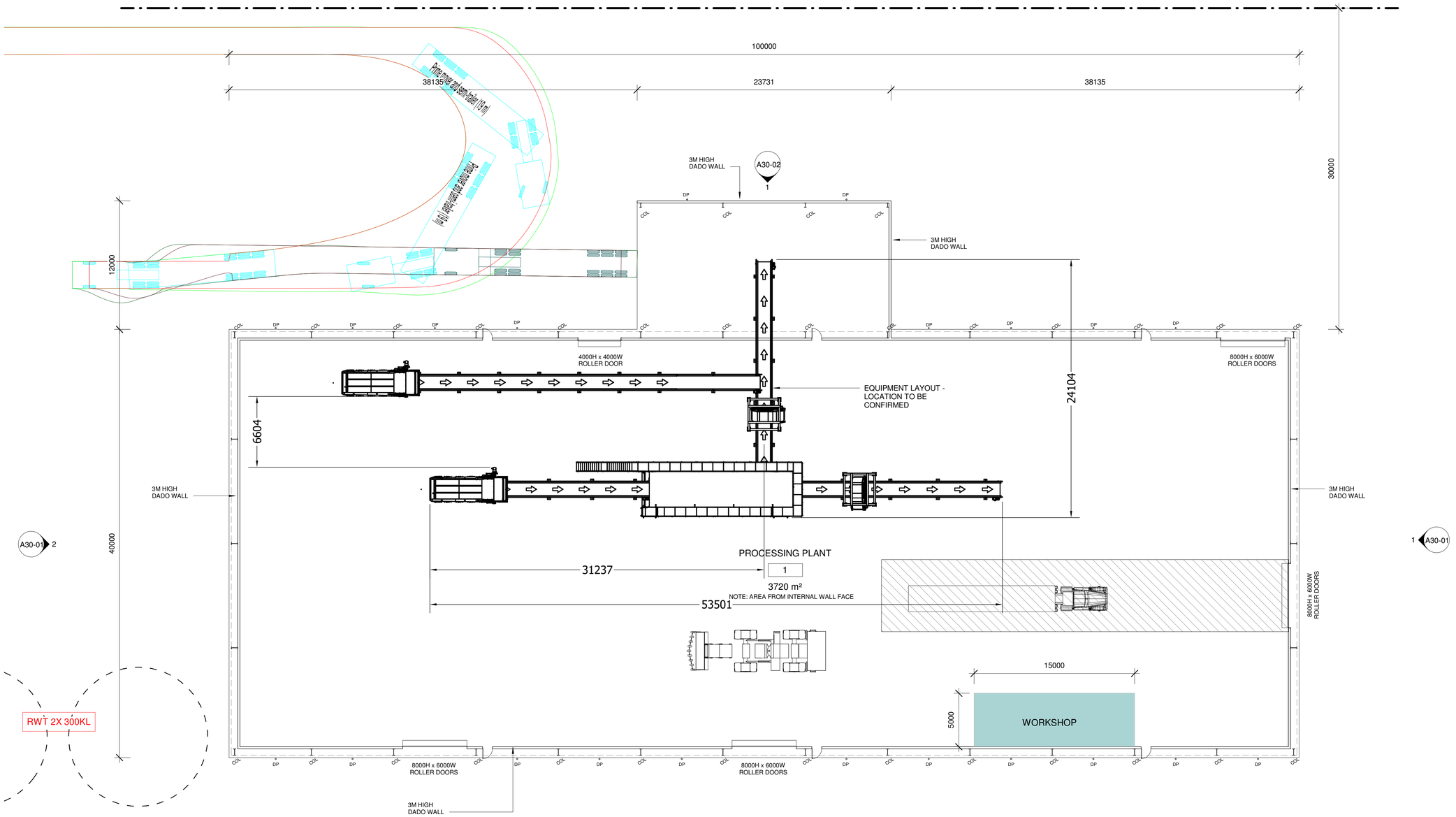
Scale 1 : 500



SKETCH OVERLAY

1 Ground Floor

1 : 200

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Notes

APPROX BAY SPACING SUBJECT TO CHANGE

INDICATIVE INTERNAL LAYOUT - CLIENT TO CONFIRM LOCATION

EQUIPMENT DWG FILE:
LAYOUT_IWS
DUBLIN_A1386-1-001D CAD

STRUCTURE TO BE CONFIRMED WITH STRUCTURAL DESIGNER

No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21

IWS

STAGE 2 PROCESSING SHED	
99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA	
DRAWING - GROUND FLOOR PLAN	
Project number	DSK21211
Date	03.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status

DA SUBMISSION

A21-01

North

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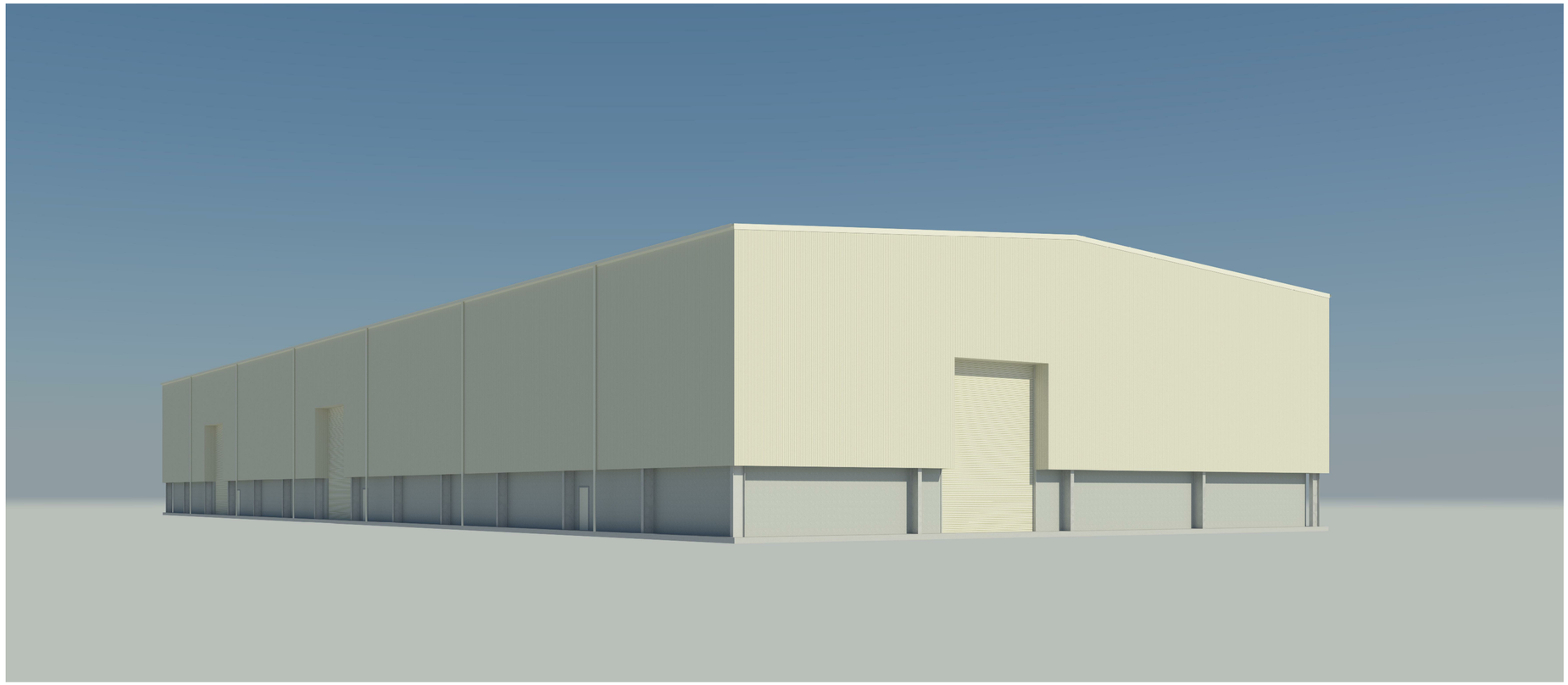
VISUAL SCALE 1:200 @ A1

Scale 1 : 200



1 Perspective A
1 : 1

2 Perspective B
1 : 1

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Notes

No.	Description	Date
A	Concept	30.03.21
B	Layout Amended	21.04.21
C	Layout Amended	22.04.21

IWS

STAGE 2 PROCESSING SHED	
IWS - DUBLIN	
DRAWING - PERSPECTIVES SHEET A	
Project number	QDK21090
Date	22.04.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	C

Drawing Status
CONCEPT

A90-01	North
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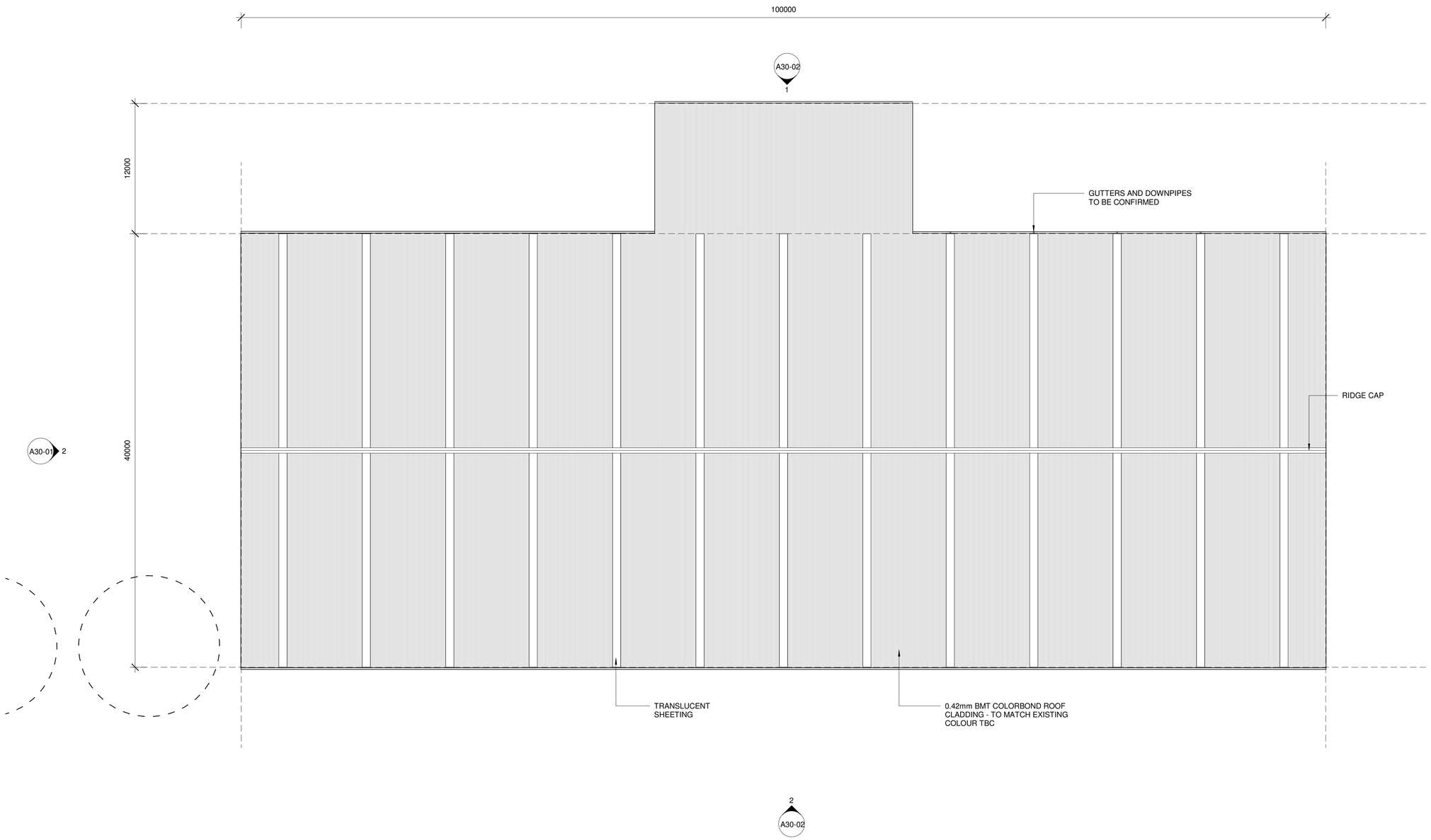

1 Roof Plan
1 : 200

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No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21

IWS

STAGE 2 PROCESSING SHED

99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA

DRAWING - ROOF PLAN

Project number	DSK21211
Date	03.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status
DA SUBMISSION

A21-02

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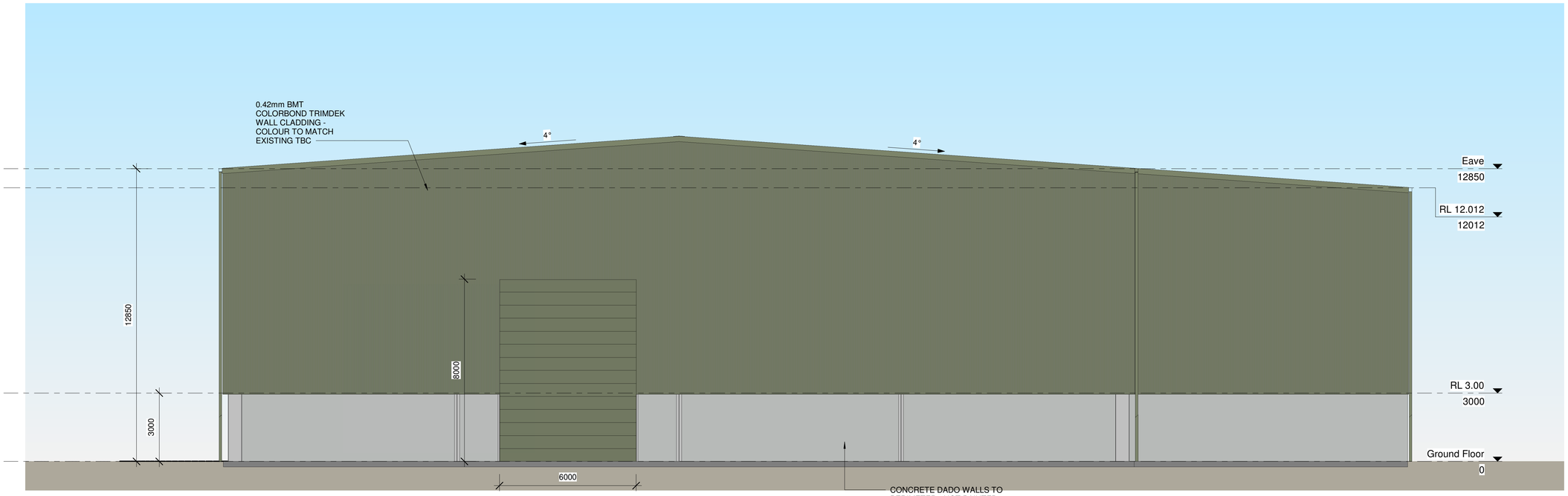
Scale 1 : 200



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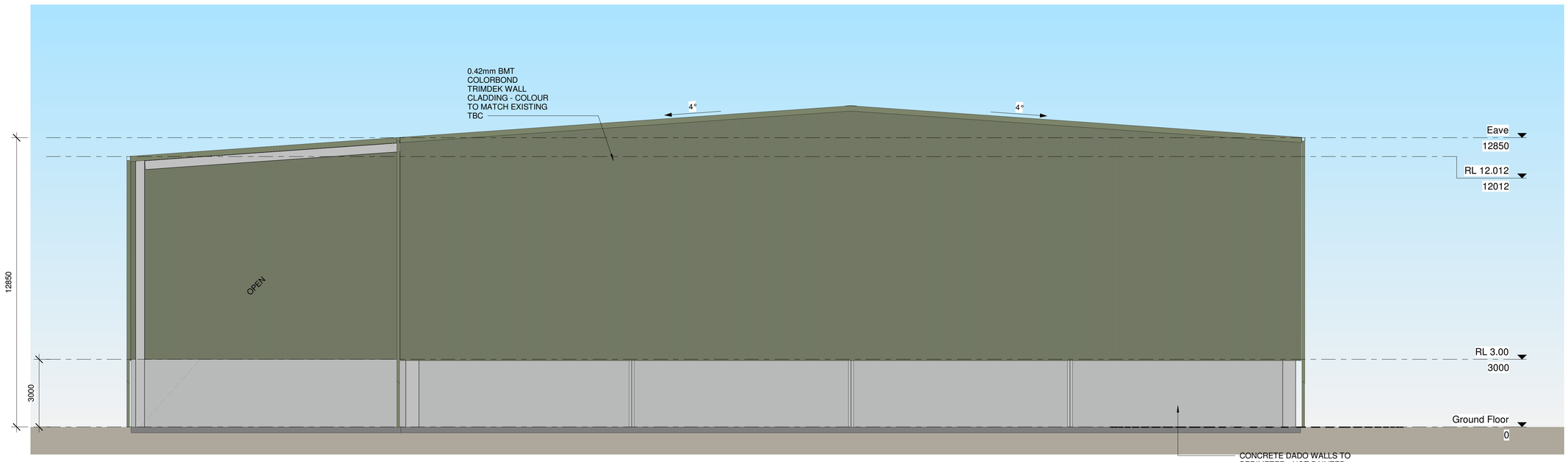

2 West
1 : 100

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Notes

No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21

IWS

STAGE 2 PROCESSING SHED	
99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA	
DRAWING - EXTERNAL ELEVATIONS SHEET A	
Project number	DSK21211
Date	03.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status
DA SUBMISSION

A30-01

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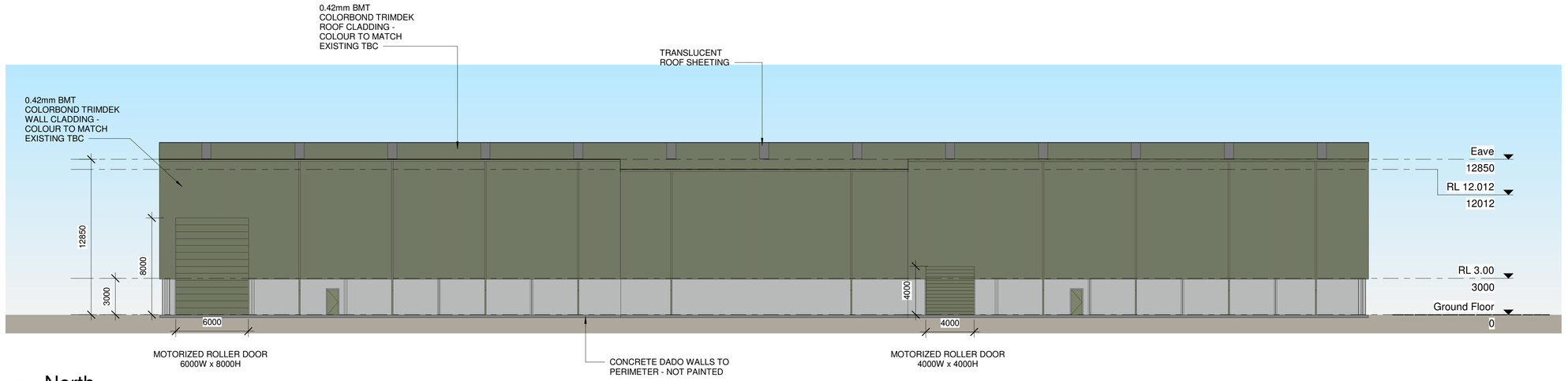
Scale 1 : 100



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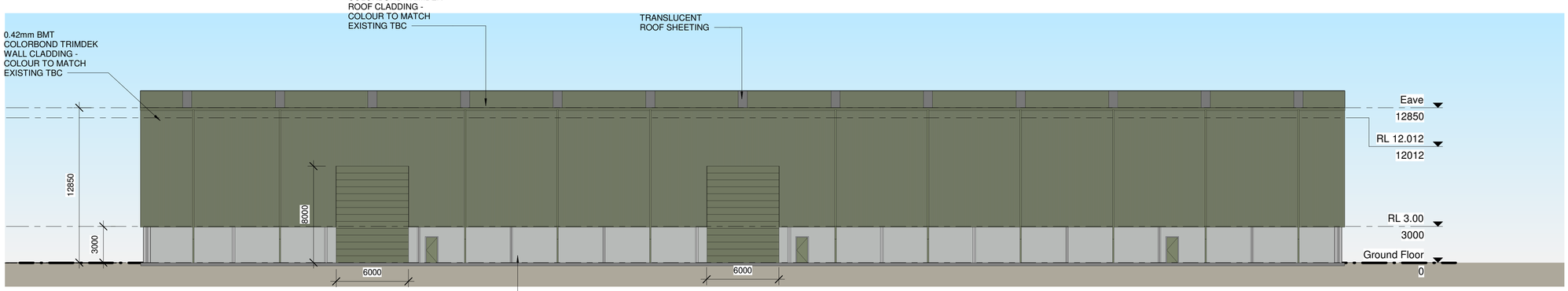

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ISSUE OF CAD FILE

Ahrens

Notes

No.	Description	Date
AA	DA SUBMISSION	31.05.21
BB	Amendments	03.06.21

IWS

STAGE 2 PROCESSING SHED	
99 LEMMY RD, DUBLIN, SOUTH AUSTRALIA	
DRAWING - EXTERNAL ELEVATIONS SHEET B	
Project number	DSK21211
Date	03.06.21
Drawn by	MB
Checked by	AM
Approved by	AM
Current Revision	BB

Drawing Status
DA SUBMISSION

A30-02

North

Scale Bar
0m 2m 4m 6m 8m 10m
VISUAL SCALE 1:200 @ A1

Scale 1 : 200

ENVIRONMENTAL IMPACT STATEMENT
GUIDELINES FOR A SOLID WASTE LANDFILL DEPOT
DISTRICT COUNCIL OF MALLALA

INTRODUCTION

The Minister for Housing, Urban Development and Local Government Relations decided in October 1994 that an Environmental Impact Assessment (EIS) would be required under Section 46 of the Development Act 1993 for the landfill proposal in the District Council of Mallala. An EIS under the Development Act is intended to address the critical issues relating to a proposal.

The proponent is P. & M. Borrelli and Sons Pty Ltd. The proposal is for a landfill for disposing of domestic, solid industrial and commercial waste. Hazardous liquids or chemical wastes will not be accepted at this site. The site chosen covers 440 hectares. The landfill operational life is envisaged to be between for 30-55 years.

THE EIS PROCESS

An Environmental Impact Statement, as defined in the Development Act, means a statement of the expected social, economic, and environmental effects of the development or project. The EIS should consider the extent to which the expected effects of the development or project are consistent with the provisions of any relevant Development Plan, the Planning Strategy, and any matters prescribed by the Regulations. The EIS should also state the conditions (if any) that should be observed in order to avoid or satisfactorily manage and control any potentially adverse effects of the development or project on the environment. Further it should consider any other particulars required by the Minister or by the Regulations.

The EIS process is intended to ensure that the implications of a project considered to be of environmental, social or economic importance are examined, these can then be taken into consideration by the decision-makers.

The EIS process allows public participation at several points and is conducted with reference to a timeframe agreed by the proponent and the Environmental Impact Assessment Branch (EIA Branch) of the Department of Housing and Urban Development (DHUD). The steps of the process where public input is invited are marked with an asterisk * as follows:-

- EIS required
- * Guidelines prepared and exhibited publicly
- Proponent prepares EIS document
- * Public exhibition of EIS document (at least 6 weeks). Written submissions invited. Public meeting may be held during the exhibition period to assist people in the preparation of their submissions
- Proponent responds to public submissions and any other matters required by the Minister
- The Assessment Report is prepared for the Minister by the EIA Branch of DHUD.

The EIS, response, Assessment Report and development application are then sent to the Governor who is the decision maker. There is no appeal against a Governor's decision.

Copies of the EIS, response and Assessment Report will be publicly available for inspection and purchase at a place determined by the Minister and notified in public advertisements.

A flow chart describing the process is attached in Appendix A.

THE EIS DOCUMENT

The following should guide the production of the EIS document.

The document can be presented in two main sections

- Part A Draft Waste Depot Management Plan
  describes the environment, the proposal, and how the depot is to operate.(Appendix B contains the index for the plan)

- Part B Environmental Impacts
  discusses the environmental, social and economic impacts and how they have been considered in formulating the operating plan (including monitoring and rehabilitation) and seeking planning approval. It must also deal with any matter set out in Section 46(1) of the Development Act not already referred to.

The Document should provide the following.

SUMMARY

The Environmental Impact Statement (EIS) should incorporate a discussion of the matters set out in Section 46(1) and include a concise summary of all aspects covered under the headings set out in the guidelines below, in order for the reader to obtain a quick but thorough understanding of the proposal and the resulting environmental impact.

BROAD OBJECTIVES OF THE PROPOSED DEVELOPMENT

The EIS introduction should contain a brief statement of the objectives of the proposed development with reference to the present and future operations of the company/developer, the nature of the waste disposal operation, type of waste, and the timing of the operation. Alternative locations within the region should be discussed. Reference should be made to current waste management plans prepared by the S.A. Environment Protection Authority - Recycling and Waste Branch.

PART A WASTE DEPOT MANAGEMENT PLAN (WDMP)

Appendix B contains the Index provided to the applicant for the preparation of the Plan (as required by the Environment Protection Authority for licensing purposes) which should identify the nature of the site, the proposal and the details of how the depot will be operated.

The General Conditions of Licence Applying to Solid Waste Depots are attached in Appendix C.

PART B ENVIRONMENTAL IMPACTS

This section should provide the information and discussion of the issues which have been considered and evaluated in arriving at the proposed operation outlined in the Waste Depot Management Plan (WDMP) described in Part A.

This part of the EIS should describe all other factors of the existing environment which have not been included in the WDMP and evaluate the potential environmental impact of the development, both direct and indirect, both beneficial and detrimental, using the description of the existing environment (site and surrounding area) as a baseline. Due consideration should be given to the short-term effects of construction and establishment as well as those of long term operation, site rehabilitation and future use. It should give due regard to Section 46(1) of the Development Act which states:

"environmental impact statement", in relation to a development or project, means a statement of -

(a) the expected social, economic and environmental effects of the development or project;

(b) the extent to which the expected effects of the development or project are consistent with the provisions of -

(i) any relevant Development Plan; and

(ii) the Planning Strategy; and

(iii) any matters prescribed by the regulations;

(c) the conditions (if any) that should be observed in order to avoid or satisfactorily manage and control any potentially adverse effects of the development or project on the environment;

(d) any other particulars in relation to the development or project required -

(i) by the regulations; or

(ii) by the Minister.

Description of Existing Environment - off site

This section should include information on those other characteristics of the environment not incorporated in the WDMP. These should include;

- meteorological data - rainfall, temperature, wind, air quality
- nature and type of adjacent land uses

Potential Environmental Impact

The following points should be addressed in the evaluation of the potential environmental impact of the proposed waste disposal site development and operation.

1. Location

Site Area Required for Development

The effects of the proposed land use change, given the area required for the development, and adjacent existing land uses should be examined.

Constraints on Proposal

This section should discuss how constraints on the proposal are to be resolved.

Constraints to be considered include;

- proximity of other land uses including other similar operations;
- suitability of local geology and soil conditions;
- impact on existing road access and current users (Pt Wakefield Rd and local roads):
- existence of local surface water movement;
- impact of the proposal on local regional groundwater systems and the environment.

Groundwater

Impact of the proposal on groundwater, the aquifers, recharge/leakage/outflow, water quality, existing uses and the potential effects on the Gulf should be examined.

Visual Impact

Visual representations of the waste disposal depot at progressive stages would be useful. The general visual impact of the depot on the local area in both the short and long terms should be described and evaluated. The estimated time for rehabilitation to take effect should be discussed, and the visual impact of the proposed future use described.

Noise

The frequency, regularity, sources and impacts of any noise associated with depot preparation and operation should be evaluated with respect to accepted standards and legislation.

Air quality

The proposal's acceptability in terms of standards and legislation for air quality should be discussed and any significant source of pollutant material (including dust) in the proposal examined and remedial measures to be adopted described.

Cost and Economic Impact

A cost estimate should include site acquisition, planning development, operation and rehabilitation costs. Consideration should also be given to costs associated with the adoption of safeguards and standards for the protection of the environment. The undertakings proposed should be included in the Appendices to the WDMP. Regional economic consequences should be addressed. Employment opportunities and the sections of the community affected must be addressed.

2. Site Preparation and Operation Implications

Describe in detail the implications of site preparation and depot operation methods to be used, and any environmentally sensitive aspects where impacts should be minimised. Protective measures for sensitive areas should be described. The results of many of these investigations will be in the WDMP.

Resources Required

The impacts of the type of material required for site preparation and operation, sources of materials, and transportation methods to and within the depot location should be described.

Solid Waste Characteristics

The reasons for the choice of operation and procedures to be used should be discussed in relation to the sources, quantity and nature of wastes to be disposed at the site. Reference should be made to alternative methods and appropriate legislation and regulations. Litter management on and off site should be addressed.

Leachate Control and Disposal

Provision should be made for the minimisation of leachate. The document should evaluate the potential for leachate, and migration of leachate, and include plans for the environmentally acceptable disposal of any leachate which may occur.

Construction and Operating Traffic

Measures to restrict traffic or the impacts of traffic in environmentally sensitive areas should be described.

Rehabilitation Measures

Proposed measures for rehabilitation, which may include landscaping, topsoil conservation and native seedling protection, the expected final state of the site, and possible end use of the land should be described. The commitments to be made by the applicant should be included in the WDMP.

Public Health

Measures to be taken to protect public health should be discussed and the commitments included in the WDMP.

3. Associated Biophysical and Social Impact

Flora

Consideration should be given to impacts on population stability and the ability of the flora to regenerate after disturbance. The conservation significance of the flora should be indicated, and any significant associations discussed. A discussion of any expected impact on protected, rare and endangered plant species should quantify affected plants and analyse the effect on the viability of the populations.

Fauna

The impacts of the proposed waste disposal depot on fauna (aquatic and terrestrial) should be evaluated (e.g. destruction of habitats, disturbance of breeding patterns, etc.). It should be ensured that adequate feeding and breeding grounds are maintained in an undisturbed state for the region's fauna.

Natural Drainage

Impacts on natural drainage patterns, including both semi-permanent and permanent swamps, and measures to minimise these impacts should be discussed. The ecological value of local wetland habitats should be assessed.

Erosion

The probabilities of erosion resulting from the project should be evaluated and appropriate ameliorative measures proposed. Specific problem areas should be discussed separately.

Introduction of Pests

The risk of escalation of vermin should be investigated in relation to construction and operation of the depot, and the potential impacts on the surrounding areas and uses of the lands. Preventive and control measures should be described and incorporated in the WDMP.

Heritage

Sites of archaeological, anthropological or historical significance should be recorded and legislative requirements observed. Their conservation significance should be evaluated and protective measures proposed if they are likely to suffer detrimental impact from the proposal.

PUBLIC PARTICIPATION

The level of public involvement in the planning and decision-making process leading to the compilation of the application and the EIS document should be described. Outline the nature of objections raised in any known public response.

LEGISLATION AND CODES OF PRACTICE/ENVIRONMENTAL SAFEGUARDS AND STANDARDS

The appropriate legislation and codes of practice applying to the proposal should be identified and its compliance discussed.

The safeguards and/or standards proposed to minimise the environmental effects of the proposed action should be discussed, together with the costs and benefits of adoption or non-adoption of such safeguards and standards. Reference should be made to existing environmental legislation and relevant codes of practice, such as those relating to noise, leachate and dust control with the intended actions described. Some of this information will be included in the WDMP.

Contingency plans should be formulated to deal with accident events, such as fire, and surface flooding. Commitments to ameliorative action could include measures such as special equipment, drainage, fencing, hours of operation, restricted access, restriction of traffic movement and special rehabilitation measures.

MONITORING AND REVIEW

Monitoring is required to determine the actual environmental impact of the proposal after commencement of operation. Baseline data extracted from the survey of the existing environment are necessary to gauge relative changes in environmental parameters. This will enable the effectiveness of environmental safeguards and standards that have been incorporated into the development and the actual environmental impact of the project to be checked and compared with the predicted impacts. A monitoring programme for this purpose should be formulated and discussed in this section and the appropriate section of the WDMP. These monitoring studies should be carried out over a time span long enough to obtain information on any seasonal or long-term changes, they should be commenced prior to operations starting and continue until long-term impacts are fully documented.

Monitoring is also required during the initial site preparation phase to cover those areas likely to be affected by that activity. If monitoring gives an indication of unacceptable environmental degradation, there must be provision in the design to allow for tightening of the initial standards and rectification of damage where possible.

SOURCES OF INFORMATION

The sources of information (e.g. reference documents, literature sources, research projects, authorities consulted) should be fully referenced. Where judgements are made, these will need to be clearly identified and the basis on which these judgements are made and the expertise of those making the judgements will need to be spelled out. The qualifications of consultants and authorities should also be provided.

APPENDICES

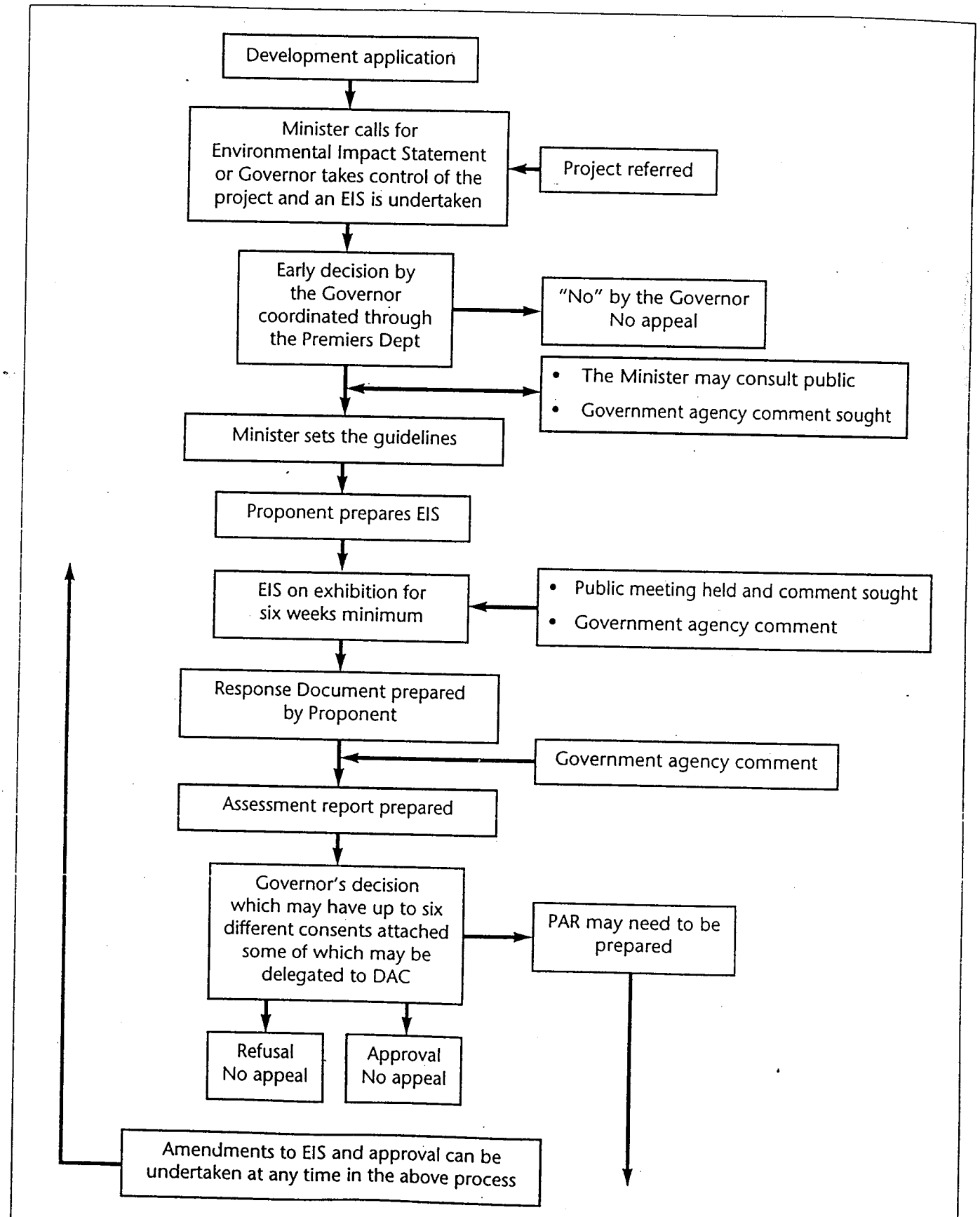
Additional information relevant to the EIS that is not included in the text should be included in the appendices (maps, graphs, tables, photographs, reports, etc.). A glossary may be appropriate.

The design of the proposal should be flexible enough to incorporate changes to minimise any impacts highlighted by this evaluation or by post - operational monitoring programmes.

APPENDIX A

ASSESSMENT PROCESS FOR PROJECTS OF MAJOR SIGNIFICANCE

Key steps



Development Act 1993

Second Amendment to the

Assessment Report

for the

ENVIRONMENTAL IMPACT STATEMENT AMENDMENT

IWS Northern Balefill Multiple Waste Treatment Facility, Dublin

Government of South Australia

Development Act 1993

Second Amendment to the

Assessment Report

for the
ENVIRONMENTAL IMPACT STATEMENT AMENDMENT

IWS Northern Balefill Multiple Waste Treatment Facility, Dublin

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Minister for Urban Development and Planning

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ISBN 9780759000896
FIS 23003

August 2009

CONTENTS PAGE

1 INTRODUCTION

This Second Amendment to the Assessment Report (AAR) has been prepared by the Minister for Urban Development & Planning and assesses the environmental, social and economic impacts of a proposal by Integrated Waste Services Pty Ltd (IWS) to establish a Multiple Waste Treatment Facility (MWTF) at the IWS Northern Balefill (balefill) landfill. The balefill is located approximately 50 kilometres north of Adelaide and 3 kilometres south of Dublin, in the District Council of Mallala. Information on establishment of the IWS balefill site can be obtained from the *Assessment Report for the Environmental Impact Statement for the IWS Northern Balefill* (1997) and the *Amendment to the Assessment Report for the Environmental Impact Statement for the IWS Northern Balefill* (2005).

1.1 BACKGROUND

IWS obtained development authorisation from the Governor on 29 January 1998 to establish and operate a balefill near Dublin. Solid waste material from metropolitan Adelaide is processed at the IWS Resource Recovery and Transfer Facility (RRTF) located at Wingfield. The RRTF receives waste from domestic, commercial and industrial premises, building and demolition waste and green waste. Waste material not able to be recycled at the RRTF is compressed into bales (where the material allows this to be undertaken) and is then transported to the IWS landfill and placed into a cell that has a compacted clay liner and drainage layer and collection system for liquid (leachate) that permeates through the waste. The Environment Protection Authority (EPA) issued a Waste Depot & Recycling licence to IWS on 1 September 2001 to enable operation of the landfill, which was commissioned on 22 May 2002.

Following an EIS Amendment process, the Governor approved a change to the balefill operation in September 2005 to incorporate a Low Level Contaminated Waste and Liquid Treatment Residues facility. The amended EIS was the subject of a three week public consultation period in August/September 2003. An amended Assessment Report was released May 2005.

The site is currently licensed by the EPA to receive a range of non-recyclable waste (mainly putrescible 'household' waste compacted into bales), some demolition waste, low level contaminated waste and liquid treatment plant residues.

On 26 November 2008, IWS made an application to vary the development authorisation to enable the establishment of a Multiple Waste Treatment Facility for the reception, treatment and disposal of contaminated soil and sludges (ie. High Level Contaminated Waste). A copy of the proponent's Application for a Variation to the Development Authorisation (June 2008) is attached as Appendix A.

The Minister for Urban Development and Planning determined that the proposed new waste stream was not envisaged in the earlier EIS nor the amended EIS, and accordingly a second amended EIS should be prepared by IWS, in accordance with the relevant provisions of the *Development Act 1993.* The document titled "Integrated Waste Services, Northern Balefill, Dublin, Multiple Waste Treatment Facility, EIS Amendment dated 24 November 2008" (AEIS) was prepared by the proponent and included details of the proposal and anticipated effects.

1.2 ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURES

Section 47 of the *Development Act 1993* enables the Minister to publicly exhibit the EIS Amendment if of the opinion the amendment "significantly affects the substance of the EIS. The Minister then formed this opinion. Following a 3 week public display period for the EIS Amendment, between 11 February and 4 March 2009, all public and government submissions were forwarded to the proponent to respond to the matters raised on the EIS Amendment. Copies of all submissions received are included in Appendix A. The proponent's response to submissions is included in Appendix B.

Pursuant to Section 47 of the Act, in preparing this Second AAR, consideration has been given to; the original EIS; the Amended EIS; submissions from the public, the EPA and other government agencies; comments from the District Council of Mallala; the proponent's response to submissions; additional advice from the EPA; and any other matters considered relevant.

Pursuant to Section 48(7) of the Act the Governor must, when making a decision, have regard to the provisions of the appropriate Development Plan and the relevant regulations, Building Rules (if relevant), and the Planning Strategy. Further, when making a decision on an "activity of environmental significance", as listed in the Act, the Governor must have regard to certain provisions of the *Environment Protection Act 1993*. In particular, the Governor must have regard to the Objects of the Act, the general environmental duty under the Act and any relevant environment protection policies. The Governor must also, pursuant to Section 48 (5)(e) of the *Development Act 1993*, have regard to the EIS Amendment and the Second AAR. Further, as indicated in Section 48(7), the Governor may specify conditions which should be attached to a development authorisation that must be complied with in the future and under some circumstances, may vary or revoke conditions to which the development authorisation is subject or attach new conditions to the development authorisation.

2. PROJECT DESCRIPTION

2.1 PROJECT JUSTIFICATION

The proposed MWTF would satisfy the need for a licensed facility in South Australia for the treatment and/or disposal of soils containing listed wastes (ie. High Level Contaminated Waste). There is currently no such facility available in the State, although the Southern Waste Depot can be used for treating contaminated materials, but only if approved by the EPA on a case by case basis. Whilst the Southern Waste Depot currently does not achieve the level of standard proposed by the MWTF (and preferred by the EPA as best practice), the operator is proposing to upgrade the treatment facility to meet such standards.

Sites containing contaminated soils are currently managed either by on-site remediation (which in built up areas can impact on neighbours and local communities), 'capped' in an untreated state, transported interstate or left un-remediated (and the site left un-developed). These options may not result in best practice waste management or may have transport implications (including financial and greenhouse emission costs). In particular, the lack of a treatment facility can reduce or restrict the development potential of contaminated land. There is likely to be an increased demand for such a facility due to increasing levels or urban renewal and infill development for residential purposes, often for sites that are difficult or costly to develop due to past contamination.

Some contaminated sites cannot be remediated on-site, which can restrict the development potential of a site. The proposed 'soil swapping' option would provide a benefit to the building industry, as it would enable contaminated sites to be remediated quicker and would allow a site to be redeveloped for a wider range of uses (especially residential).

The proposal to deposit highly contaminated waste at the Dublin site would be integrated with the current landfill operations and would benefit from utilising existing infrastructure and the environmental management programme. In particular, it would compliment the current Low Level Contaminated Waste disposal operations at the site. Thus, the landfill would provide a range of waste management services at a single consolidated location.

Whilst the original EIS did not envisage the treatment and disposal of contaminated materials, there are benefits in expanding the use of the existing waste depot, as an alternative to establishing a separate facility at a different site. The EPA considers that any potential risk to adjacent land uses, groundwater or the Gulf St Vincent can be suitably managed within the existing operations.

2.2 THE SITE AND CURRENT LAND USE

The proposed MWTF would be located within the existing IWS Northern Balefill, adjacent the landfill cells area. The Balefill is currently licensed by the EPA as a Waste or Recycling Depot (EPA Licence No. 11275) and operates under a Landfill Environmental Management Plan (LEMP). On 2 April 2009, the EPA provided IWS with a list of revisions that need to be made to the LEMP and improvements that need to be implemented at the Balefill.

The establishment of a MWTF within the existing waste depot does not represent a change in land use, as the proposed materials to be accepted are waste products.

The adjacent land uses have not changed since the original EIS was produced in 1996 and comprise, intensive animal keeping facilities within 1 km of the property boundary (namely piggeries, feedlots, chicken and poultry) and two residences within 500 m of the eastern property boundary.

2.4 THE PROPOSAL

A general description of the proposed facility and method of operation is provided in this section. For a more detailed description refer to the proponent's EIS Amendment document (dated 24 November 2008).

The proposal is for the receival, storage and treatment of high level contaminated waste within a Multiple Waste Treatment Facility (MWTF). The dimensions of the MWTF would be 125m length X 50m width X 12m height and would have the capacity to treat up to 6,000m^3 of materials. The MTWF would comprise a large colourbond shed type of building, with a fully bunded concrete base (including individual receiving bays and a 1% drainage slope, drain and sump for leachate collection).

It is proposed to construct the MWTF in two stages as follows:

- Stage 1 – construction of a concrete base to serve as a temporary storage and laydown area for soil stockpiles prior to treatment. Stockpiles would be covered to prevent stormwater infiltration and for dust suppression.

- Stage 2 – construction of the MWTF building and roof over the storage/laydown area

The eastern half of the building would comprise a fully enclosed, negative pressured treatment facility, with rapid closing doors and an exhaust gas removal system incorporating a biofilter to capture potential odours and fugitive emissions (ie. dust and contaminants). The western half of the building would comprise a semi-enclosed (ie. partially open sided) storage area. A site amenities building, office and laboratory would be built onto the eastern end of the MTWF.

After document checking and clearance, trucks arriving at the facility would enter the eastern end of the MTWF through rapid closing doors, unload materials into specified bays, then exit the western end through rapid closing doors. Contaminated materials will then undergo appropriate treatment (bioremediation or contaminant stabilisation using biological and chemical additives). Treated materials would either be disposed of into existing and future landfill cells designed for the containment of low level contaminated waste or be reused where appropriate. The proposed MWTF would have the same hours of operation as the landfill.

The MWTF would primarily treat contaminated soil, although it would have the capacity to treat other high level contaminated wastes, such as non-liquid industrial residues/process waste, sludge and sediment. The source of materials would be from a range of contaminated sites needing remediation, such as petrol stations, rail yards and industrial land. The range of contaminants that the facility could treat include:

- inorganics (ie. heavy metals)
- total petroleum hydrocarbons (including semi-volatile and volatile organic compounds)
- monocyclic aromatic hydrocarbons
- acid sulphate soils

Future technologies, such as thermal desorption, in vessel composting and solvent extraction, could be employed to treat persistent organic pollutants (eg. pesticides and dioxins), polychlorinated biphenyls and polycyclic aromatic hydrocarbons. Such treatment processes would need to be approved by the EPA before they could be used.

Soil swapping would also be provided as a service, whereby trucks unloading contaminated soil could be back-loaded with clean soil from the balefill site (ie. after going through a washdown facility) for more efficient land remediation.

The landfill site is connected to electricity, mains pressure water, telephone services and a septic tank for sewerage facilities. A sealed road extends from the entry gates to a weighbridge and gatehouse. Staff amenities have been established in a caretaker's residence, which enables an IWS staff member to be present at all times. A workshop is also located on the balefill site to enable the maintenance of plant and equipment used at the site.

In the long-term, the proponent has a vision to establish a one-stop-shop site for the receipt, treatment, recycling, recovery, energy generation and (where necessary) disposal of wastes based around the MWTF location. It should be noted that the proposed future components, such as energy generator, resource recovery facility and MRRF, have not been considered as part of this assessment and would need to be the subject of separate applications in the future.

3. CONSISTENCY WITH GOVERNMENT POLICIES

When making a development decision on a major development or project for which a declaration applies, the Governor must have regard to the Planning Strategy, provisions and regulations in the Development Plan and if relevant, Building Rules. In addition where the development involves a prescribed activity under the *Environment Protection Act 1993*, the Governor must have regard to the objects of the Act, the general environmental duty and any relevant environment protection policies.

Since development approval was granted to the IWS Balefill in January 1998 there have been changes made to the Planning Strategy and Development Plan. The following sections assess the proposal against relevant provisions of the Planning Strategy and Development Plan at the time of decision.

3.1 PLANNING STRATEGY

In making a decision on the proposal the Governor must have regard to the Planning Strategy for the Outer Metropolitan Adelaide Region (December 2007). The Planning Strategy sets out the State Government's vision for development and directions for future growth and development for the community, the private sector and local government. The Planning Strategy is based on the integration of economic, social and environmental factors pertinent to Outer Metropolitan Adelaide.

This assessment of the proposal has had regard to specific policies in the Strategy that relate to waste management. Previous assessments of the appropriateness and sustainability of establishing a waste depot (balefill) at the site and the suitability of disposing of low level contaminated waste against the key directions and policies of the Strategy have been made in the original Assessment Report and Amendment to the Assessment Report.

In regard to general policies related to economic activity, the community and the environment, the following assessment has been made:

- The proposal involves the reception of additional waste materials at an approved waste depot on land that is now alienated from agricultural use and no additional land will be lost from agricultural use. There are existing buffers established at the site and, as discussed in Sections 5 and 6, management and monitoring measures ensure there would not be impacts on adjacent land uses.

- The proposal involves the establishment of a facility to receive contaminated soil that has originated from the cleanup of contaminated sites. Without appropriately designed and managed facilities able to service metropolitan Adelaide and regional areas, remediation of site contamination may not occur or result in higher costs to the community. This facility will primarily service the northern metropolitan area but would also be available to the regional community.

- The proposal involves the establishment of a facility for receipt of high level contaminated waste at an existing waste depot. This means there is no need to establish a new facility at an alternative location and therefore provides for an orderly, efficient and

economical option for management of listed wastes. Establishment of the facility in an approved waste depot enables EPA approved management and monitoring practices to be implemented and upgraded thereby minimising potential impacts on the community. The design of the facility is to a high standard and together with the management and monitoring measures proposed will minimise impacts on the community and the environment. Community involvement has occurred through the public consultation process associated with this proposal.

Region Wide Policies – Integrated Waste Management

1. Develop waste treatment and resource recovery facilities at strategic locations to optimise opportunities for re-use and recycling of waste in accordance with the Waste Management Hierarchy.
(a) Identify strategic locations for waste management facilities and sites for future facilities and ensure these are protected from incompatible uses such as housing, becoming established or intensified adjacent to them.
(b) Plan for and develop a range of waste processing facilities.
(c) Ensure that infrastructure and systems are developed and sites located for the management of residual and hazardous waste.

2. Gain the highest resource value from the waste stream.
(a) Cluster, co-locate and rationalise facilities and businesses to create strategic hubs to assist in development of new markets and products for recycled materials and encourage the use of landfill gas and waste as energy sources.
(b) Encourage waste facilities, agricultural enterprises and businesses to continue to adopt new environmental best practice methods and technologies that also increase economic returns on recycled materials.
(c) Encourage development of organic waste processing facilities to reduce the volume disposed to landfill.

3. Ensure urban design and buildings incorporate appropriate space, facilities, access and construction methods to manage waste in accordance with the Waste Management Hierarchy.
(a) Develop best practice designs for dwellings and neighbourhoods to ensure that waste can be reduced, recovered and recycled.
(b) Identify opportunities to further develop facilities, businesses and markets for recovery and recycling of building demolition waste.

4. Ensure waste management facilities incorporate best practice technologies and processes to avoid impacts on sensitive land uses and minimise nuisance.
(a) Monitor waste resource recovery and transfer, residual and hazardous waste facilities and water protection areas.
(b) Create opportunities to treat wastewater for reuse and/ or safe disposal.

Conclusion

The proposal is consistent with the Planning Strategy, in that it would be undertaken in a strategic location at a site that is an existing waste depot (ie. clustering of related activities) where the potential impacts can be managed appropriately using best practices. The proposal would also facilitate the safe disposal of treated materials or the reuse/recycling of

materials that would usually go to landfill. In addition, the site has the potential for future development of new treatment technologies and the use of landfill gas/waste as energy sources.

3.2 THE DEVELOPMENT PLAN

The relevant Development Plan is the Mallala (DC) Consolidated version dated 18 December 2008. The Development Plan contains policies relating to the Outer Metropolitan area and the Council Wide area. The existing balefill and site for the MWTF is within the General Farming Zone.

Council Wide

Waste Management

Objective 35 The orderly and economic development of waste management facilities in appropriate locations.

Objective 36 Minimisation of environmental impacts from the location and operation of waste management facilities.

Objective 37 Waste management facilities protected from incompatible development.

Environment Protection

Objective 38 Protection of the quality of water resources and coastal areas from hazardous waste, discharge or storage uses.

Objective 39 Control the export of sediment, suspended solids, organic matter, nutrients, bacteria and litter in stormwater run-off.

Objective 41 Hazardous substances handled, stored and used with extreme care and appropriate safety precautions.

The proposal would comply with the relevant Council Wide objectives as it would be undertaken at an approved/licensed waste depot site and impacts would be suitably controlled through design, management and monitoring provisions (addressed in an EPA approved Environmental Management Plan).

Principles of Development Control

General

2 Development should take place in a manner which will not interfere with the effective and proper use of any other land and which will not prevent the attainment of the objectives for that other land.

Waste Management

121 Waste management facilities should be located, sited, designed and managed to minimise adverse impacts on both the site and surrounding areas due to generation of surface water and ground water pollution, traffic, noise, odours, dust, vermin, weeds, litter, gas and visual impact.

123 Waste management facilities should be provided with appropriate separation distances to minimise adverse impacts on the surrounding area and land uses.

127 Landfill and associated facilities for the handling of waste, should be located at least a distance of 500 metres from the boundaries of the landfill site. A lesser distance may be provided within the land-fill site where the land-fill facility is considered compatible with the surrounding area, land uses and activities so that an effective minimum separation distance of 500 metres can be provided and maintained between the land-fill facility and potentially incompatible land uses and activities.

128 The area of landfill operations on a site should:

(a) be located a minimum distance of 100 metres from any river, creek, inlet, wetland or marine estuarine area and not within the area of a 1 in 100 year flood event; and

(b) not be located on areas with ground slopes of greater than 10 percent except where the site incorporates a disused quarry; and

(c) not be located on land subject to land slipping; and

(d) not be located within three kilometres of an airport used by commercial aircraft. If located closer than three kilometres the land-fill operations should incorporate bird control measures to minimise the risk of bird strikes to aircraft.

130 The waste management site should be landscaped to screen views of the processing facilities and operational areas.

131 Sufficient area should be provided within the waste management site to ensure on-site containment of potential groundwater contaminants and for the diversion of stormwater.

132 Noise reduction treatments comprising separation distances and the incorporation of on-site treatments should be provided to ensure noise generation associated with the waste management operation does not result in an adverse impact to any existing or future development on an adjacent allotment.

134 Leachate from waste management activities should be contained within the property boundary of the waste management site and should not contaminate surface water or ground water.

142 Waste management sites should be accessed by an appropriately constructed and maintained road.

143 Traffic circulation movements within the waste management site should be adequate in dimension and construction to support all vehicles hauling waste and to enable forward direction entry to and exit from the site.

144 Suitable access for emergency vehicles to and within the waste management site should be provided.

145 A proposal to establish, extend or amend a waste management operation should include an appropriate Environment Management Plan that addresses the following:

(a) The prevention of ground water and surface water contamination;

(b) The need to protect and enhance native vegetation;

(c) Litter control, dust control and sanitary conditions generally;

(d) Odour and noise control;

(e) Fire safety;

(f) Security;

(g) Maintenance of landscaping and the general condition of the site; and

(h) Final contour plan and rehabilitation proposals including soil cover, landscaping, drainage, the removal of any contamination or waste, restoration and the like to ensure compatibility with the surrounding landscape and to enable a suitable after use of the site.

The proposal would comply with the above principles of development control. An EMP for the MWTF would addresses issues relating to treatment and storage activities, especially potential impacts from air emissions. The Current LEMP would need to be amended to address the control and management of stormwater, visual amenity (ie. vegetated screens and mounds) and the disposal of treated waste to low level contaminated waste cells.

General Farming Zone

Objectives

Objective 1 Maintenance of general farming activities and land use on large property holdings.

Principles of Development Control

6 New buildings and structures or alterations and additions to existing ones should, where possible be of traditional style and appearance and be clustered with other buildings, and in all respects designed and landscaped to enhance the amenity and compliment the existing character of the locality.

18 Development involving the reception, storage, treatment or disposal of waste, except for the processing of organic waste, should not occur.

Under Principle 19, the *disposal, treatment and/or storage of contaminated soil and waste referred to in Schedule 2 of the Waste Management Regulations, 1988* is listed as a kind of development that is non-complying in the General Farming Zone.

The proposed development is within a land holding that has previously been declared and approved (under the Major Development provisions of the *Development Act 1993*) for the establishment of a waste depot. The proposal would not establish or develop a new use, but would cater for additional waste types within the existing facility. The MWTF would comprise a large, colourbond shed that would be similar to other large structures in the area used for primary production (especially for intensive animal keeping).

Conclusion

It is concluded that, notwithstanding the "non-complying" nature of the proposed development in the relevant zone, the proposal is not "seriously at variance" with the Development Plan. Section 5 assesses the potential issues in detail.

3.3 BUILDING RULES

This report does not include specific assessment of the proposal against the provisions of the Building Rules under the *Development Act 1993*. If the Governor grants Provisional Development Authorisation, Building Rules certification would be a reserved matter requiring additional approval (pursuant to Regulation 64 of the Act) from the Governor or the Development Assessment Commission (as delegate of the Governor), following certification by a private certifier or the District Council of Mallala. This matter would relate to the design of the MWTF building.

3.4 ENVIRONMENT PROTECTION ACT

The proposed development involves an activity of major environmental significance as prescribed in the *Environment Protection Act 1993* and accordingly was referred to the EPA. When proposals involve activities of major environmental significance the Governor, before making a decision on the proposed development, must have regard to the objects of the Act, the general environmental duty and any relevant environment protection policies.

The objects of the Act are:

- *To promote the principles of ecologically sustainable development;*

- *To ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment having regard to the principles of ecologically sustainable development, and to prevent, reduce, minimise and, where practicable, eliminate harm to the environment.*

In addition, proper weight should be given to both long and short term economic, environmental, social and equity considerations in deciding all matters relating to environmental protection, restoration and enhancement. The EPA is required to apply a precautionary approach to the assessment of risk of environmental harm and ensure that all aspects of environmental quality affected by pollution, and waste are considered in decisions relating to the environment.

Changes to the Act relating to site contamination (ie. increased liability and responsibility for cleaning up polluted sites) are likely to lead to increased demand for facilities that treat and dispose of contaminated waste.

The proposal would help meet key objectives of South Australia's Waste Strategy 2005 – 2010 by encouraging sustainable behaviour through the provision of a facility for the improved management (esp. treatment and reuse) of wastes in the State.

The EPA provided comment on the Amended EIS (refer to Section 4.3.1) and provided further advice in reply to the proponent's response to submissions (Appendix D).

3.5 OTHER MATTERS FOR CONSIDERATION

South Australia's Strategic Plan (2007)

The Governor is also required to have regard to any other matters considered relevant. In this context, an assessment has been carried out with reference to the Strategic Plan. The Plan seeks to widen opportunities for all South Australians through the pursuit of six strategic objectives:

1. Growing prosperity
2. Improving well being
3. Attaining sustainability
4. Fostering creativity and innovation
5. Building communities
6. Expanding opportunities

In particular, the proposal could help achieve the T3.8 target of reducing waste to landfill by 25% by 2014.

Of relevance to the proposal are the objectives of improving well being by improving the quality of life and well being of the community and individual citizens, and attaining sustainability, with the focus being on the protection of biodiversity, sustainable water and energy supplies and minimising waste.

Past industrial practices have resulted in the contamination of land that has the potential to impact the health and well being of the community and individuals. In addition in order to minimise the State's ecological footprint there is an opportunity to redevelop land that has been degraded by contamination for residential use, subject to appropriate clean-up being undertaken. In many instances there are no economically viable technologies to treat the contaminated soils to

a level that would enable the effective use of the site for residential purposes. In these cases it would be necessary to dispose of the contaminated soils in appropriately located and designed facilities.

Establishment of an appropriately designed facility within the existing approved landfill site would mean there is no need to develop a new site with potential impacts on the community or biodiversity. The design and management measures proposed for the MWTF would provide a high level of environmental protection in terms of potential impacts.

The waste materials proposed to be treated and disposed of are primarily soils containing high level contaminants that come from sites that are difficult or costly to remediate.

The establishment of the proposed facility within an existing approved waste depot is considered to be appropriate from an environmental perspective and accords with relevant provisions of the Strategic Plan, provided it is managed appropriately. Section 5 considers these issues in detail.

Strategic Infrastructure Plan for South Australia (2005/6 – 2014/15)

The proposal would help meet the objectives and strategic priorities of the Strategic Infrastructure Plan for SA by potentially diverting some materials away from landfill for reuse or recycling. It would also provide a high-quality facility for the appropriate handling and disposal of hazardous waste that ensures community safety and the environment are protected. In addition, the site also has the potential to develop and implement technologies for the future recovery of energy from waste.

4. CONSULTATION WITH THE PUBLIC, COUNCIL AND GOVERNMENT AGENCIES

The EIS Amendment was placed on public exhibition for 3 weeks from 11 February to 4 March 2009, with 5 submissions received from the public and 6 submissions from government (including a submission from the District Council of Mallala). Refer to Appendix A for a copy of all submissions received. All submissions were forwarded to the proponent, which subsequently prepared a response to the submissions (Appendix B).

Due to concerns expressed by Councillors and ratepayers that the technical aspects of the EIS Amendment were difficult to understand, the District Council of Mallala held an information session on 6 April 2009 at the Two Wells Community Centre. At the session, the DPLG provided an summary of the development assessment process (ie. for a Major Development EIS Amendment), whilst the EPA summarised the landfill licensing process. Consultants for the proponent described the proposal in detail and answered questions raised by Councillors present.

4.1 PUBLIC SUBMISSIONS

The issues raised in the submissions were:

- EIS Amendment is of a technical nature and difficult to comprehend.
- Issues with EPA licence compliance. Ability of the operator to manage the impacts of more toxic waste.
- Potential for land or groundwater contamination.
- Sea level rise implications, especially for landfill cell liner integrity.
- Treatment in the open during high winds (mainly for Stage 1).
- Implications for the post closure phase of the landfill.
- Extent of buffers needed (including rezoning and compensation for adjoining landowners).
- Need for a new EIS.
- Hazardous waste treatment not the same level of risk as current operations and requires greater management. Previous EIS documentation would not have considered relevant requirements and impacts.
- Concern that Stage 2 would not be developed.
- Stage 1 comprises simplistic soil treatment and not considered best practice.
- Treatment method for volatile organics not considered acceptable, as will result in air pollution (with no management or monitoring considered).
- Acid sulphate soil treatment not considered best practice (ie. will discourage on-site avoidance or management) and may not prevent acidification.
- Inadequate details on soil swapping facility, especially verification of swapped-out soil quality.
- Inadequate detail on soil quality testing and QA/QC regimes.
- Environmental risk assessment seems overly simplistic and needs to consider social impacts.
- Should find a more suitable site.
- Potential impact of recent internal combustion fire within a landfill cell on air and groundwater quality.

- Potential effect on residents and agriculture, including maintaining produce quality assurance goals.

4.2 DISTRICT COUNCIL OF MALLALA

The District Council of Mallala submission made the following comments on the proposal:

- The storage facility should not be operational before the treatment facility is established. The whole proposal should be undertaken in one stage.
- Potential impact on rural activities and residents, especially from wind blown material.
- All structures will need Building Rules assessment and any amenities will require Council approved effluent disposal.
- Sea level rise implications.
- Confusion regarding scientific and technical aspects.
- There should be a community forum to explain the proposal.
- There should be adequate monitoring to ensure on-going compliance.

4.3 GOVERNMENT AGENCIES

Relevant government agencies were consulted, with comments received summarized below.

4.3.1 Environment Protection Authority

The EPA provided its initial comments as follows:

- Does not support an untied or separate two-staged development, but is supportive of a proposal conditional on Stage 2 being completed within 12 months of Stage 1 commencing construction.
- In order to justify the assertion that there would be no by-products of significance expected to be produced, the proponent must either undertake remediation trials or provide examples where the treatment of proposed waste streams have been treated with the proposed methods to produce treated wastes to levels that will be acceptable for reuse or disposal.
- Maximum Leachabilty Values in Table 1 are an order of magnitude above those for the SA EPA and US EPA and justification for the values has not been provided. Treated wastes must be disposed of as per the current leachability criteria. Trials need to be conducted on proposed waste streams to determine pre-treatment leachability values. Other concerns with the information in Table 1.
- Future treatment options in Table 2 this can't be approved until pre-trials have been undertaken.
- Reference to PCB treatment needs to be deleted from Section 2.1.
- Remediate of waste to an "appropriate level" needs to be qualified in Section 2.1.
- Supposition that the proposed leachability values in Section 2.2 are acceptable to the EPA is incorrect.
- EPA Licence 11275 does not permit the reuse of any material above waste fill criteria.
- The approved Landfill Environment Management Plan (LEMP) is inadequate to deal with the proposed activities. The proponent should submit to the EPA for assessment an

Environmental Management Plan (EMP) specifically tailored to the remediation technologies to be used in the proposed MWTF.

- Table 7 states that MWTF will operate undercover (although this only relates to Stage 2), that all listed waste will be 'stored in a roofed facility or covered with low permeable material' and that no listed waste will be stored outside the MWTF. Clarification required.
- The proposal needs to clearly state expected sources or types of wastes, e.g. leaking petroleum storage tank soils, liquor from mining activities, etc, in addition to the components that will be treated. The degree of contamination or toxicity will then determine the management and operational procedures to be developed to deal with the wastes.
- The 520m buffer between the operation and residents will provide adequate noise attenuation.
- In relation to air quality, no details provided on the odour reduction efficiency of the various technologies proposed; potential odours from the stage 1 not addressed; and potential emissions and potential ground level impacts from materials such as monocyclic aromatic hydrocarbons, organic pollutants, PCB's and PAH's not addressed.
- Insufficient information to adequately assess the likely impacts on stormwater, which should be addressed in an EMP.

4.3.2 Zero Waste SA

- The proposed development of a multi-purpose waste treatment facility has potential to result in the diversion of some waste that would otherwise be consigned to landfill and hence to the achievement of the Waste Strategy and the SA Strategic Plan target of reducing waste to landfill by 25% by 2014.

4.3.3 Department of Water, Land and Biodiversity Conservation

- Revegetated perimeter buffer should use locally indigenous species.
- The LEMP should address the management of runoff from the site and stormwater management systems that will be included.

4.3.4 Department for Transport, Energy and Infrastructure (DTEI) – Transport

- Traffic information insufficient for proper assessment – need a Traffic Impact Study to be undertaken.

4.3.5 Office of Major Projects and Infrastructure (DTEI)

- The provision of a suite of waste management services at a single consolidated location within the existing site is consistent with the broad strategies of the Strategic Infrastructure Plan for SA (eg "promoting shared and multiple use of assets through co-location..." (page 6) and "exploring options for redevelopment.... of existing assets and design of adaptable multi-purpose facilities for shared use.`"). The Plan also encourages the use of landfill emissions to produce energy.

4.4 PROPONENT'S RESPONSE

The proponent responded to the concerns raised in public and Government submissions. Refer to Appendix B.

This has also been considered in the assessment of the proposal in Section 5.

5. ASSESSMENT OF ENVIRONMENTAL, SOCIAL AND ECONOMIC ISSUES

The proposed Multiple Waste Treatment Facility (MWTF) would receive, treat and dispose of High Level Contaminated Waste (HLCW). In terms of the potential risk posed by air emissions, the main potential risk would be the generation of air emissions from the dumping, treatment and storage of materials that could be odorous or contain dust or toxic chemicals (mainly volatile organic compounds). This risk is proposed to be addressed by treating waste materials within an enclosed, negative pressure building (ie. large shed structure) that is equipped with a biofilter exhaust system to remove any airborne contaminants and odours. In addition, treated waste would be disposed of to landfill cells designated for Low Level Contaminated Waste (LLCW) that are designed with double liners and leachate collection systems to ensure surface water and groundwater is not contaminated.

In terms of the proposed staging of the facility, further information provided by the proponent demonstrates that there is an immediate need for a suitable disposal site for HLCW associated with land remediation and urban renewal projects across the Metropolitan area. Thus, a two-staged approach, but for a limited storage capacity applied to Stage 1, can be supported under controlled conditions. A storage limit of up to 3,500m^3 should be imposed to enable the receival of a small batch of HLCW as an interim measure, until the MWTF is fully constructed. Stage 2 would need to be completed within 12 months of the start of construction of Stage 1, before any more waste could be received. Thus, waste would only be stockpiled for less than 12 months. In order to minimise the risk of generating contaminated air emissions, the unloading and storage of HLCW would need to be undertaken in accordance with stringent management practices. The should include:

- the unloading of HLCW must only occur during conditions where the wind speed measured on-site is less than or equal to 15 knots.
- HLCW materials must be wetted down during unloading
- HLCW materials must be covered with an impermeable cover (such as High Density Polyethylene plastic) immediately after unloading, in order to minimise odour emissions and rainfall infiltration
- the impermeable cover must be securely held down
- all unloading activities must be supervised and inspected by an independent accredited auditor (approved by the EPA) to ensure management practices to control air emissions have been suitably followed. Stored materials must be inspected quarterly to ensure they are covered in a secure manner
- treatment of the stored materials can only commence once the completed MTWF is approved by the EPA to commence operation

An automated wind monitoring station would need to be established next to Stage 1 of the MWTF, in order to determine when unloading activities should not be undertaken. Auditors reports would need to be provided to the EPA following each unloading activity and on a quarterly basis.

Before HLCW materials can be received at the MWTF, pre-remediation trials of the material must be undertaken to determine whether the material could be successfully treated. Testing

results would need to meet the EPA criteria for disposal as LLCW (or re-use). Materials could not be received without EPA approval.

In regard to the storage area, information provided by the proponent identifies that only treated materials would be stockpiled, prior to disposal on-site or removal from the site. It is considered that the storage area should also be fully enclosed to minimise potential air emissions. Such a precautionary approach would enable the storage of LLCW materials in a safe and secure manner.

Minor effects from the proposal include:

- the generation of dust during construction, which would be controlled using standard dust suppression measures (primarily wetting down of exposed soils);
- additional noise sources, which are similar to current operations, for which potential impacts would be contained within the existing site noise buffer zone and would be minimised by existing or new screen mounds;
- additional truck movements, which would not have a significant impact, given the high volumes of traffic currently using Port Wakefield Road (ie. 6 – 12 additional truck movements per day compared with 8,500 vehicle movements per day on Port Wakefield Road, resulting in an increase of <0.15% over existing traffic volumes);
- the visual impact of a large shed structure, which would be screened from views from nearby residences and Port Wakefield Road by an expansion of existing vegetated screens and the establishment of an additional vegetated screen;
- potential stormwater contamination, which would be managed by directing flows around the site (ie. integrated with existing stormwater management measures), with rainfall collected from the roof of the building being reused on-site;
- potential off-site movement of contaminated materials (esp. for soil swapping activities), which would be minimised by requiring trucks leaving the site to go through an existing wheel wash and automatic water jetting system (ie. previously established for trucks transporting LLCW). An additional wheel wash facility would be established for trucks entering the MWTF (ie. to prevent the introduction of weed species to the site);
- the storage and use of treatment chemicals, which would be undertaken within a fully bunded and enclosed area (with minimal quantities kept on-site); and
- the receival of soils contaminated with petroleum hydrocarbons that may contain volatile organic compounds that could pose a fire risk, which would be managed under standard fire safety precautions and control measures for such materials.

Closure and post closure arrangements for the landfill would not be affected.

There are no environmental impacts associated with the proposal that have not been previously investigated and addressed (particularly the potential effects of landfill operations on groundwater and the Gulf St Vincent).

The mitigation of impacts associated the MWTF would be addressed by licensing requirements for a Waste or Recycling Depot under the *Environment Protection Act 1993* (and associated Environment Protection Policies), particularly through an Environmental Management Plan prepared specifically for the operation of the MWTF. The existing licence (EPA Licence No. 11275) would need to be amended to incorporate specific requirements for the MWTF.

6 MITIGATION, MANAGEMENT AND MONITORING

The operation of the MWTF would need to be managed and monitored in accordance with a separate Environmental Management Plan (EMP), rather than amending the current LEMP as proposed in the AEIS. The EMP would need to address Stage 1 storage activities separately to the fully completed facility. The EMP would need to be finalised, to the satisfaction of the EPA, prior to the commencement of operation of Stage 1 of the MWTF. The EMP would also need to include a financial assurance strategy to cover the liability for operations and monitoring (as per the current LEMP), due to the increased potential risk resulting from the materials proposed to be received.

In regard to management of the MWTF, materials could not be received until testing confirms the proposed treatment process would result in contamination levels being reduced to within prescribed levels for safe disposal or reuse. Two treatment processes have been proposed, comprising:

- Bioremediation
- Contaminant stabilisation – physical and chemical

The disposal of treated waste to the LLCW landfill cells would be undertaken in accordance with the LEMP. The current LEMP would also deal with the management of soil erosion, stormwater and vegetated screens/mounds.

The current LEMP includes the following key site management components:

- Environmental Management System.
- Groundwater and Leachate Management Plan.
- Soil Erosion Management Plan.
- Surface Water and Drainage Management Plan.
- Landfill Gas Management Plan.
- Air Quality and Management Plan.
- Vegetation Management and Revegetation Plan.
- Pest Plant and Animal Management Plan.
- Aboriginal Heritage Management Plan.
- Facilities Management Plan.
- Fire Risk Management Plan.
- Financial Assurance.
- Closure and Post Closure Management Plan.
- Low Level Contaminated Waste (LLCW) & Liquid Treatment Plant Residue (LTPR) Cells.
- Hazardous Substances Management Plan.
- Multi-purpose Waste Treatment Facility Management Plan.

7. CONCLUSIONS

The amended assessment of the proposal by IWS to establish a Multiple Waste Treatment Facility (MWTF) to receive, treat and dispose of High Level Contaminated Waste (HLCW) at the approved Northern Balefill has required the consideration of a limited range of social, economic and environmental issues.

Advice from the Environment Protection Authority (EPA) has been incorporated into this Second Amendment to the Assessment Report, both as required by the *Development Act 1993* and as the EPA will be responsible for the determination of licensing requirements (if the proposal is granted development authorisation by the Governor). The Governor will be responsible for deciding whether the current land use can be expanded to accept an additional waste stream and for approving a built structure. The EPA will be responsible for controlling the activities associated with the operation of the MWTF.

The Mallala District Council provided a written submission on the proposal and consideration has been given to the relevant Development Plan, government and public comments.

It is concluded that there is a definite need for a facility to receive, treat and dispose of HLCW in South Australia. Such a facility currently does not exist in this State and would help satisfy demand associated with contaminated site remediation projects. There are strategic benefits in having such a facility located within an existing, licensed waste depot. The issues associated with the proposal have been satisfactorily addressed in the Amended EIS, the proponent's response to submissions and further information provided by the proponent to enable the Governor to make a decision on the proposed development.

8. RECOMMENDATIONS

This Second Amendment to the Assessment Report concludes that the potential environmental, social and economic impacts associated with the proposed Multi Waste Treatment Facility (MWTF) at the IWS Northern Balefill site can be minimised to acceptable levels and are manageable.

If the Governor were to grant development authorisation, the current development approval will need to be amended, with additional conditions based on the following requirements:

1. Integrated Waste Services shall undertake the development in general accordance with the following documents and plans (except where varied by conditions of approval or EPA licensing):
   - Integrated Waste Services, IWS Northern Balefill, Application for a Variation to the Development Authorisation, Waste Treatment Facility, Dublin, South Australia (June 2008).
   - EIS Amendment, Multiple Waste Treatment Facility, Integrated Waste Services, Northern Balefill, Dublin (24 November 2008).
   - Proponent's response to submissions (3 April 2009).

2. Design of the Multiple Waste Treatment Facility (MWTF)
   - The design of the MWTF must be amended to include coloured metal cladding on all sides of the building, so as to enclose the whole of the facility.
   - Final plans, cross-sections and elevations must have Building Rules Consent, prior to construction commencing.
   - Designs for the effluent treatment and disposal system must prepared to the reasonable satisfaction of the District Council of Mallala.
   - An automated wind monitoring station must be established next to Stage 1 of the MWTF, prior to the commencement of operation of Stage 1.

3. Operation of the Multiple Waste Treatment Facility (Stage 1)
   - Upon the completion of Stage 1 construction, the interim storage of High Level Contaminated Waste (HLCW) must not exceed 3,500m^3 of materials, until Stage 2 construction is complete.
   - The unloading and storage of HLCW must be undertaken in accordance with an EPA approved Environmental Management Plan.
   - The unloading of HLCW must only occur during conditions where the wind speed measured on-site is less than or equal to 15 knots/hr.
   - HLCW materials must be wetted down during unloading.
   - HLCW materials must be covered with an impermeable cover (such as High Density Polyethylene plastic) immediately after unloading, in order to minimise odour emissions and rainfall infiltration.
   - The impermeable cover must be securely held down.
   - All unloading activities must be supervised and inspected by an independent accredited auditor (approved by the EPA) to ensure management practices to minimise air emissions have been suitably followed. Stored materials must be inspected quarterly to ensure they are covered in a secure manner.

- Treatment of the stored materials can only commence once the completed MTWF is approved by the EPA to commence operation.
- A truck wash with water sprays shall be installed for the removal of residues from vehicles transporting high level contaminated wastes to the site. All transport vehicles shall not leave the site unless they have gone through the truck wash.

4. Stage 2 Construction

   - The construction of Stage 2 (ie. completion of the MWTF building) must commence immediately following the completion of construction of Stage 1.
   - Stage 2 must be completed within 12 months of the commencement of construction.
   - Treatment of waste material must not occur until the construction of the entire MWTF has been completed, to the reasonable satisfaction of the EPA.

5. Treatment Processes
   - Bioremediation and stabilisation are the only treatment processes that can be used in the MWTF.
   - Pre-remediation trials must be conducted on all contaminated materials, prior to delivery to the MWTF, to determine if treatment methods approved by the EPA would be successful. Trial results must be submitted to the EPA for assessment, prior to delivery of contaminated materials to the MWTF.
   - Post-remediation testing on treated materials must be undertaken to assess its suitability to be disposed of or reused. Testing results must be submitted to the EPA for assessment, prior to disposal or reuse.
   - Future treatment options must undergo pre-trial assessment, to the reasonable satisfaction of the EPA, before they can be adopted.

6. Management and Monitoring:
   - An Environmental Management Plan (EMP) for activities associated with the MWTF, prepared to the reasonable satisfaction of the EPA, must be in place prior to the receival of contaminated materials.
   - The EMP would need to address Stage 1 storage activities separately to the fully completed facility.

Notes to the Applicant

1. Management and Monitoring:
   - The EMP must include an air quality monitoring programme to ensure air emissions from the MWTF do not contain contaminants at levels that may be harmful to nearby residents and land uses.
   - The EMP must include protocols for testing/trialling the suitability and effectiveness of treatment methods for batches of contaminated materials that could potentially be treated at the MWTF, prior to the receival of such material.
   - The EMP must include contingencies for dealing with contaminated materials that cannot meet disposal criteria after treatment.
   - The EMP must include a detailed risk assessment protocol for all contaminated waste types to be treated.
   - The EMP must include a Fire Risk Management Plan.
   - The EMP must include a Hazardous Substances Management Plan.

- The EMP must include an Occupational Health, Safety and Welfare Plan prepared in consultation with the Department of Health.
- The EMP must include a financial assurance strategy.
- The EMP must be amended if new treatment options, that have been approved by the EPA, are adopted in the future.
- The current Landfill Environmental Management Plan (LEMP) must be amended, to the reasonable satisfaction of the EPA, to address the management of soil erosion and stormwater and the upgrading of existing screens and/or mounds or the establishment of new vegetated screens and/or mounds associated with the MWTF.
- The amendment of the LEMP and the upgrading of the site infrastructure, including but not limited to vegetated screens and/or mounds, must be undertaken prior to commencement of the MWTF operations. Details of the LEMP amendments and site upgrade requirements are contained in a letter from the EPA to IWS dated 2 April 2009.

2. Future Developments in the Vicinity of the MWTF:
   - The potential future development of an Energy Generator, Resource Recovery Facility or MRRF would need to be the subject of separate applications for assessment and approval in the future.

3. Current EPA Licence:
   - It should be noted that, except for the design requirements for the MWTF, the above requirements would need to be incorporated into the current EPA Waste Depot & Recycling licence before waste could be received at the MWTF.

9. REFERENCES

Golder Associates, 2008. *Integrated Waste Services, Northern Balefill, Dublin, Multiple Waste Treatment Facility, EIS Amendment*, prepared for Integrated Waste Services Pty Ltd, 24 November 2008.

Bone & Tonkin Planners Pty Ltd et al, 1996. *Solid Waste Balefill Environmental Impact Study*, prepared for P & M Borrelli and Sons Pty Ltd, Adelaide, February 1996.

The Minister for Transport and Urban Planning, 1997. *Assessment Report for the Environmental Impact Statement for the IWS Northern Balefill*, November 1997.

Master Plan and Parsons Brinckerhoff, 2003. *EIS Amendment, Receipt of Low Level Contaminated Soil and Liquid Treatment Plant Residues at the IWS Northern Balefill*, prepared for Integrated Waste Services Pty Ltd, July 2003.

The Minister for Transport and Urban Planning, 2005. *Amendment to the Assessment Report for the Environmental Impact Statement for the IWS Northern Balefill*.

The Premier of South Australia, 2007. *Planning Strategy for the Outer Metropolitan Adelaide Region.*

District Council of Mallala, 2008. Development Plan, Consolidated version dated 18 December 2008.

The Premier of South Australia, 2007, *South Australia's Strategic Plan*.

Strategic Infrastructure Plan for South Australia (2005/6 – 2014/15)

10. GLOSSARY

AHD	Australian Height Datum (approximate mean sea level)
AS	Australian Standard
CFS	Country Fire Services
DB	Decibels
DAARE	Department of Aboriginal Affairs and Reconciliation
DHS	Department of Human Services
DTUP	Department for Transport and Urban Planning
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environment Protection Authority
HDPE	High density polyethylene
LCCC	Local Community Consultative Committee
LEMP	Landfill Environmental Management Plan
LLCS	Low level contaminated soil
LTPR	Liquid treatment plant residues
L/s	Litres per second
m	Metres
mg/L	Milligrams per litre
NATA	National Association of Testing Authorities
PIRSA	Primary Industries and Resources SA

APPENDIX A

PROPONENT'S APPLICATION FOR A VARIATION TO THE DEVELOPMENT AUTHORISATION (JUNE 2008)

INTEGRATED WASTE SERVICES

IWS Northern Balefill

Application for Variation to
Development Authorisation

Waste Treatment Facility
Dublin, South Australia

June 2008

INTEGRATED WASTE SERVICES

IWS NORTHERN BALEFILL

PREPARED BY

Golder Associates

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1 INTRODUCTION

1.1 Overview

This report has been prepared in support of an application to amend the current Integrated Waste Services Pty Ltd Development Authorisation at the Dublin, Northern Balefill. The amendment seeks to vary the consent to incorporate facilities to treat contaminated materials. The location of the subject site is shown on **Figure 1, General Site Location Map**.

This documentation details the conceptual design, operation and environmental management of the proposed facility. It is intended to undertake the development in two stages.

Stage 1 will comprise construction of a concrete pad storage and laydown area that will form the foundation of the facility (a future operation specifically designed to treat contaminated materials). This storage and laydown area will be used for interim storage of contaminated soil, prior to the development of Stage 2. No walls, service areas or other infrastructure associated with the final operation will be constructed as part of the works associated with this.

Stage 2 will involve development of the overall facility, that is the infrastructure and aspects to treat contaminated soil.

The timing of the development, although to some extent dependent on market conditions, is expected to commence on issue of approval and licence amendment and commencement of Stage 2 no later than March 2011.

In addition to this planning report, a document has been prepared for the EPA (**Appendix A**) which also forms part of this application and provides details of the proposed handling and treatment processes for soil remediation activities.

This report incorporates the following:

- An overview of the existing operations at the site.
- Information on the applicant.
- The existing approvals and licensing of the site.
- Detailed information on the proposed development and site operations.
- An assessment of the proposal in relation to the relevant provisions of the Development Plan.
- Air modelling of the proposed facility.

A revised site Landfill Environmental Management Plan (LEMP) for EPA purposes accompanies this report (refer **Appendix F**).

The IWS site is currently licensed to accept a variety of non-recyclable waste, some demolition waste, low level contaminated waste and liquid treatment plant residue.

INTERGRATED WASTE SERVICES

GENERAL SITE LOCATION MAP

Legend

- Town Location
- Road
- Site Location

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0 3,750 7,500
Scale in metres

SCALE 1:170,000

N

DATUM GDA 1994
PROJECTION MGA Zone 54

Project:	077663306	Figure No:	G306F15 ver. 1
Drawn:	KB	Date:	19.03.2008
Checked:		Date:	19.03.2008

FIGURE 1

J:\2007\Env\077663306 - IWS Green Star\GIS\PROJECT\077663306 G306F15 ver. 1Figure 1. Site Plan.mxd

In 1998 development of the IWS Northern Balefill as a solid waste landfill was approved pursuant to the requirements of the Development Act 1993 (**Appendix B**).

In September 2005 the DAC approved a variation to the IWS Northern Balefill to incorporate a Low Level Contaminated Waste and Liquid Treatment Plant Residues facility (**Appendix C**). This application proposes a variation to the existing authorisation.

1.2 The Applicant

The applicant, Integrated Waste Services Pty Ltd (IWS), is a privately owned South Australian based, specialist waste management company.

IWS is a significant participant in the provision of waste management services in metropolitan Adelaide with facilities located at Wingfield and Dublin. IWS's facilities are designed to world's best standards, and enable IWS to offer the best possible waste management and diversion solutions. Through their facilities at Wingfield and Dublin, IWS has invested significant capital and energy into South Australia, resulting in high standard waste management practices and valuable employment.

The objectives of IWS are to:

- Continue to improve innovative and environmentally progressive waste management systems.
- Maintain world's best practice in all areas of operation.
- Be aware of environmental issues and their effects on the community.
- Be prepared to implement improvements in waste management operations.
- Continue to remain abreast of innovative technologies that minimise waste to landfill and to implement such technologies in an economically sustainable manner.
- Maintain a safe and healthy working environment for all employees and contractors.
- Meet the environmental and economic expectations and requirements of clients and the community.
- Be an active member of the community by employing fulltime staff and supporting contractors on an ongoing basis.

1.3 Variation Application

This application is submitted to vary the current Development Authorisation to enable IWS to receive and process materials and soil contaminated as listed in Schedule 1 of the Environment Protection Act 2003[1].

[1] That is soil that exceeds the criteria for Waste Fill, Intermediate Landfill Cover and Low Level Contaminated Waste.

This application is for two stages of development:

- Stage 1: Construction and operation of a contaminated material receiving and storage area; and
- Stage 2: a facility to include treatment of contaminated solid and semi-solid waste streams.

The revised Landfill Environmental Management Plan (LEMP) includes environmental management procedures for the operation.

The potential for environmental effects associated with the Stage 1 and Stage 2 development are considered to be extremely low and will be managed in accordance with the management measures outlined in the LEMP (refer Section 7 of Appendix F).

A summary of the site's physical environmental characteristics, based on the EIS (1996), are provided in **Appendix E**.

1.4 Context of Application with SA Waste Strategy 2005 – 2010

South Australia currently has limited available treatment facilities for solid and semi-solid contaminated wastes. The need and demand for dedicated facilities to treat these materials is expected to increase for the following reasons:

- Changes to the Environment Protection Act 1993 relating to site contamination is likely to lead to an increased demand for facilities that treat and dispose of contaminated wastes.
- The trend towards urban consolidation and urban infill projects will potentially lead to more development on sites containing contaminated waste. In most urban localities, treating contaminated materials on-site can pose unnecessary environmental risk to neighbouring residents and properties, and therefore a dedicated treatment facility offers an off-site treatment and disposal option that respects closely settled living and working areas.
- Ongoing development of new policies and practices dealing with industrial and other wastes may require industry access for waste treatment. The variation offers an opportunity to facilitate waste management practices that are in line with community expectations.
- There are solid and semi-solid wastes currently being disposed to landfill style facilities. The variation offers the potential for treatment of material and reuse rather than disposal to landfill. Treatment can contribute to improving environmental protection through contaminant reduction or neutralisation, and minimising waste to landfill.
- Treatment of contaminated waste may offer the potential to create reusable materials.

The vision for the site is to provide a one-stop site for the receipt, treatment, recycling, recovery, energy generation and, where necessary, disposal of wastes.

This project represents an opportunity to contribute to the aims and commitments of the Zero Waste SA's South Australia Waste Strategy in an orderly and practical manner.

In addition to treating contaminated materials, the proposed development addresses key objectives of Zero Waste SA's Waste Strategy 2005-2010. This strategy aims to ensure a healthy environment for South Australians now and into the future. It establishes waste reduction goals and targets for South Australia and sets out a range of strategies and steps to achieve these goals and targets.

The five year strategy is focused on the key objectives described below.

The contribution of this project to some of these objectives is outlined in Table 1:

TABLE 1 - SA WASTE STRATEGY 2005–2010

SA Waste Strategy 2005 – 2010 Objectives	Project Contribution
1. **Foster sustainable behaviour** – simply providing information will not necessarily influence people to recycle or re-use material or resources in a sustainable way.	• The project will foster sustainable behaviour by providing an alternative mechanism by which contaminated material can be treated in a controlled environment, increase the amount that can be reused, and reduce off-site environmental risk by providing a treatment and disposal option. • Provide industry and developers with a readily accessible northern based option for waste management and disposal.
2. **Less waste** – achieving substantially less waste going to landfill in South Australia means that materials must be redirected towards more beneficial uses and treatment options.	• The variation provides a mechanism by which contaminated material can be treated in a controlled environment. Treatment has the potential to create reusable materials which will reduce overall waste disposal to landfill.
3. **Effective systems** – South Australia needs to establish, maintain and increase the capacity of recycling systems and re-processing infrastructure in metropolitan and regional areas.	• The use of effective waste treatment systems will increase the capacity for treatment of contaminated materials to remove, stabilise or neutralise contaminants. • The facility provides an option that will present an opportunity to reduce environmental and human health risk associated with leaving material onsite or to current disposal options.
5. **Successful cooperation** – targets of this and future strategies will only be reached with the successful cooperation of a range of stakeholders.	• This project supports the intent and goals of Zero Waste SA and forms part of IWS vision to contribute to the aims of the SA Waste Strategy 2005 – 2010.

2 EXISTING OPERATIONS

2.1 Development Authorisation

On 29 January 1998, His Excellency the Governor of South Australia granted development authorisation with conditions for Integrated Waste Services Pty Ltd to construct the Northern Balefill (Dublin) facility (Appendix B).

In addition, a notice was also made by the Governor delegating powers to the Development Assessment Commission (DAC) in relation to granting variations to the development approval or varying or revoking conditions in relation to the approval. Reference was also made to the requirement of a licence to operate a waste depot from the Environment Protection Authority (EPA). A subsequent variation to the conditions of the development authorisation was made on 17 October 2002, and the Development Approval was further amended with the approval of the Low Level Contaminated Waste and Liquid Treatment Plant Residues facility, that was gazetted on 8 September 2005 (Appendix C).

2.2 EPA Licence

IWS is authorised to operate a Waste or Recycling Depot under the Environmental Protection Act 1993 (Schedule 1, Part A, Clause 3(3)) and other relevant Environment Protection Policies. These requirements govern permissible emission or concentration levels as well as operation and/or maintenance standards of plant and equipment, subject to the conditions of the licence. A copy of the Licence (EPA Licence No. 11275) can be found in **Appendix D**. The Licence was renewed in 2008 until 2013.

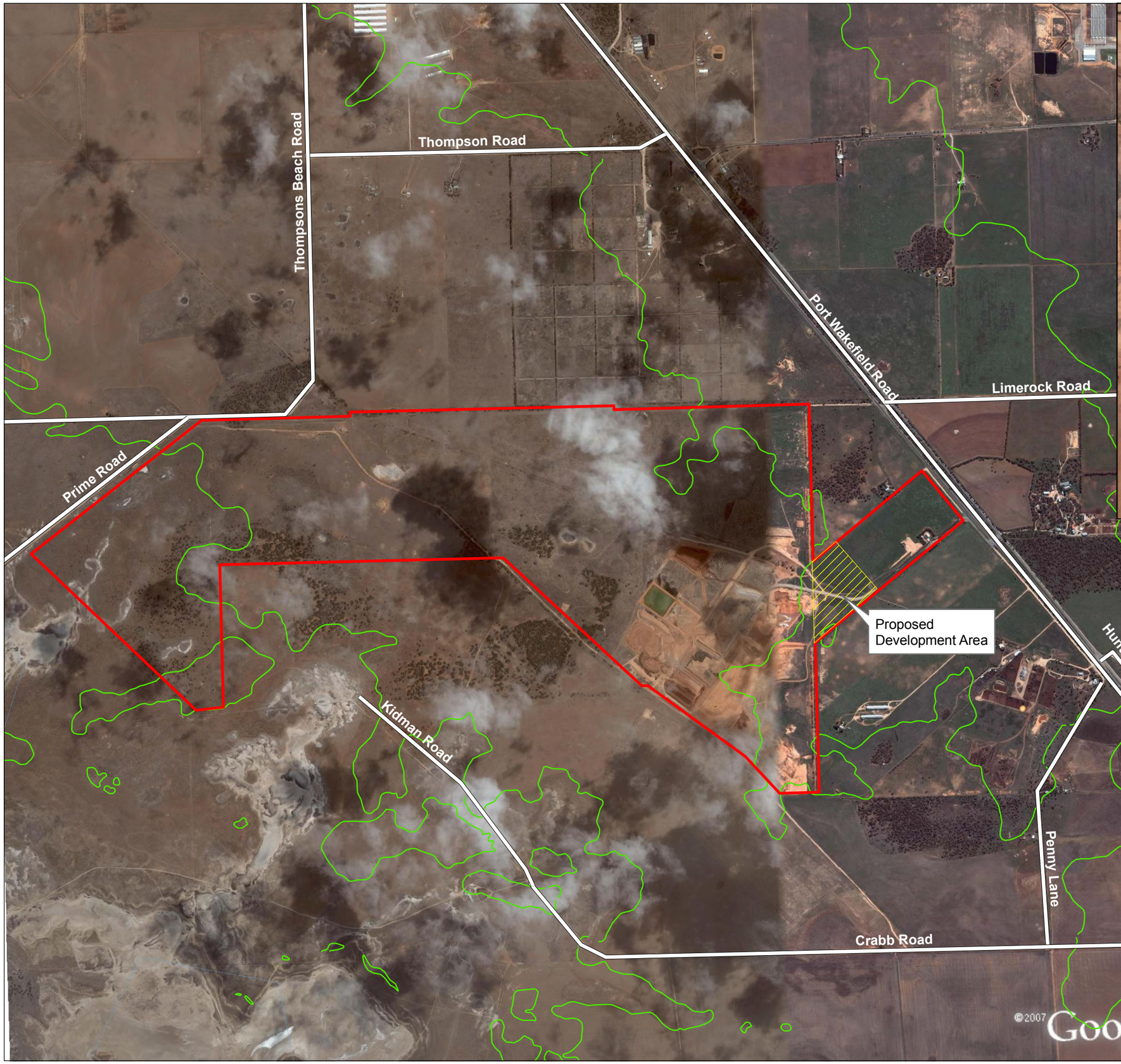
2.3 Subject Land

The proposed development is to be constructed within the existing IWS Northern Balefill facility, Dublin, South Australia. Land that forms the existing facility are:

- Section 312, Certificate of Title – Volume 5348, Folio 343.
- Section 311, Certificate of Title – Volume 5348, Folio 396.
- Section 310, Certificate of Title – Volume 5348, Folio 390.
- Allotment 76, Certificate of Title – Volume 5348, Folio 333.
- Allotment 92, Certificate of Title – Volume 5348, Folio 393.
- Allotment 93, Certificate of Title – Volume 5348, Folio 392.
- Allotment 94, Certificate of Title – Volume 5348, Folio 395.
- Allotment 95, Certificate of Title – Volume 5348, Folio 391.
- Allotment 96, Certificate of Title – Volume 5348, Folio 394.

Certificates of Title are provided in **Appendix G**.

The IWS Northern Balefill site is depicted on Figure 1, General Site Location Map in its regional context and more particularly on **Figure 2, Development Site**.



INTERGRATED WASTE SERVICES

AERIAL PHOTOGRAPH SHOWING
PROPOSED DEVELOPMENT AREA

Legend

- Proposed Development Site
- Site Boundary
- 5m Contour
- Road

0 500 1,000
Scale in metres

SCALE 1:20,000

DATUM GDA 1994
PROJECTION MGA Zone 54

Project: 077663306 Figure No: G306F09 ver. 1
Drawn: KB Date: 20.03.2008
Checked: Date: 20.03.2008

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FIGURE 2

J:\2007\Env\077663306 - IWS Approval\GIS\PROJECT\GIS\Project\077663306 G306F09 ver. 1 Development Area and Site Plan.mxd

2.4 Overview of Existing Site Operations

The IWS Northern Balefill facility opened in May 2002 and is currently licensed to accept the following waste types:

- domestic waste (baled);
- municipal waste (shredded and baled where reasonable and practicable);
- commercial and industrial waste (shredded and baled where reasonable and practicable);
- construction and demolition waste;
- green waste and kerbside collected green waste (shredded where reasonable and practicable);
- Intermediate Landfill Cover as defined in the Environment Protection (Fees and Levy) Regulations 1994, Schedule 6.
- Waste Fill as defined in the Environment Protection (Fees and Levy) Regulations 1994, Schedule 6, and
- Low Level Contaminated Waste and Liquid Treatment Plant Residue that meet the chemical criteria established in Table 3 attached to the EPA Licence (refer **Appendix D**).

The facility primarily accepts baled non-recyclable wastes and unbaled construction and demolition wastes for disposal. The balefill cells are designed and constructed with full environmental controls, including groundwater control, base liner system, leachate collection system, daily/intermediate/final cover system, and a landfill gas control system. The balefill cells have been developed so separate materials can be baled at Wingfield, stored in cells and the position recorded. Should future technologies enable the use of that material as a secondary resource, the material is recoverable for that purpose in the future.

Balefill Stages 1 and 2, comprise cells 1 to 20 in the eastern and southern areas of the site. These areas cover, in part, the land previously quarried during construction works on Port Wakefield Road. These stages will take between 15 to 20 years to fill at projected waste disposal rates. These cells will be progressively covered and landscaped to provide a buffer to the adjacent residences and Port Wakefield Road to the east. Cells are designed to provide 9 to 12 months capacity with separate leachate collection systems draining to sumps outside the landfill cells. These separate leachate systems enable variable leachate management practices depending on the type of materials stored in the cells, age of the cell, performance of the final cap and leachate management techniques.

Stage 3, Cells 22 to 31 are reserved for Low Level Contaminated Waste and Liquid Treatment Plant Residue, commencing with Cell 31. Stages 4 to 7 will be developed separately from east to west.

Prior to developing these stages, stormwater control, perimeter access roads and landscaping will be developed to ensure maturity of screening and erosion control planting before landfill cell development.

Further detail regarding the site operation and environmental management procedures in place for the site are given in the LEMP (refer Appendix F).

2.5 Site Features

Existing site features include:

- revegetated perimeter screen zones;
- fully sealed and landscaped entrance roadway and main site access road;
- weighbridge/load control gatehouse;
- supervised rejected vehicle turn paths;
- office/environmental education facilities;
- stormwater management systems to prevent flow concentrations, minimise sediment loads and divert flows away from balefill zones;
- vehicle wheel wash;
- balefill cells with full environmental controls including groundwater control, base liner system, leachate collection system, final cover and landfill gas control systems;
- the ability to separate waste into designated areas for future recovery should appropriate technologies become available;
- an approved low level contaminated waste (LLCW) and liquid treatment plant residue (LTPR) cell, with environmental protection controls;
- a tracking system to record the receipt and placement of all wastes for future recovery;
- the award winning SISS (Slow Inward Seepage System) dewatering system; and
- an EPA approved LEMP.

Detailed heritage, soil, groundwater and climate assessments were undertaken previously for the site. An overview of these assessments is provided in Appendix E.

The location of this site offers an opportunity for waste from northern metropolitan urban areas to avoid transport across the city, and access to major transport corridors for waste from other areas of the city. Benefits of siting the proposed facility within the existing Northern Balefill site include:

- no loss of rural land currently utilised for primary production, recreation or water and nature conservation;
- appropriate buffer zones to adjacent rural and residential properties already exist;
- existing site infrastructure and services can be utilised, thereby reducing the environmental effects as compared to a standalone facility; and
- the EPA approved Landfill Environmental Management Plan (LEMP) for the IWS Northern Balefill site can be readily modified to incorporate considerations of the proposed infrastructure and associated processes.

2.6 Services

Existing site services include:

- electricity;
- mains pressure water;
- telecommunications; and
- septic system for sewerage from facility amenities.

A sealed road extends past the gatehouse to the existing wheel-wash and continues to Cell 1 as a fully engineered quarry rubble graded road. An existing sealed road extends into the proposed development area.

There are fully serviced staff amenities within the caretaker's residence, a gatehouse at the weighbridge and a fully equipped workshop. The caretaker's residence allows a staff member to be on site at all times in the case of an emergency. The proposed development will utilise existing services on site as much as practicable and will include the construction of demountable/portable site office and employee amenities close to the work area.

2.7 Site Location

The land and location of the IWS Northern Balefill facility was originally selected for the following reasons:

- it is located north of Adelaide, rather than to the east, thus avoiding transportation of waste through more densely populated residential areas and the Mount Lofty Ranges;
- land was in a degraded state due to former use for mining and off road vehicle racing activities, and was significantly cleared of native vegetation;
- land is not prime agricultural or primary production land;
- groundwater at the site is highly saline with no beneficial uses;
- the area is sparsely populated;
- major road access is adjacent the site; and
- the site can be developed in a manner which results in limited visual intrusion.

The proposed development is within the site as shown on Figure 1 and within the existing IWS Northern Balefill facility, as shown on Figure 2.

2.8 Surrounding Land Uses

Current surrounding land uses are agricultural. There are two residences within 500m of the eastern property boundary and a Mineral Lease Area on the western property boundary. There is grazing and intensive animal husbandry within 1.0 kilometre of the other property boundaries including piggeries, feedlots and poultry to the southwest, and rural housing and feedlots to the north. Extensive grazing occurs on other farming land in the region.

Adjacent land uses to the site are described in detail in the 1996 *Mallala Solid Waste Landfill Environmental Impact Statement* (P & M Borrelli & Sons Pty Ltd, 1996). There have been minimal changes to surrounding land use from 1996 to present (refer **Figure 7, Land Use Survey**.

The site is not readily visible from the main road system, National Highway No.1, and vegetation screen zones are being progressively established around the site perimeter. A portion of the site is visible from Prime Beach Road, which is neither a tourist route nor a through road.

2.9 Landfill Environment Management Plan (LEMP)

In accordance with the Governor's consent granted to IWS for the Development of the IWS Northern Balefill, dated 29 January 1998 (revised 17 October 2002 and 8 September 2005), a Landfill Environmental Management Plan (LEMP) was prepared.

IWS currently operates the Northern Balefill facility in accordance with its EPA approved LEMP. The LEMP details the approved strategies for managing potential environmental impacts and is reviewed and updated periodically. The LEMP undergoes ongoing EPA review and approval.

The LEMP includes the following key site management aspects:

1. Environmental Management System.
2. Groundwater and Leachate Management Plan.
3. Soil Erosion Management Plan.
4. Surface Water and Drainage Management Plan.
5. Landfill Gas Management Plan.
6. Air Quality and Management Plan.
7. Vegetation Management and Revegetation Plan.
8. Pest Plant and Animal Management Plan.
9. Aboriginal Heritage Management Plan.
10. Facilities Management Plan.
11. Fire Risk Management Plan.
12. Financial Assurance.
13. Closure and Post Closure Management Plan.
14. Low Level Contaminated Waste (LLCW) & Liquid Treatment Plant Residue (LTPR) Cells.
15. Hazardous Substances Management Plan.
16. Multi-purpose Waste Treatment Facility Management Plan.

The LEMP has been updated to include environmental management procedures for the facility, which are detailed in Section 18 of the LEMP (refer Appendix F). Where changes to the existing LEMP have been required, they have been highlighted in the updated document.

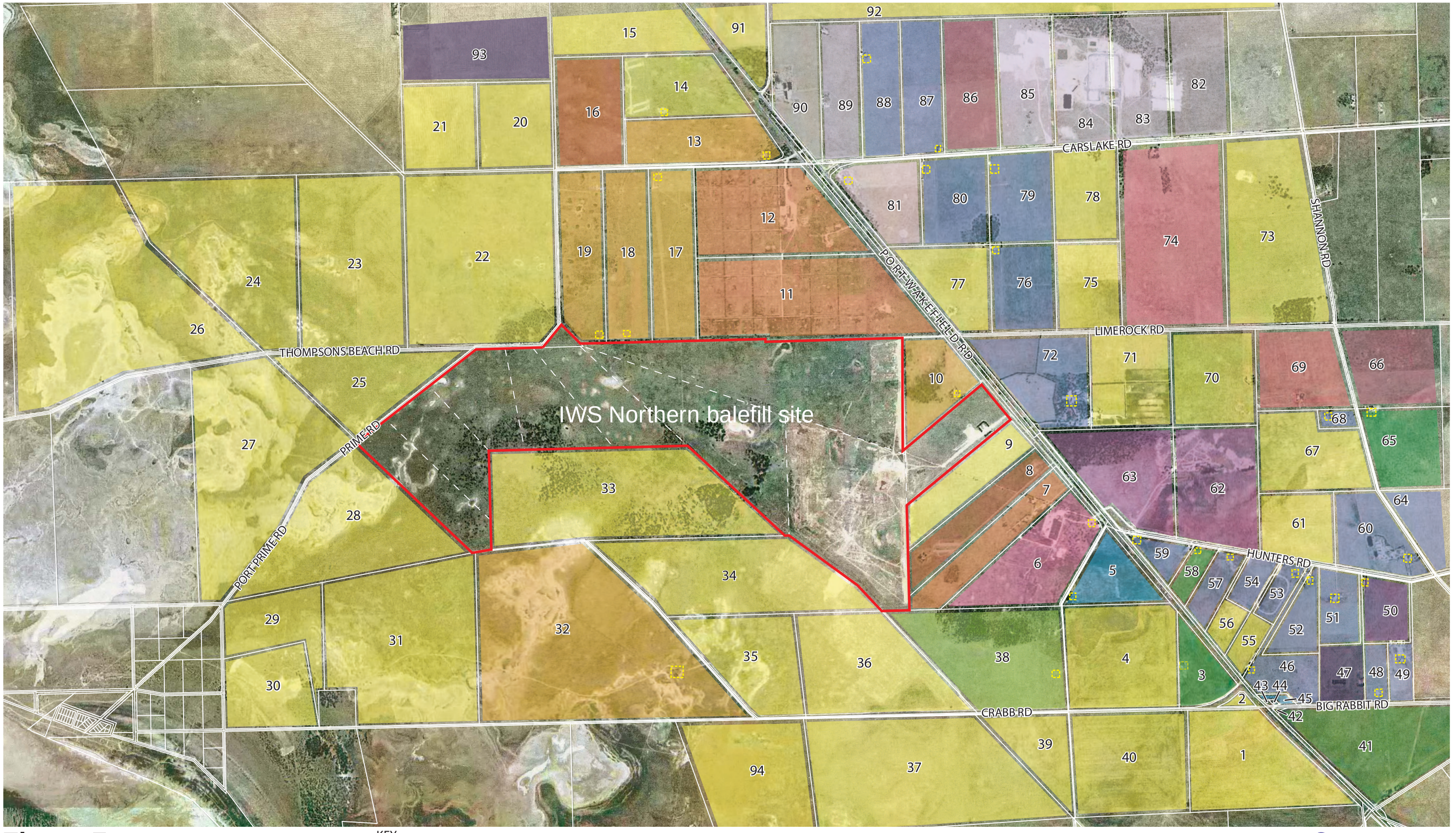

Figure 7
LAND USE SURVEY
IWS Northern balefill site location

KEY

- Farming
- Detached dwelling, sheds & horse keeping
- Detached dwelling, caravan, sheds & horse keeping.
- Detached dwelling, sheds, intensive animal keeping & feedlots
- Intensive animal keeping - poultry
- Intensive animal keeping, feedlot & sheds
- Farming & detached dwellings
- Intensive animal keeping - poultry, detached dwelling
- Detached dwelling & horse-keeping
- Recreation
- Dwelling & yard
- Detached dwelling
- Farming and detached dwelling with sheds
- Farming and sheds
- Agricultural & detached dwelling with sheds
- Intensive animal keeping - piggery
- Horse keeping
- Farming, caravan & sheds
- Extractive industry - quarry
- Detached dwelling & junkyard
- Intensive animal keeping
- Farming, offices and sheds

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3 PROPOSED DEVELOPMENT

The layout of the proposal in simple terms is shown in **Figure 4**. The facility will receive contaminated materials, principally contaminated soil, that exceeds the Low Level Contaminated Soil criteria (refer Table 3 of the Northern Balefill EPA licence, Appendix D of this report). Contaminated waste will be transported to the IWS Northern Balefill for treatment facilitating reuse or disposal.

The facility will be developed to incorporate the following features:

- Concrete and bunded soil storage and laydown areas.
- Sealed soil treatment and remediation facilities.
- Unidirectional drive through facility with vehicle rejection area.
- Clean stormwater harvesting infrastructure for utilisation in processing and revegetation.
- Stormwater management systems to divert flows around the facility while minimising erosion and systems to store water from contaminated storage and treatment facilities.
- Utilisation of existing site facilities, including the weighbridge and wheel wash.
- Revegetated perimeter buffer zones & retention of existing revegetation where possible.

This proposal comprises two stages:

- Stage 1 - the concrete and bunded soil storage and laydown shown as 'Temporary Storage Area' (refer Figure 4).
- Stage 2 - the completed facility (refer Figure 4).

The layout of the final concept of the proposal is shown in **Figure 6**.

The Stage 1 proposed temporary receiving and storage laydown area will be located within the Northern Balefill site, approximately 700 metres from Port Wakefield Road and within the existing 520 metre buffer zone to the nearest dwellings on the adjacent properties (refer **Figure 5**). Aerial photographs (refer Figure 1 and 2) and a detailed survey of the development site (refer **Figure 3**) were obtained to identify existing site features and land contours.

3.1 Stage 1: Storage and Laydown Area

The concept design for the facility that will receive and store the soil/material to be treated is shown in Figure 6. The facility will occupy approximately 125 m x 50 m and be constructed of an impervious material (concrete or similar). It is proposed that a maximum carrying capacity of 6,000 m3 to an approximate average height of 2.0 metres will be implemented at the facility.

The area will be laid out to incorporate receiving bays, which will be delineated using concrete blocks. These blocks are moveable to enable alteration of bay size according to the volume of material within a discrete batch.

INTERGRATED WASTE SERVICES

PROPOSED DEVELOPMENT AREA SURVEY

Legend

CONTOUR - ELEVATION (m)

- 0
- 6.8
- 7 - 7.8
- 8 - 8.8
- 9 - 9.8
- 10 - 10.8
- 11 - 11.8
- 12 - 12.8
- 13 - 13.8
- 14 - 14.4
- 520m BUFFER
- FENCE
- TRACK
- TREE

0 50 100

Scale in metres

SCALE 1:2,000

N

DATUM GDA 1994
PROJECTION MGA Zone 54

Project:	077663306	Figure No:	G306F12 ver. 1
Drawn:	KB	Date:	19.03.2008
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FIGURE 3

INTERGRATED WASTE SERVICES

MULTIPURPOSE WASTE TREATMENT FACILITY SITE LAYOUT

Legend

- Building
- Storage and Laydown Area for Treatment Storage
- Wheel Wash
- Boundary
- Buffer Zone (520m)
- Cell Boundary

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0 50 100

Scale in metres

SCALE 1:1,250

N

DATUM GDA 1994
PROJECTION MGA Zone 54

Project: 077663306 Figure No: G306F16 VER. 3
Drawn: KB Date: 19.03.2008
Checked: Date: 19.03.2008

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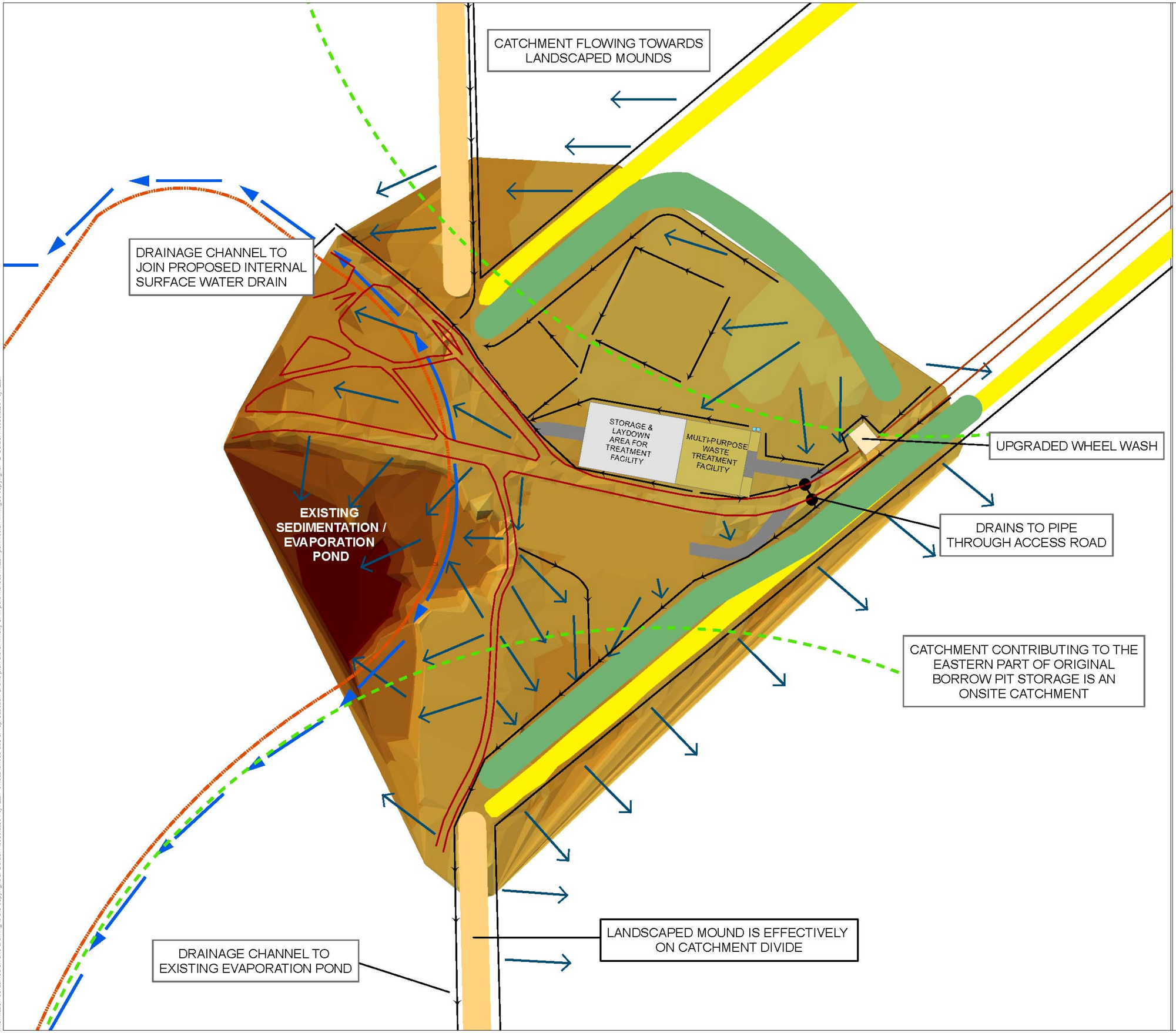
FIGURE 4

J:\2007\Env\077663306 - IWS Green Star\GIS\PROJECT\077663306 G306F16 VER. 3 Proposed Site Layout - all buildings.mxd



INTERGRATED WASTE SERVICES

SURFACE WATER DRAINAGE FOR WASTE TREATMENT FACILITY

Legend

- Landscaped Mound Toe Drain
- 520m Buffer
- Track
- Drain
- Internal Surface Water Drain
- Surface Water Drainage Direction
- Proposed Vegetated Screen
- Existing Mounded Vegetated Screen
- Existing Vegetated Screen
- Building
- Future Energy Generator
- Possible Future Resource Recovery Facility
- Possible Future MRRF Site
- Rainwater Tank
- Storage and Laydown Area for Treatment Storage
- Upgraded Wheel Wash
- Boundary
- Cell Boundary

Elevation (m)

- 13.554 - 14.412
- 12.696 - 13.554
- 11.838 - 12.696
- 10.979 - 11.838
- 10.121 - 10.979
- 9.263 - 10.121
- 8.405 - 9.263
- 7.547 - 8.405
- 6.688 - 7.547

0 50 100

Scale in metres

SCALE 1:2,750

N

DATUM GDA 1994
PROJECTION MGA Zone 54

Project: 077663306 Figure No: G306F13 ver. 2
Drawn: KB Date: 19.03.2008
Checked: Date: 19.03.2008

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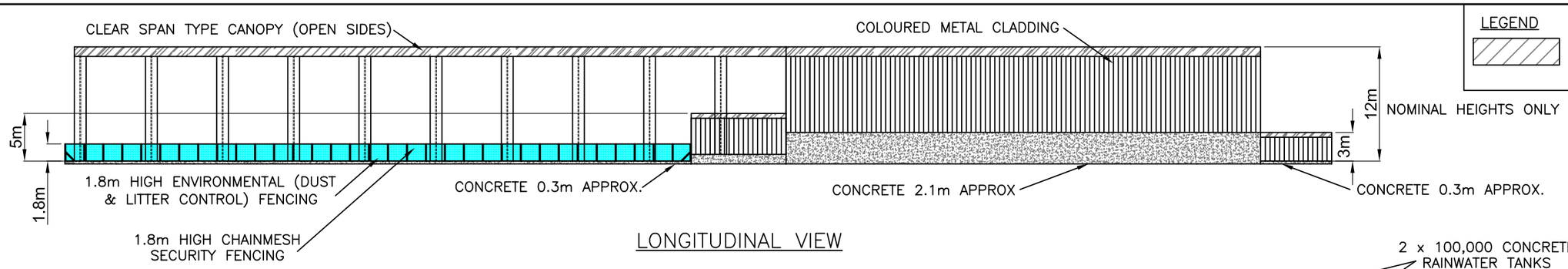
FIGURE 5

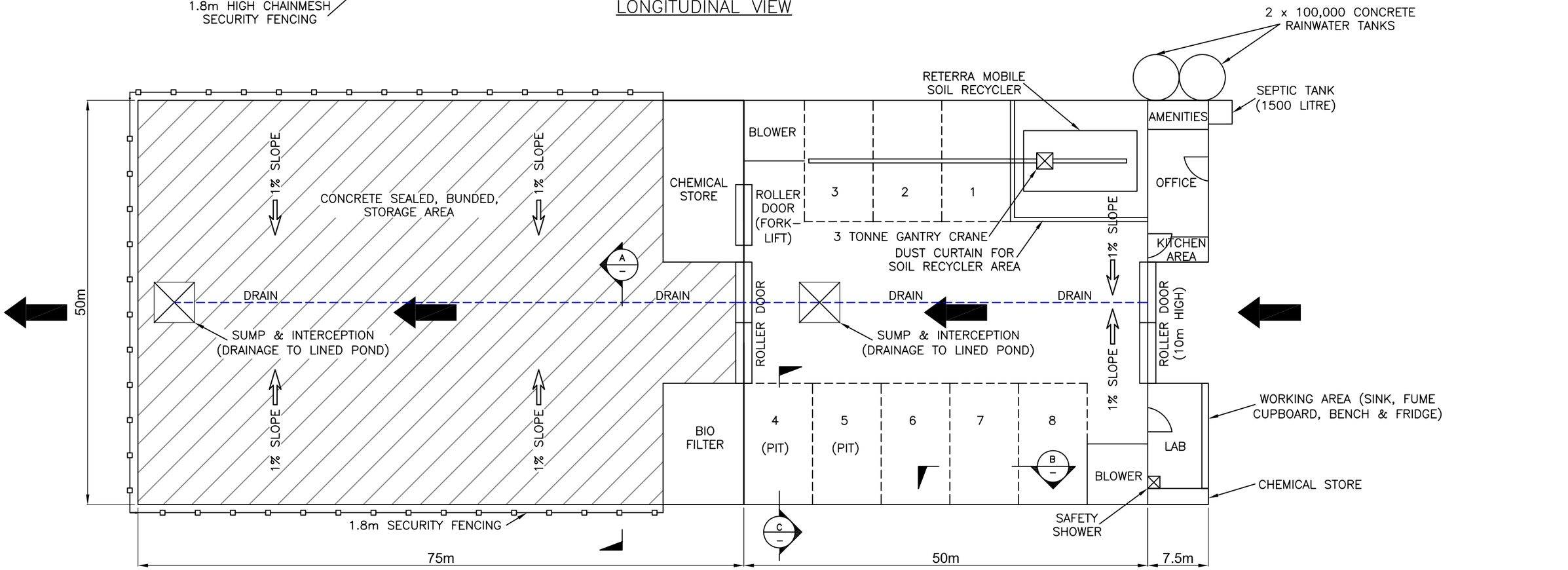
J:\2007\Env\077663306 - IWS Green Star\GIS\PROJECT\077663306 G306F13 ver. 2 Figure 5 Surface Water Drainage.mxd

LEGEND

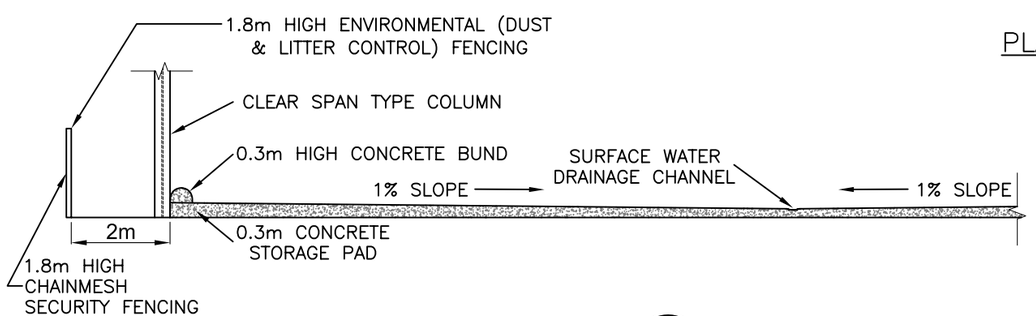
—MATERIAL RECEIVING AND STORAGE LAYDOWN AREA



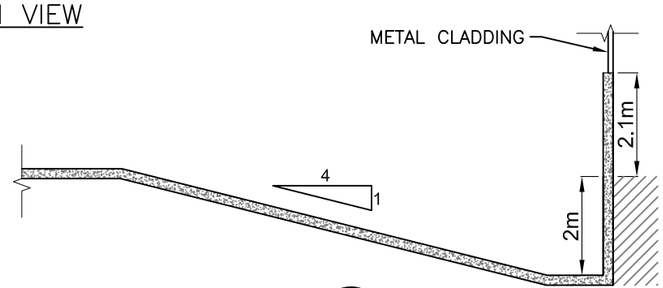
LONGITUDINAL VIEW



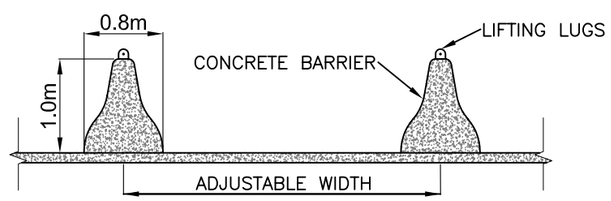
PLAN VIEW



SECTION A — NTS



SECTION C — NTS



SECTION B — NTS

BASE PLAN AND SCALE SOURCED FROM SKETCHES AND SITE OBSERVATIONS

0 10 20 30 40 50m

Scale in metres

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CLIENT: INTEGRATED WASTE SERVICES		PROJECT: MULTI-PURPOSE WASTE TREATMENT FACILITY	
DRAWN: DJH	19-03-2008	TITLE: TREATMENT FACILITY CONCEPT DESIGN (Not for Construction)	
CHECKED	18-03-2008		
SCALE: 1:500	A3	PROJECT No: 077663306	FIGURE No: FIGURE 6 REV. 2

xref- cadfile:- J:\20071\ENV\077663306 IWS\DRAWINGS\3306 FIG. 6 REV. 2

The floor of the building will have a minimum 1% drainage slope. Two bays will be constructed with a concrete sloping ramp of 25% with a small area of the base acting as a sump to allow wet solids to be placed into the bay.

Product arriving at the facility will be unloaded into a labelled bunded bay following documentation checks and clearance. Rejected loads will not be permitted to unload and will be required to leave the site.

A roof is proposed as part of Stage 2. A roof will be constructed as a single structure for both the storage area and proposed treatment facility. It is proposed that for Stage 1 of the development that temporarily stored material will be covered using material of low permeability, such as plastics (ie high density polyethylene) or geomembranes (such as Bentofix) or similar material to prevent infiltration of stormwater and dust suppression. Covers will allow for stormwater run-off, which will be directed to a temporary detention pond and discharge as part of normal stormwater runoff is proposed.

3.2 Stage 2: Multipurpose Waste Treatment Facility

3.2.1 Receipt/Storage Building

The concept design for the building that will receive the soil/product to be treated and also store the treated product is shown in Figure 6. The building will occupy approximately 0.25 hectares (50 m x 50 m) and be of steel frame construction with a coloured metal cladding. The floor of the building will be constructed of an impervious material (concrete) (as proposed for Stage 1) and this floor will form a coving along the edge of the building that is reinforced and rises vertically to form a 2.1 metre wall. The sides of the bays will comprise concrete blocks that are moveable so that the size of the bays can be adjusted according to the volume of material within a discrete batch that requires treatment.

The floor of the building will have a minimum 1% drainage slope. Two bays will be constructed with a concrete sloping ramp of 25% with a small area of the base acting as a sump to allow wet solids to be placed into the bay. The liquid will therefore drain into the sump and the drier material can be scooped out for treatment. There is not expected to be any excess water associated with the treatment of the material outside of these specific bays. However, if there is any, the water will be collected by the internal drainage system and will pass through a sediment trap to a sump where it can be disposed to the existing LLCW and LTPR lined sedimentation pond for storage and treatment.

To minimise potential odour, the building will operate under negative pressure, created by an exhaust gas removal system and be fitted with rapid closing doors. The negative pressure and rapid closing doors will maximise the capture of potential odours and minimise fugitive emissions from the building.

The exhaust system will be connected to a biofiltration unit that will treat and reduce potential odour emissions below the odour criterion of 10 odour units (3 minute average, 99.9%), as required by the *EPA Guideline (373/07), Odour Assessment using Odour Source Modelling*. The criterion of 10 odour units (3 minute average, 99.9%) applies to this situation, as there are less than 12 residents within a 500 metre radius of the facility.

Additional information relating to the biofiltration unit is provided in AWN Pty Ltd's report, provided in **Appendix H**.

Any chemicals utilised in the treatment process will be stored within this building within a bunded chemical storage area. The volume of chemicals stored will be minimised by ordering chemicals for specific batch requirements, thus offsetting the need to maintain larger quantities of chemicals over extended periods.

Product arriving at the facility will be unloaded into a labelled bunded bay following documentation checks and clearance. Rejected loads will not be permitted to unload and will be required to leave the site. Treated product may also be stored within this building, either within a bunded area for this purpose or retained within a treatment vessel until loaded and transported off-site.

3.2.2 Treatment Platform

An impervious treatment pad (concrete or similar) will be constructed as part of Stage 1 of the development. This treatment pad will be approximately 75 m x 50 m (0.375 hectares) (refer Figure 6). This treatment pad will be situated immediately adjacent to the storage shed in order to minimise the distance required to transport materials.

The pad will have a minimum 1% drainage slope, draining to the middle of the pad, where a spoon drain extending the length of it will collect any water that falls onto the pad or seeps from moist material. The volume of liquid collected within this system is expected to be very small as the concrete pad will be covered by the extension of the roof from the receiving shed.

During operation of the treatment facility, the small volume of liquid that may be collected within the sump can be tested for disposal or utilised for dust suppression on the same or similar contaminated material. It may also be possible to dispose of this liquid via the existing LLCW & LTPR lined sedimentation pond. Vehicles will be loaded directly from the treatment pad either for disposal on-site or for transport of clean material off-site as fill.

3.2.3 Site Amenities

A site amenity building will be provided for the anticipated two full-time and up to four staff that may be required to operate the facility. Amenities will include a shower, toilet and kitchen area.

This building will be constructed of the same materials as the storage shed and will be immediately adjacent to the storage shed.

Wastewater will be disposed of via a septic tank (in-ground polyethylene, 1,620 L) and soakage trench system in accordance with the design requirements of the *Public and Environmental Health Act 1987*.

A separate application will be lodged with the District Council of Mallala for the septic tank and effluent disposal system.

3.3 Odour Assessment

AWN Pty Ltd were commissioned to undertake odour dispersion modelling of Stage 1 and 2 activities, in accordance with *EPA Guideline (373/07) Odour Assessment using Odour Source Modelling*. As the proposed facility is not operational, a precautionary approach was taken, with the modelling based on a worst case scenario, which involved:

- An estimation of odour emission rates using odour flux rates measured at a gas works remediation site in Victoria (contaminated gas works soil are generally accepted as highly odorous and representative of the 'worst case scenario' for this facility).
- The facility operating at maximum capacity.
- Odour emissions from three main sources:
    1. The biolfiltration unit (treating 50% of odour within the building at an efficiency of 85%).
    2. Fugitive emissions from the receipt/storage facility (50% of odour within the building).
    3. The treatment pad.

The modelling predicted maximum ground level concentrations of 1.9 odour units (3 minute average, 99.9%) at the nearest sensitive receptor (refer to Appendix H, Figure 3). This level is below the *EPA Guideline (373/07) Odour Assessment using Odour Source Modelling*, criterion of 10 odour units (3 minute average, 99.9%). There are less than 12 residents within 500 metres of the site, and therefore a level of 10 odour units (3 minute average, 99.9%) applies to this development (EPA Guideline 373/07).

Further evidence that potential odours will have a minimal effect on the surrounding areas is provided in an isopleth plot of the highest ground level odour concentrations. The plot predicts that the odour criterion of 10 odour units (3 minute average, 99.9%) will be confined to an area between 100 metres to 200 metres from the operation and within the IWS facility (refer Appendix H, Figure 4).

A copy of the Plume Dispersion Modelling Assessment report, prepared by AWN Pty Ltd, is provided in Appendix H.

To confirm the facility meets the EPA odour criterion of 10 odour units (3 minute average, 99.9%), odour dispersion modelling will be undertaken within 12 months of the completed facility commencing operations.

The modelling will be based on samples taken from odour sources on-site, including the biofiltration unit and treatment pad. A copy of the odour dispersion modelling report will be provided to the EPA for their information.

3.4 Surface Water and Drainage Management

Surface water and drainage management will be conducted in accordance with the existing *Surface Water and Drainage Management Plan* of the LEMP.

Surface waters from the development site area will be directed so as to link in with the existing surface water and drainage management plan, as shown in Figure 5. Environmental screens (embankments) planned as part of future works will also act to redirect water around the facility.

The surface water, watercourses and water bodies are protected by the management strategies delineated in the LEMP (refer Appendix F). It should be noted that there are no existing natural watercourses in or around the site and water will not flow onto the receiving and storage area due to the combination of interception drains and concrete edges to the facility is covered, protecting stormwater from coming into contact with contaminated or treated material. Stormwater is also unable to flow onto the receiving shed floor or concrete pad due to the combination of interception drains and the concrete coving that forms the walls of the facility. Natural patterns of surface water flow are maintained, as far as is practicable, and the use of vegetated drains is designed to slow the movement of water to reduce erosion and sediment transport.

The proposed site for this development is highly disturbed and the original vegetation structure was destroyed prior to the site being purchased by IWS. Existing native vegetation where it exists and revegetation has been protected by the careful location of the stormwater system and the vegetation in turn will reduce the surface volume of stormwater.

3.5 Water Supply

Stormwater that falls on the facility roof will be collected by rainwater tanks and utilised at the site. Any overflow will be directed into the stormwater drainage system. Captured water may subsequently be utilised on site for processing, dust suppression or the watering of the plants that form the environmental screens. Two concrete rainwater tanks totalling 100,000 litres will be installed adjacent to the site office to capture runoff from the roof of the facility, as part of Stage 2.

The expected water consumption for the contaminated soil treatment facility is approximately 10 ML of water per 10,000 tonnes of treated waste material. On average, the proposed facility is expected to receive around 15,000 to 30,000 tonnes per annum which equates to approximately 15 to 30 ML of water per year.

3.6 Environmental Screens

The structure and location of the existing mounded and un-mounded vegetation screens is provided in the LEMP (refer Figures 10.2 and 10.3). Stage 2 of the development is not expected to have significant effects to visual amenity. Stage 2 works will include extension of mounded vegetation screens to provide additional visual screening from the direction of Port Wakefield Road and the northern property boundary, as shown in Figure 5.

Un-mounded revegetation that exists adjacent to the property boundaries will be retained with the earth mounds constructed internal to this revegetation, generally as shown in Figure 5. Vegetated mounds will therefore be present around three sides of the proposed facility. The revegetation work will improve local amenity, increase biodiversity, assist the control of surface water flows and reduce dust and noise emissions. The revegetation work will be undertaken in accordance with the existing Vegetation Management and Revegetation Plan of the LEMP.

3.7 Transport

The layout and design has incorporated the need for traffic flow through the facility to be uni-directional (refer Figure 6). The facility has been sited adjacent to the existing main service road to offset the need to construct additional road infrastructure. All roads and traffic areas are to be constructed in accordance with the Australian Standard design requirements, in order to provide all weather access to the facility for heavy vehicles. The facility includes a rejected vehicle return path.

3.8 Environmental Issues & Management

A new section of the Landfill Environmental Management Plan (LEMP) for the Northern Balefill has been prepared, which documents the environmental management requirements for the proposal (refer Section 18), integrated within the existing management requirements of the site.

Air modelling was undertaken as part of assessment activities as described above, and findings are included as part of this variation application and associated documents (refer Section 3.3 of this report and **Appendix H**). No other environmental effects studies were undertaken for the proposal, and general conditions are considered consistent with the environmental impact assessment undertaken as part of the overall Northern Balefill site Environmental Impact Statement (EIS) (1996).

The potential for negative environmental effects associated with Stage 1, the proposed storage and laydown area is low and will be managed in accordance with the management measures outlined in the LEMP (refer Appendix F). The risk of on or off-site movement of contaminated material is low due to the proposed management measures.

The potential for negative environmental effects associated with Stage 2 is low based on the design aspects and management measures outlined in this variation application and the site LEMP.

The IWS Northern Balefill LEMP outlines the current environmental management and mitigation controls for the site. The LEMP was updated to provide additional controls relating to Stage 1 and Stage 2 of the proposed development. This will be submitted to the EPA for approval. The LEMP includes management measures for the following environmental issues:

- Groundwater and Leachate.
- Surface Water and Drainage.
- Air Quality.
- Noise.
- Odour.
- Dust.
- Amenity.
- Effluent.
- Facilities.

3.9 Proposed Development

The proposed variation is within the site of the existing IWS Northern Balefill facility.

The variation comprises a storage and treatment shed that extends cover over a sealed concrete pad and other operational and staff facilities, the details of which are detailed below and in Section 4.

The proposed development will be located approximately 700 metres from Port Wakefield Road and outside the existing 520m buffer zone created around the nearest dwellings on the adjacent properties (refer Figure 4).

The variation forms part of IWS's commitment to develop an integrated waste reuse, recycling, treatment and management facility for South Australia. The facilities are designed to maximise secondary resource recovery and environmental management of the solid waste stream.

The facility will be capable of receiving and processing material that is contaminated as listed in Schedule 1 of the *Environment Protection Act 2003*, that is, soil that may exceed the criteria for Waste Fill, Intermediate Landfill Cover and Low Level Contaminated Waste, refer Section 5. It is proposed that soil exceeding the *low level contaminated waste criteria for the classification and disposal of contaminated waste* may also be received and processed at the treatment facility (refer Appendix D).

It is noteworthy that often this type of material is treated on sites within the populated urban areas. This proposal will reduce potential environmental effects on the local environment and communities.

4 OPERATIONAL DETAILS – STAGE 1

4.1 Modus Operandi

On entering the site (off Port Wakefield Road), trucks will report to the existing gatehouse where drivers will sign in and complete a brief site safety induction, if not previously inducted to the site. Prior to development of the full facility infrastructure, the existing gatehouse will be the contact point for load inspection and documentation review duties. Waste documentation will include details of contaminated waste including chemical analysis. If the appropriate documentation is not presented to staff upon arrival, trucks will be denied access until documentation is presented.

Upon receiving the appropriate documentation, facility staff will direct trucks to unload in the receiving and storage floor area. Traffic flow through the shed will be one-way at all times, with the exception of trucks reversing to unload. Once unloaded, trucks will proceed through the shed and concrete pad, exiting the facility via the western end of the concrete pad, and exiting the site via the sealed access road back to the main entrance gate.

It is anticipated that stockpiling limits for the receiving and storage laydown area will be a maximum storage volume of approximately 6,000 m3 to an approximate average height of 2.0 metres, during operation of the temporary facility. During construction, material may be required to be moved around within the material storage area, which for short periods will result in a stockpile height above 2.0 metres.

4.2 Hours of Operation

In accordance with the Licence conditions (Condition 40) of the Northern Balefill facility, the proposed contaminated soil treatment facility will operate during the following hours:

- 6.00 am to 6.00 pm – Monday to Friday.
- 7.00 am to 5.00 pm – Saturday.
- 8.00 am to 4.00 pm – Sundays and public holidays.

4.3 Employees

Employee numbers will vary depending on process and work load demands, however it is expected that current site staff number will be suitable for the receipt and storage of material (Stage 1).

4.4 Site Access and Security

Site access will be via the current IWS Northern Balefill entrance, via the service road from Port Wakefield Road where contractors and visitors are required to report to the site office and complete a brief site safety induction, if not previously inducted to the site.

The perimeter boundary fence for the Northern Balefill site is currently a 1.5 metre high post and wire fence with vermin proof wire to a height of 1.0 metre and two strands of barbed wire above. This is generally consistent in overall form and height with standard agricultural fencing.

Boundary fencing around the proposed facility will be 1.8 metre high chain wire security fence incorporating shade cloth or material of a equivalent nature for the control of dust.

The proposed receiving and storage laydown area will be signposted to prominently display warnings, site information and directions, including the following:

- Main entrance sign indicating that the facility is not open to the general public, the name of the licensee, emergency phone numbers, licence number and hours of operation, existing signage will be modified as required.
- Traffic signs to direct users and indicate speed restrictions within the site.
- Direction, information and other signs to ensure appropriate and orderly use of the facility.

4.5 Traffic

It is expected that due to the storage limit proposed as part of this development application, the number of vehicles will be limited. It would be anticipated that deposition of material will be dependent on actual needs, and will be limited by the carrying capacity of the facility, that is, a maximum of 6,000 cubic metres. Traffic is not expected to be significant (refer Section 5.6 below).

5 OPERATIONAL DETAILS – STAGE 2

5.1 Modus Operandi

On entering the IWS waste management site (off Port Wakefield Road), trucks will report to the existing gatehouse where drivers will sign in and complete a brief site safety induction, if not previously inducted to the site. Once inside, trucks will proceed along the sealed access road and enter the treatment facility where they will report to the site office and drivers will present the appropriate documentation. This documentation will detail the nature of the contaminated waste. While waiting, trucks can be parked in the sealed parking area adjacent to the site office and staff amenities, refer Figure 4. If the appropriate documentation is not presented to staff upon arrival, trucks will be denied access until documentation is presented, and drivers will be required to exit the facility via the rejected vehicle turn path if acceptable documentation is not produced.

5.2 Proposed Soil Treatments

A brief summary of the proposed treatment technologies is given below. A more detailed description of the technologies is given in **Appendix I**.

5.2.1 Contaminant Stabilisation

Prior to treatment and costing, initial bench top trials will be conducted to determine the most effective methods of stabilisation. Based upon the outcome of these trials, advice can be given on the most cost effective approach to achieving the objectives of the remediation. Both physical and chemical stabilisation/fixation can be enhanced with the use of the treatment unit. Up to 100 tonnes per hour can be homogeneously mixed with fixating chemicals.

5.2.1.1 Physical Stabilisation (Solidification)

Mixing waste with sulphur cement, silicate cement or phosphates results in solidification of the material. The treated waste can then be managed on-site or disposed to a licensed off-site facility. Waste characteristics such as void volume, soil pore size and permeability will influence the effectiveness of this treatment method.

5.2.1.2 Chemical Stabilisation

Contaminants are chemically absorbed and immobilised or reduced in toxicity by proprietary processes. This process involves the addition of proprietary reagents to the soil in order to produce an insoluble complex within the soil matrix. It also minimises the leachability of heavy metals from within the soil matrix. Contaminated soil is pre-screened to remove debris that can adversely affect the process.

Pre-treatment may be required to improve the performance of the process and the product to meet specific conditions. Contaminated soil is then loaded into a hopper and conveyed to the reaction vessel where proprietary fixation reagents are added and blended with the soil. Treated soil exits on a conveyor and is stockpiled and analysed to verify compliance with site specific targets. Pending successful remediation results, waste is released from holding to be disposed off-site or reused on-site in accordance with existing license conditions.

5.2.2 Bioremediation

Bioremediation processes normally require the contaminated material to initially be screened and subsequently mixed in the Reterra with the required amendments before being placed into windrows on the concrete pad. Mixing occurs within the shed. Amendments may include:

- Green organics.
- Inorganic fertilisers (eg super phosphate and urea).
- Biosolids (as an inoculum).
- Biosurfactants (microbial and plant derived surfactants).
- Vegetable oils.
- Complex sugars (eg cyclodextrins).
- Carbohydrates.

In most cases a forced vacuum aeration system will be established on the concrete lined pad in a bed of woodchips before the mixed material is placed on top. Windrow dimensions will generally be 5.0 metres at the base, 2.5 metres high and of a practical length, determined by the volume of material and size limitation of the concrete pad. Windrow forming will be undertaken using a front end loader or excavator. All windrows will be covered for dust suppression and to maintain windrow integrity.

Monitoring during treatment will involve a number of parameters, including:

- Contaminant sampling and testing.
- Temperature monitoring.
- Moisture monitoring.
- Off-gas monitoring for oxygen, carbon dioxide and methane.

5.3 Hours of Operation

In accordance with the licence conditions (Condition 40) of the Northern Balefill facility, the proposed contaminated soil treatment facility will operate during the following hours:

- 6.00 am to 6.00 pm – Monday to Friday.
- 7.00 am to 5.00 pm – Saturday.
- 8.00 am to 4.00 pm – Sundays and public holidays.

5.4 Employees

Employee numbers will vary depending on process and workload demands. Operation of the completed facility (Stage 2) is expected to require four full-time employees when fully operational.

5.5 Site Access & Security

Site access will be via the current IWS Northern Balefill entrance, via the service road from Port Wakefield Road where contractors and visitors are required to report to the site office and complete a brief site safety induction, if not previously inducted to the site.

The perimeter boundary fence for the Northern Balefill site is currently a 1.5 metres high post and wire fence with vermin proof wire to a height of 1.0 metre and two strands of barbed wire above. This is generally consistent in overall form and height with standard agricultural fencing. Boundary fencing around the proposed facility will be 1.8 metre high chain wire security fence incorporating shade cloth or material of a equivalent nature for the control of dust.

The proposed facility will be signposted to prominently display warnings, site information and directions, including the following:

- Main entrance sign indicating that the facility is not open to the general public, the name of the licensee, emergency phone numbers, licence number and hours of operation, existing signage will be modified as required.
- Traffic signs to direct users and indicate speed restrictions within the site.
- Signs stipulating the types of waste the depot is not licensed to receive.
- Direction, information and other signs to ensure appropriate and orderly use of the facility.

5.6 Traffic

On average, the proposed facility is expected to receive a around 15,000 tonnes to 30,000 tonnes per annum. This is based on the use of B-double or semi-trailer tipper vehicles for the transport of soil, with a capacity of approximately 15 tonne per vehicle average. This equates to around 20 to 40 vehicles per week or 3 to 6 per day entering the facility. This further equates to approximately 6 to 12 two-way vehicle movements per day.

The traffic movements reported in the *Mallala Solid Waste Landfill Environmental Impact Statement* (February 1996) were 7,300 two-way movements per year along Port Wakefield Road. Therefore, the additional vehicle movements expected as a result of the proposed facility form less than 0.1 % of those reported in the EIS and can be described as negligible.

There is expected to be some additional vehicle movements if the removal of suitably treated soil off-site becomes viable, however, standard industry practice is to backload vehicles that have delivered contaminated soil.

6 PLANNING ANALYSIS

This section provides an assessment of the proposed variation in relation to the relevant provisions of the Development Plan for the *Mallala District Council*.

6.1 Outer Metropolitan Region – Development Zone Objectives

The Integrated Waste Services Pty Ltd Northern Balefill facility is located within the Mallala District Council within the Outer Metropolitan region. The Outer Metropolitan Region Development Zone comprises 15 Councils, including the Mallala District Council. The following objectives and principles that apply for the control of development within this Outer Metropolitan Region in addition to those that are specific for Mallala District Council.

The following objectives and principles of development control are applicable to the nature of the proposed facility.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
Objective 1: **Orderly and economic development**	The proposed variation is located entirely within the existing IWS Northern Balefill site and will not involve the loss of rural land currently utilised for primary production, recreation or water and nature conservation. The location has significant economic advantages for the development industry as it allows existing site infrastructure and services to be better utilised. The proposed development is orderly as it co-locates activities within a discrete area on the established waste management site and integrates existing services offered at the site. The development of these facilities north of the City of Adelaide is consistent with the increasing community need, as residential development increases on the northern side of the metropolitan area within former industrial areas that are associated with contaminated soils. The only other equivalent facility is located well to the south of Adelaide. The proposal provides for traffic in a manner that does not prejudice the free flow of traffic in the locality, and does not affect the operation of neighbouring or nearby land uses. The development is a form that can be established such as not to effect the character or amenity of the locality. Accordingly, as the proposal satisfies the design and function criteria set out in the Development Plan, it results in an orderly and economic development.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
Objective 2: **A proper distribution and segregation of living, working and recreational activities by the allocation of suitable areas of land for those purposes.**	The IWS Northern Balefill site is a highly suitable location having been identified and approved as a significant waste management facility. The variation can be established entirely within the site, offsetting the need to develop land utilised for other purposes, such as farming. The site is suitably separated from other living and working environments.
Movement of People and Goods	
Objective 11: **The safe and efficient movement of people and goods.** **Objective 12:** **The free flow of traffic on roads by minimising interference from adjoining development.**	The primary road network utilised is Port Wakefield Road, with the existing service road and on-site traffic network. Additional vehicular access and egress will be developed on site to link the infrastructure with the on-site traffic network. A uni-directional flow of vehicular traffic through the facility is established. All roadways and vehicular services will be constructed in accordance with the relevant design requirements and standards. Additional, traffic movements associated with the operation of this facility will not affect the operating status of Port Wakefield Road. It is the highest order road being part of National Highway 1 with a service road designed in accordance with DTEI requirements. There will not be a continuous flow of traffic associated with this activity as the material delivered to the site will reside in the facility for storage and treatment. The type of vehicles accessing the proposed facility and utilised within the facility are consistent with those currently transporting waste to the site. There is no surrounding development that will interfere with the operation of this facility and the site is sufficiently buffered so as to prevent interference from future development. Contaminated material will only be transported to the site by an operator licensed in accordance with EPA and NEPM guidelines.
Appearance of Land and Buildings	
Objective 27: **The amenity of localities not impaired by the appearance of land, buildings and objects.**	The proposed variation is within the existing landfill site, with the proposed infrastructure to be located approximately 700 metres from Port Wakefield Road and beyond the existing 520 metre buffer zone defined as a separator from the nearest dwellings on the adjacent properties.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	The soil treatment area will be further screened from Port Wakefield Road and adjacent properties by existing vegetated earthen mounds located adjacent to the property perimeter. Additional vegetated mounds and revegetation work in the immediate vicinity of the operation will be part of Stage 2 of the development. Plantings will enhance the visual amenity of the proposed infrastructure and provide habitat for endemic native flora and fauna. The typical structure of the vegetated earthen mounds is provided in the LEMP as Figures 10.2 and 10.3. The site will be maintained in an orderly manner in accordance with the Landfill Environment Management Plan established for the site.
Rural Development	
Objective 37: **The retention of rural areas primarily for agricultural, pastoral and forestry purposes, and the maintenance of the natural character and beauty of such areas.**	The co-location of the proposed facility within the existing IWS Northern Balefill site preserves the surrounding rural landscape, as this site has already received development approval for waste management activities. Furthermore, revegetation work at the site and vegetated environmental mounds have contributed to enhancing the character of the area. The proposed facility will not affect the land use of the adjoining properties or surrounding rural area.
Conservation	
Objective 42: **Retention of native vegetation.** **Objective 43:** **Buildings and other structures sited on allotments in a manner which minimises the requirement to clear or remove native vegetation.**	Native vegetation existing at the site is managed in accordance with the requirements of the Native Vegetation Act and the Vegetation Management and Revegetation Plan as incorporated into the LEMP. The siting of buildings and other infrastructure is undertaken so that no clearance of native vegetation, is required.
COUNCIL-WIDE	
General	
Objective 1: **Orderly development of the Mallala district, with economic extensions of services and facilities.**	The proposed development is an extension of the services currently offered at this site in the same use of waste management. The location of the proposed facility allows existing infrastructure to be shared and avoids the necessity to duplicate facilities. The environmental footprint of the facility is reduced through the ability to be co-located.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	The provision of these additional services will provide an economic provision of these facilities to the Adelaide community. With continuing residential development in former industrial areas occurring within Adelaide, there is likely to be increasing demand for such a facility to the north of the city.
Objective 2: **Development and land management which seeks to protect and enhance biodiversity and areas of conservation significance.**	There are no areas of conservation significance at the proposed site. The existing LEMP has been updated to incorporate considerations of the proposed infrastructure and associated processes. Environmental values are protected through the implementation of the LEMP. Section 10, 'Vegetation Management and Revegetation Plan' of the LEMP outlines the objectives and management actions that will be undertaken to enhance the biodiversity of the site.
Objective 8: **Minimisation of fire risk throughout the Mallala district.**	Fire suppression and prevention actions are established at the facility and these have been upgraded to accommodate the proposal. Section 14 'Fire Risk Management Plan' of the LEMP details fire management objectives and procedures, and fire management is incorporated into the design requirements of the facilities themselves in accordance with the BCA requirements.
Objective 10: **Opportunities for further diversification and growth of local employment.**	The proposal to establish a contaminated soil receivable facility (Stage1) and a treatment facility (Stage 2), at the Northern Balefill site is a diversification of the existing facility and represents additional employment opportunities for the local population.
Form of Development	
Objective 14: **Development of land that is suitable for the intended use, activities and structures having regard to flood potential, slope and land slip, erosion, water tables, sea level rises, extreme tides, stormwater, wave effects and other coastal influences, mineral deposits and mining operations.**	The site is highly suited to the proposed function and is not subject to the effects of coastal processes such as tidal movements, wave action or extreme tides. The proposed site has previously been assessed through the preparation of an EIS for the Northern Balefill (1996) planning approval process and is not known to have mineral deposits and is not subject to mining operations. As the area is relatively low lying and gently sloping the management of surface water is an environmental issue that has been addressed through Section 7 'Surface Water and Drainage Management Plan' of the LEMP.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	Design and siting considerations have been incorporated into the infrastructure so that it does not contribute to localised flooding or erosion. The land chosen for this facility has been assessed to be suitable for the purpose.
Objective 15: **Buildings and structures sited on allotments in a manner which minimises the requirement to clear or remove native vegetation.**	This is within an area that does not require the clearance of native vegetation.
Objective 16: **Compatibility of new buildings with the surrounding environment.**	Stage 2 includes the construction of a shed for the temporary storage of soil and an amenity building for staff at the site. The shed and amenity building will be constructed of materials (Colorbond® finished or similar) that is consistent with large farm machinery storage sheds or processing facilities and will comply with the Building Code of Australia. The external finish of the shed will be of an environmentally sympathetic colour (eg light green) so as to blend into the natural environment. These buildings will be within character for a rural landscape. The facility will be screened by both existing and newly established vegetated mounds. The mounds will be planted with local species adapted to the on-site conditions and serves to connect the facility to the surrounding environment. This type of shed is entirely consistent with a range of built form that can be anticipated within the rural area.
Objective 17: **Avoidance of nuisance from noise, light, dust, odour and any other source.**	The proposed facility is located beyond the established buffer zones (520 metres) for the nearest sensitive receptors and is not likely to present an environmental nuisance. The existing LEMP has been modified where required to manage any additional potential environmental issues associated with the facility and its operation. The vegetated mounds established around the facility will act to reduce noise, dust and create a visually appealing site that is connected to the surrounding landscape. Administrative controls have been established in accordance with existing development approval conditions and EPA licence conditions to avoid environmental nuisance. Hours of operation will remain unchanged.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
Objective 19: **Land zoned for general farming and horticulture protected from encroachment by incompatible land uses.**	The existing Northern Balefill site is an approved waste management facility. The establishment of these facilities within this site does not represent encroachment upon general farming land within the surrounding area. The proposed facility is entirely compatible with the existing land use.
Industrial Development	
Objective 24: **The minimisation of environmental impacts of industrial activity through appropriate location, site design and management, the minimisation and control of emissions, and the provision of appropriate buffer distances from sensitive uses.**	The proposed development is sited beyond the established appropriate buffer zone (520 metres) from the nearest sensitive receptors. The co-location of facilities at the Northern Balefill site allows existing services and facilities to be utilised, thereby reducing the environmental effects as compared to a standalone facility. Section 9 'Air Quality and Noise Management Plan' of the LEMP for the existing site has been updated to incorporate the infrastructure and processes associated with the proposed facility so that potential environmental issues, including control of emissions, are appropriately managed. Design considerations have been incorporated to the design to allow for rainwater harvesting so that this water can be utilised on site, the design of the vegetated mounds to reduce dust emissions, improve amenity and create ecological habitat and the stormwater diversion and treatment systems to protect the quality of surface and groundwater within the area.
Movement of People and Goods	
Objective 26: **Protection of land in the vicinity of Port Wakefield Road and secondary roads from unsightly developments.**	The development is screened from Port Wakefield road by the vegetated mounds and existing plantings along the service road. In addition the shed will be finished in an environmentally sympathetic colour (eg light green) to further blend into the surrounding environment. The development utilises existing services and infrastructure where possible to reduce the environmental footprint and avoid the unnecessary duplication of these services and structures. The proposed facility is orderly, appropriately sited and effectively screened by the vegetated mounds.
Objective 28: **Provision of a safe and efficient transport system to facilitate travel to, from and within the Mallala district.**	The proposed development will utilise the existing transport system, namely Port Wakefield Road and the existing service road into the site. Access will be constructed from this service road to the facility.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	It should be noted that the construction of this facility at this site will provide a necessary service to the north of the city of Adelaide, offsetting the present need to transport soil through the city to the alternate site situated south of Adelaide.
Waste Management	
Objective 34: **The orderly and economic development of waste management facilities in appropriate locations.**	This proposal represents an orderly development within an existing waste management facility that has been approved and is operational as an appropriate location. The facilities provide economic development within the region and will act to reduce the amount of contaminated soil that is presently disposed of to landfill.
Objective 35: **Minimisation of environmental impacts from the location and operation of waste management facilities.**	Environmental impacts associated with the receiving and storage areas are expected to be minimal. Potential environmental effects associated with the proposed facility will be managed through the mitigation measures outlined in the updated LEMP. The facility is beyond the prescribed separation distance from sensitive receivers.
Objective 36: **Waste management facilities to be protected from incompatible development.**	The location of the proposed facility is beyond the existing buffer zones for the sensitive receivers. The proposed development is compatible and complementary to the existing waste management facility.
Environment Protection	
Objective 37: **Protection of the quality of water resources and coastal areas from hazardous waste, discharge or storage uses.**	All materials on-site are stored within appropriately bunded or sealed areas as required by legislation and licensing requirements, thus preventing discharge to the surrounding environment. The concrete pad has a sloping floor that drains the surface to a drain that extends the length of the centreline that is connected to a sump, while a 0.3 metre high concrete bund extends around the perimeter of the pad. The small volume of liquid collected by this sump will be managed in accordance with the licence requirements. It is proposed that interim storage of materials, as part of Stage 1 of the development, will be covered using material of low permeability, such as plastics (ie high density polyethylene) or geomembranes (such as Bentofix) or similar material to prevent infiltration of stormwater and dust suppression. Covers will allow for stormwater runoff, which will be directed to the temporary detention pond.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	Stage 2 of the development includes the addition of a roof structure over part of the storage area. Water resources and coastal areas are protected from hazardous waste, discharges and storage uses by the implementation of Section 5 'Groundwater and Leachate Management Plan', Section 6 'Soil Erosion Management Plan', and Section 7 'Surface Water and Drainage Management Plan' of the LEMP.
Objective 38: **Control the export of sediment, suspended solids, organic matter, nutrients, bacteria and litter in stormwater run-off.**	Stormwater that falls upon the shed will be collected in rainwater tanks and utilised at the site with any overflow directed into the stormwater drainage system. This water may subsequently be utilised on-site for processing, dust suppression or the watering of the plants that form the environmental screens. The stockpile areas are located within the shed and this prevents export of sediment via stormwater. The concrete pad where processing occurs is protected from surface water inflow via a perimeter bund. The roof line of the shed extends over the concrete pad. Any moisture present on the concrete pad will drain to the central interception drain and sump. The area surrounding the pad is also gently contoured to direct surface water flows around the infrastructure along natural drainage lines wherever possible and artificial drainage lines where necessary. Section 6 'Soil Erosion Management Plan' and Section 7 'Surface Water and Drainage Management Plan' within the LEMP have been modified to incorporate this proposed facility. The surface water control system is provided in Figure 5.
Objective 40: **Hazardous substances handled, stored and used with extreme care and appropriate safety precautions.**	All materials will be stored and handled in compliance with the material safety data sheets, relevant legislative controls and IWS standard operating procedures including site induction and training. A 'Hazardous Chemical Management Plan' has been incorporated into the LEMP.
Conservation	
Objective 43: **Conservation and reuse of stormwater using such method of aquifer recharge, swales, holding ponds, on-site storage, irrigation and seepage trenches.**	Stage 1 of the development will not be using water in its operations, as such there are limited opportunity for conservation and reuse of stormwater.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	It is proposed that stormwater will be captured from the roof of Stage 2 of the development and stored on-site in two 100,000 litre concrete rainwater tanks and utilised on-site for dust suppression, within the soil treatment processes or used to support the on-site plantings of indigenous vegetation until established, in accordance with Section 10 'Vegetation Management and Revegetation Plan' of the LEMP. The soil treatment processes incorporate water saving and reuse principles into their design to minimise water use. Use of the rainwater collected from the roof of the facility will reduce the amount of groundwater required.
Objective 45: **Development sensitive to the preservation of the natural environment for future generations.**	This development involves the treatment of contaminated soil so that contaminants may be reduced to a level or otherwise made safe. The materials can then be reused or safely disposed in the low level contaminated soil cell that exists on-site. The treatment of this contaminated material reduces the environmental and health risks posed by such material, and enables areas of urban and other land to be made safe. The co-location of this facility at the existing landfill site does not impact on the natural environment and the service provided affords significant environmental, social and economic benefit. Overall site revegetation carried out as part of current operations is anticipated to result in a significant environmental benefit at the site.
Catchment Water Management	
Objective 46: **Protection of the quality and quantity of South Australia's surface waters (inland, marine and estuarine) and underground waters.**	Section 5 'Groundwater and Leachate Management Plan' within the LEMP is modified to include the proposed development. It should be noted that the soil will be stockpiled and covered and therefore should not have any impact upon the quality of the surface or underground waters. All materials stored on-site will be within bunded areas or upon bunded pallets and there will be no uncontrolled water flow onto or from the floor of the facility. Many of the proposed treatment processes are contained systems with no discharge. Chemicals are expected to be utilised in Stage 2 of the development.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
Objective 47: **Development designed, located and managed to prevent or minimise the generation of waste (including wastewater) by applying the following waste management hierarchy in the priority order shown below:** **a) avoid waste production;** **b) minimising waste production;** **c) reusing waste;** **d) recycling waste;** **e) recovering part of the waste for re-use;** **f) treating waste to reduce potentially degrading impacts; and** **g) disposing of waste in an environmentally sound manner.**	The operation will include treatment processes attune with the waste hierarchy and systems designed to avoid discharge, reuse water and treating agents, and produces products that may either be reused or are rendered safe for disposal. The details of these processes are discussed in detail within Section 7.2 of this application. This variation will therefore facilitate: • reuse of waste; • treatment of waste to reduce potentially degrading impacts; and • disposal of waste in an environmentally sound manner.
Objective 48: **Development which:** **a) ensures that surface run-off promotes the restoration of natural flow regimes;** **b) prevents soil erosion and water pollution;** **c) protects stormwater from pollution sources;** **d) protects environmental flows required to meet the needs of the natural environment;** **e) protects water quality and riparian zone by providing adequate separation distances from watercourses, and other water bodies;** **f) protects water quality from problems associated with salinity;** **g) maintains natural hydrological systems and existing indigenous vegetation;** **h) maintains natural water storage capacity whether temporary or permanent; and** **i) protects aquifers, particularly recharge zones and their dependant ecosystems.**	Section 6 'Soil Erosion Management Plan' and Section 7 'Surface Water and Drainage Management Plan' in the LEMP provides the necessary management techniques for the protection of surface water. It should be noted that there are no existing natural watercourses or water bodies within the vicinity of the proposed site of this development. Stormwater is protected from contamination by the presence of interception drains that prevent the flow of surface water onto the treatment area. The entire facility is covered to avoid rain falling directly onto stockpiles. Revegetation work undertaken at the site utilises indigenous vegetation and will create a net gain of habitat.
Objective 53: **Dams, walls or other water collection or diversion mechanisms constructed and managed in a manner which:** **a) protects catchment water quality and quantity;**	As far as is practicable, the surface water drainage system maintains the natural flow regime and is designed in a manner so as to avoid mobilisation of sediment. Low flow velocity drains that maintain a cover of vegetation are employed.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
b) provides sufficient water during low flow periods for downstream dependent ecosystems; **c) allows migration of aquatic biota; and** **d) protects and enhances amenity.**	There are no existing watercourses or water bodies within the vicinity of the proposed development, although control measures have been developed to protect the environment.
Objective 54: **Integrated stormwater management at the catchment level, drainage system level and site level including incorporation of water sensitive design in all development.**	The utilisation of closed operating systems is a mechanism by which water is conserved and water will be recycled throughout the treatment processes. In addition, stormwater is collected and utilised on the site from two 100,000 litre concrete storage tanks, thereby reducing the demand upon water derived from the deep aquifer.
Objective 55: **Storage and/or use of water including treated waste water and/or imported water which avoids adverse impact on public health, water and soil and their dependent ecosystems.**	The amenities on-site include shower, toilet, hand washing and kitchen facilities for up to six workers. These facilities are constructed in accordance with the Building Code of Australia, Plumbing and Drainage Code and Public and Environmental Health Act 1987. Due to the small number of workers located at the site and the nature of the processing undertaken, a 1,620 litre septic tank and soakage trench will be installed to manage wastewater generated by on-site staff. The generation of such a low volume of wastewater and the irregular utilisation of the facilities is deemed not suitable for the installation of a biocycle type system. The wastewater system will be subject to approval in accordance with the Public and Environmental Health Act 1987.
Objective 56: **The sustainable use of natural water resources (including groundwater, surface water and watercourses).**	Sustainable water use principles have been incorporated into the design of the proposed development in order to protect water resources within the vicinity of the development from any potential contaminants and to minimise water use throughout the treatment process. Stage 1 of the proposed development is not anticipated to use water or impact natural water resources. Stage 2 includes utilising rainwater, recovering treatment water and recycling this water and utilising treatment technologies that reduce the volume of water required. Details of the treatment processes are provide in Section 7.2.
Appearance of Land and Buildings	
Objective 62: **Improvement of the appearance of all land and buildings throughout the district.**	The buildings will be constructed of materials (sheet metal) that are typically associated with similar structures, such as animal production sheds or machinery sheds, within the general farming zone.

OUTER METROPOLITAN REGION	
Form of Development	**Comment**
	The finish of the shed will be sympathetic to the environment and be non-reflective. Appearance of the land will be improved through the establishment of the vegetation screens, vegetated mounds and general landscaping, utilising indigenous plants. The site of the proposed buildings is a disturbed and formerly cleared site with little natural vegetation cover. The proposed plantings will restore structure to the vegetation community at the site and represent a significant increase in the diversity of habitat available.
Objective 63: **Sympathetic blending of development with the built and natural environment in the locality.**	The architectural style of the buildings and materials blend with the surrounding and typical general farming characteristics. The revegetation and landscaping undertaken at the site will blend with the existing landscaping and further restore indigenous vegetation on-site.
Bushfire Protection	
Objective 79: **Development should minimise the threat and impact of bushfires on life and property while protecting the natural and rural character.**	Section 14, 'Fire Risk Management Plan' within the LEMP has been modified to include this facility. The siting of this facility takes advantage of the firebreak provided by the main access road, and an additional break is provided around all site infrastructure providing fire and emergency access and egress along the perimeter of the infrastructure.
Objective 80: **Buildings and the intensification of non-rural land uses directed away from areas of high bushfire risk.**	The area of the proposed development is not zoned as high bushfire risk according to Figures Mal(BPA)/4 and 6 (Mallala District Council, 2007).

PRINCIPLES OF DEVELOPMENT CONTROL

General	
Principle 1: **Development should take place on land which is suitable for the intended use having regard to Mallala (DC) Structure Plans Mal/1 (Overlay 1) including Enlargements A and B, and Mal/1 (Overlay 2), and with regard to the location and condition of that land and the objectives for the zone or policy area concerned.**	The intended site of this development is an existing well established landfill site and is ideally suited to the proposed development.

General	
Principle 2: **Development should take place in a manner which will not interfere with the effective and proper use of any other land and which will not prevent the attainment of the objectives for that other land.**	The proposed development will not impact upon the effective and proper use of any other land and will not prevent the attainment of the objectives for that other land.
Principle 5: **Development should be of a high standard of design, layout and appearance, and be sited, designed and operated so as to be compatible with and cause minimal impact to, adjoining development and the environment.**	The development will not impact upon the adjoining general farming land and potential environmental impacts will be managed by the implementation of the modified LEMP. Significant environmental benefits are achieved through this development both on and off-site.
Vehicle Access and Parking	
Principle 59: **Sufficient provision should be made on the site of development for the loading, unloading and turning as such vehicles as are expected to be used in connection with the provision of services or the movement of people, goods or wastes in connection with such development.**	The facility is designed and sited to maximise use of the existing traffic management infrastructure and provides all necessary provisions for vehicular movements.
Principle 60: **Access to public roads should be safe and convenient and not cause conditions that interfere with the safe and efficient movement of traffic on adjoining roads. Access to Port Wakefield Road should be restricted.**	The existing site access is to be utilised for this facility, and traffic movement is consistent in nature with that presently experienced. Traffic movement to and from the facilities will not cause interference with the safe and efficient movement of traffic on adjoining roads.
Principle 69: **All other development not listed in Table Mal/1 should provide adequate off-street car parking facilities, having regard to anticipated demand, availability of on-street car parking and safety.**	The anticipated staff numbers are initially 1 full-time employee, at the soil storage and laydown area, with an increase to a maximum of 4 full-time employees once the facilities are fully operational. A total of 6 car park spaces will likely be required. Provision is made for the temporary parking of soil transport vehicles. Given the nature of the operation and the fact that it is not available for public visitation, car parking specific to the waste management facility needs is appropriate.
Chemical and Materials Storage	
Principle 96: **All raw materials, products and waste materials should be stored under cover or in airtight containers and within bunded areas constructed from impervious material or, where applicable, stored in accordance with AS 1940 – 1993, to prevent any spilled material from migrating off-site.**	Chemicals utilised on-site will be stored undercover within bunded areas or upon bunded pallets. Bunds will be constructed in accordance with EPA guidelines. Soils stored on-site will be kept covered at all times.

General	
	The facility will include an interception drain incorporated into the concrete pad so that any chemical spill or contaminated liquid waste is collected for treatment or disposal to an appropriately licensed facility.
Principle 97: **Contaminated water associated with the storage of hazardous substances should be contained within a bund prior to its collection and transportation off-site to a licensed liquid waste facility.**	Stockpiles of material will be stored undercover during Stage 1 of the operation and undercover within a shed, as part of Stage 2 of the operations. It may be possible that some storage of contaminated soils on the concrete pad produces a small volume of contaminated water during rainfall and this potentially contaminated water is collected by the interception drain and will be stored prior to testing, treatment or disposal to an appropriately licensed facility.
Principle 98: **Storage areas for dangerous and/or hazardous materials should be protected from the weather and access to them secured.**	The entire site will be secured by a perimeter 1.8 metre high chain mesh fence that is locked daily upon completion of activity at the facility. Stores of any hazardous or dangerous goods will also be secured by a separate chain mesh enclosure. The contaminated soil is stored within the shed and many of the treatment processes involve closed or covered containment units.
Principle 99: **Outdoor storage areas should be screened from public view by a fence of materials matching those of the main buildings or a combination of solid fencing and screen landscaping.**	The entire facility is screened from public view by the perimeter vegetated mounds and vegetation screens and by virtue of its location, approximately 700 m set back from Port Wakefield Road.
Principle 100: **Outdoor storage areas should be designed and managed to ensure that waste is contained within the areas. Emergency site access and protection measures should be provided.**	The presence of a perimeter access around all site infrastructure provides emergency access and egress to all parts of the facility and also acts as a fire break. Additional protective measures are provided in accordance with BCA requirements. Within the receiving shed the contaminated soil is contained by moveable bunding to form discrete stockpiles or is contained within the two pit areas. Where soil treatment is undertaken outside of a contained unit temporary bunding may be employed to ensure soil is contained within a designated area.
Waste Management	
Principle 111: Waste management facilities should be located, sited, designed and managed to minimise adverse impacts on both the site and surrounding areas due to generation of surface water and ground water pollution, traffic, noise, odours, dust, vermin, weeds, litter, gas and visual impact.	The proposed site is an operational waste management facility with an existing LEMP to ensure that all activities that may have potential to give rise to adverse impacts are managed. This LEMP has been modified to incorporate the proposed facility and processes.

General	
Principle 113: **Waste management facilities should be provided with appropriate separation distances to minimise adverse impacts on the surrounding area and land uses.** **Principle 115:** **Land uses and activities which are not compatible with a waste management facility should not be located within any separation distances established.**	The proposed facility to store and process contaminated soil is compatible with the existing operation, and the existing separation distance to the nearest sensitive receivers has been retained in this proposal.
Principle 117: **Landfill and associated facilities for the handling of waste, should be located at least a distance of 500 metres from the boundaries of the landfill site. A lesser distance may be provided within the landfill site where the land-fill facility is considered compatible with the surrounding area, land uses and activities so that an effective minimum separation distance of 500metres can be provided and maintained between the land-fill facility and potentially incompatible land uses and activities.**	The facility is co-located on the existing landfill site. A separation distance of more than 520 metres is maintained from the nearest sensitive receivers to the facility and the facility is located approximately 700 metres from Port Wakefield Road. The surrounding area is general farming and the proposed facility is considered to be compatible with this surrounding zone designation and existing land uses. It is noteworthy that there is no change to the landfill location and hence its separation from sensitive receivers. The lateral separation between the soil treatment facility and the adjoining agricultural land is less than 500 metres, however it is considered acceptable due to the nature of this land use, the establishment of the vegetated mounds that act to provide additional buffering and the nature of the processing undertaken at the facility.
Principle 119: **The area of the organic waste processing facilities on a site should:** **a) be located a minimum distance of 100 metres from any dam, river, creek, natural watercourse, channel or bore and not within the area of a 1 in 100 year flood event: and** **b) not be located on areas with ground slopes of greater than 6 percent; and** **c) not be located on land subject to land slipping; and** **d) not be located within 3.0 kilometres of an airport used by commercial aircraft. If located closer than 3.0 kilometres the organic waste processing operations should incorporate bird control measures to minimise the risk of bird strikes to aircraft; and**	The proposed development may store soil contaminated with organic compounds. It meets all of these criteria.

General	
e) not be located within 250 metres of a public open space reserve, a forestry reserve, a National Park, a Conservation Zone or a Policy area.	
Principle 120: **The waste management site should be landscaped to screen views of the processing facilities and operational areas.**	The entire proposed facility will be screened by a combination of vegetated mounds, vegetation screens and landscaped plantings. This revegetation will link into the existing plantings on the site, affording some established screening of the proposed facility during construction and effectively screening the facility upon completion.
Principle 121: **Sufficient area should be provided within the waste management site to ensure on-site containment of potential groundwater contaminants and for the diversion of stormwater.**	Leachate is not an issue of concern for this proposal, however, the runoff from any exposed soil stockpile can be managed in the same manner as for leachate. Sufficient physical space is provided in order to site the two 100,000 litre rainwater tanks and to construct the surface water drainage system around the facility.
Principle 122: **Noise reduction treatments comprising separation distances and the incorporation of on-site treatments should be provided to ensure noise generation associated with the waste management operation does not result in an adverse impact to any existing or future development on an adjacent allotment.**	The existing separation distance of 520 m to the nearest sensitive receptors are retained in this proposal, with additional vegetated earth mounds to be constructed around the facility that will act to attenuate noise from the processing area, although this is not the primary reason for their presence. The containment of contaminated soil within the shed will act to attenuate noise associated with unloading soil from vehicles and other soil moving equipment. Many of the soil treatment processes are undertaken within closed systems and involve limited operation of heavy machinery. The development is sited beyond the existing separation distances (520 metres) from the nearest sensitive receivers, as such adequate protection from potential noise sources exists. The walls of the receiving shed have a reinforced concrete base section approximately 2.1 metres in height that will attenuate noise.
Principle 123: **Litter control measures which minimise the incidence of windblown litter should be provided on the site of a waste management operation.**	Blown litter is not considered to be an issue associated with the operation, although the perimeter cyclone mesh fence will act to catch any blown litter as will the environmental fencing (shade-cloth) that is primarily incorporated into the design to trap dust. The LEMP includes the management of litter within Section 9 ‘Air Quality and Noise Management Plan’.

General	
Principle 124: **Leachate from waste management activities should be contained within the property boundary of the waste management site and should not contaminate surface water or ground water.**	Leachate from contaminated soil stockpiles will be collected and retained for disposal, reapplication to stockpiles for dust suppression or reprocessed as appropriate. Leachate is contained on site for appropriate treatment and disposal.
Principle 127: **Surface water run-off from the waste management operations should not cause unacceptable sediment loads in receiving waters.**	There will be no direct discharge from the facility or surrounds into a watercourse. Total vegetation cover at the site will be increased from the pre-development level that will act to reduce the movement of sediment from the area. Stormwater will be retained on site within the existing sediment retention/evaporation pond system as shown within Section 7, 'Surface Water and Drainage Management Plan' of the LEMP.
Principle 129: **Fencing to a minimum height of two metres should be erected on the perimeter of a waste management site to prevent access other than at appropriate entries. For landfill sites, the fencing should be of chain wire mesh or pre-coated painted metal construction.** **Principle 130:** **Plant, equipment or activities that could cause a potential hazard to the public within a waste management site should be enclosed by a security fence.**	No change to the existing boundary fencing is proposed as part of this variation. Additional security fencing is to be placed around the facility.
Principle 132: **Waste management sites should be accessed by an appropriately constructed and maintained road.**	The existing service road and main access road into the landfill will be utilised by this development.
Principle 133: **Traffic circulation movements within the waste management site should be adequate in dimension and construction to support all vehicles hauling waste and to enable forward direction entry to an exit from the site.**	The vehicular access and egress is sufficient for the size of vehicles transporting soil and plant. Unidirectional flow has been established through the facility with adequate turning space provided at the entrance and exit of the facility. This facilitates the safe movement of traffic through the facility.
Principle 134: **Suitable access for emergency vehicles to and within the waste management facility should be provided.**	Emergency vehicle access exists on the site.

General	
Principle 135: **A proposal to establish, extend or amend a waste management operation should include an appropriate Environment Management Plan that addresses the following:** **a) The prevention of ground water and surface water contamination;** **b) The need to protect and enhance native vegetation;** **c) Litter control, dust control and salinity conditions generally;** **d) Odour and noise control;** **e) Fire safety;** **f) Security;** **g) Maintenance of landscaping and the general condition of the site; and** **h) Final contour plan and rehabilitation proposals including soil cover, landscaping, drainage, the removal of any contamination waste, restoration and the like to ensure compatibility with the surrounding landscape and to enable a suitable after use of the site.**	The existing LEMP addresses all of these requirements.
Environment Protection	
Principle 138: **Building siting, design and construction and the use of land should take place in a manner which:** **a) will minimise interference with biodiversity on the land and in surrounding localities;** **b) will enhance the longer term protection and management of biodiversity;** **c) does not cause coastal erosion, soil erosion or the silting of watercourses, or create any unstable embankment or cutting;** **d) is not liable to contribute significantly to pollution of air, water or land;** **e) will not interfere with the utilization or quality of water resources; and** **f) provides opportunities for maintaining or establishing vegetated corridors to link key areas of native vegetation.**	The site of the proposed development has historically been cleared of vegetation and very little of this original vegetation cover remains on the property. The development will therefore cause no interference with existing biodiversity on the site and in the surrounding localities. The proposed revegetation work associated with the development will result in a net gain of native vegetation and an increased complexity of habitat structure as the site is comprised of exotic grassland and sparse low shrub layers only. The proposed revegetation will link existing stands of revegetation to improve the movement of species across the site. Activities undertaken at the site are targeted at reducing pollutants within contaminated soil thereby reducing the overall environmental pollutant burden. Potential environmental issues associated with the development are managed through the LEMP.

General	
Principle 139: **Development that is connected to a septic tank or has a low pollution potential should be located at least 50 metres from any watercourse. Development with a high pollution potential should be located at least 100 metres from any watercourse.**	The development is not located near a watercourse.
Principle 140: **Waste from any development should be disposed of at least 100 metres from any bore or well.**	No waste from this development will be disposed of within 100 metres of a bore or well. Effluent will be disposed of via the septic tank and soakage trench system that is located at least 100 metres from a bore or well.
Stormwater Management	
Principle 157: **Development of stormwater management systems should be designed and located to:** **a) improve the quality of receiving waters;** **b) prevent impacts on natural drainage systems;** **c) protect existing native vegetation;** **d) prevent erosion;** **e) protect receiving waters from high levels of flow;** **f) avoid adverse impacts on built structures;** **g) protect human health and safety; and** **h) not adversely affect groundwater, and groundwater recharge areas.**	The surface water, water courses and water bodies are protected by the management strategies embodied within the modified LEMP. It should be noted that there are no existing natural watercourses or water bodies within the vicinity of the proposed site of this development. Stormwater is protected from contamination by the presence of interception drains that prevent the flow of surface water onto the treatment area, while the facility itself is roofed. Human health and safety will be protected through this system of avoiding contamination. Natural patterns of surface water flow are maintained as far as is practicable and the use of vegetated drains is designed to slow the movement of water to reduce erosion and sediment transport. The proposed site for this development is highly disturbed and the original vegetation structure was destroyed prior to the site being purchased by IWS. Existing native vegetation where it exists and revegetation has been protected by the careful location of the stormwater system and the vegetation in turn will reduce the surface volume of stormwater.
Principle 158: **Development should prevent the discharge or deposit of waste (including waste water) into any waters or onto land in a place from which it is reasonably likely to enter any waters (including by processes such as seepage or infiltration or carriage by wind, sea spray, or stormwater or by the rising of the water table).**	Contaminated soil will only be stored or processed within a contained system or otherwise on the concrete pad or concrete storage shed, at no time shall contaminated soil be stored directly onto natural land. Waste or waste water will not be discharged onto land. Effluent will be discharged through an approved septic tank system in accordance with the regulations of the Public and Environmental Health Act 1987. Treated soil may be transported from the facility for disposal at an approved licensed facility or disposed of on site in accordance with the EPA license conditions that would allow disposal within the Landfill (Cell 31).

General	
	The placement of materials within the proposed site and the potential for any discharge from the site is managed by the LEMP.
Principle 159: **Development should incorporate stormwater management techniques to contain the quality, velocity, variability and quality of run-off to as near pre-development levels as practical, by means of but not limited to:** **a) directing roof stormwater overflow from rainwater tanks to soakage tranches or to** **retention/overflow wells or sumps where large roof catchments are involved;** **b) utilising grassed swales or natural drainage lines to accommodate the major flows from the land development; and** **c) incorporating stormwater systems designed to prevent entry of pollutants such as sediment, pesticides, herbicides, bacteria, animal wastes and oil, grease and waste water from vehicle cleaning processes, air conditioners and fire protection services pipe work testing into receiving water.**	Stormwater collected from the roof of the facility will be directed into two 100,000L rainwater tanks and any overflow will then be directed to a sump to slow the velocity of discharge into the stormwater system. The natural flow regime is maintained as far as is practicable with revegetation across the site and grass within the stormwater channels to slow the velocity of water while still carrying the required capacity.
Principle 160: **Development should incorporate a stormwater treatment system capable of removing pollutants.**	Management of stormwater will be undertaken in accordance with the Section 7 'Surface Water and Drainage Management Plan' of the LEMP. The facility has been designed such that stormwater will not be polluted with rainwater stored in the two 100,000L concrete tanks and utilised in processing and available for landscaping use. Revegetation around the facility and the use of grassed drains will act to slow the movement of stormwater decreasing sediment load.
Principle 161: **The rate and duration of stormwater discharged into a watercourse or a public stormwater system should:** **a) ensure retention for reuse; and /or** **b) use detection mechanisms and/or detention in a detention basin.**	This facility will not discharge stormwater into a watercourse or public stormwater system.
Principle 162: **Detention and or retention basins should incorporate good design techniques that:**	This facility will not discharge stormwater into a watercourse of the marine environment and high velocity drainage points do not occur on the site. Wetlands will not be utilised for the cleaning of stormwater.

General	
a) allow sediments to settle so as to treat stormwater prior to discharge into watercourses of the **marine environment;** **b) ensure human health and safety, particular with respect to high velocity drainage points;** **c) ensures control of mosquitoes and nuisance insects (eg midges); and** **d) where wetlands are used for the cleaning of stormwater it is advisable that the storage is able to retain the 25 year, 24 hour rainfall event.**	
Principle 163: **Development should incorporate water sensitive design techniques to assist in the sustainable use of water.**	The technologies utilised at the facility incorporate water conservation design principles and these are provided within Section 5.2 of this report. The incorporation of rainwater into the production process reduces the demand for groundwater and is an example of water sensitive design.
Principle 164: **Where permitted by any Water Allocation Plan in prescribed areas under the Natural Resources Management Act development design and construction should maximise the potential for stormwater harvesting.**	Stormwater is harvested from the roof of the facility and stored in two 100,000L concrete rainwater tanks for use at the site. Additional production water will be drawn from a deep aquifer and is subject to the necessary approvals.
Principle 165: **Stormwater should not be discharged directly into a watercourse, but rather through a mechanism to reduce the stormwater energy so that it does not:** **a) cause erosion;** **b) adversely affect ecosystems;** **c) adversely alter the flow regime;** **d) adversely affect the quality of receiving water; or** **e) adversely affect the migration of aquatic biota.**	Stormwater is not directly discharged into a watercourse. Stormwater is managed through Section 7 'Surface Water and Drainage Management Plan' and Section 6 'Soil Erosion Management Plan' of the LEMP.
Principle 167: **Stormwater drainage systems should preserve rather than eliminate natural drainage systems.**	The natural drainage system is retained as far as is practicable on the site. It should be noted that the site is flat with only a gentle slope and water typically draining via runnelling or moving as a sheet with no significant higher order drainage features.

General	
Principle 168: **Areas for activities such as loading, wash down of vehicles, plant or equipment, or storage of waste refuse bins should be suitably paved, bunded to exclude stormwater run-off from external sources, and designed so that water that has made contact with such areas is either:** **a) directed to a sediment trap, separator or other appropriate treatment device and then to sewer; or** **b) directed to a waste water holding tank.**	There is an existing site wheel wash facility that will be utilised during Stage 1 of the development and upgraded as part of Stage 2 of the development. The management of the water and sediment from this facility is established within the existing LEMP 'Facilities Management Plan'.
Principle 169: **Development should prevent erosion and stormwater pollution before, during and after construction and associated works by:** **a) appropriate control of surface water entering or leaving the land;** **b) installing and maintaining erosion control works and measures;** **c) installing and maintaining sediment collection devices to prevent the export of sediment from the land; and** **d) rehabilitating disturbed areas.**	The existing stormwater drainage system on the site affords the development a degree of protection during the construction phase. This will be aided by the utilisation of temporary flow diversion and sediment collection devices such as hay bales and plastic sheet fencing as required. These structures will be monitored and adjusted throughout the construction phase prior to removal. Following construction, disturbed areas will be reinstated and additional revegetation works undertaken to control erosion. The LEMP Section 7 'Surface Water and Drainage Management Plan' and Section 6 'Soil Erosion Management Plan' guide the ongoing management of these issues.
Principle 170: **A soil erosion and drainage plan should be prepared where:** **a) there is a high risk of sediment pollution to adjoining lands or receiving water, or;** **b) the total area to be disturbed, or left disturbed, at any one time exceeds 0.5ha.**	The existing Section 7 'Surface Water and Drainage Management Plan' and Section 6 'Soil Erosion Management Plan' of the LEMP have been modified to incorporate this development.
Treated Waste Water and Imported Water	
Principle 171: **The use of treated or partially treated wastewater should not result in:** **a) environmental nuisance or harm;** **b) adverse impacts on human health; and** **c) adverse impacts on the amenity of a locality.**	Waste water associated with this development can be categorised in accordance with the source. Effluent produced on site is treated via an approved septic tank and soakage trench system and therefore will not present an environmental nuisance or have an adverse impact upon the environment, human health or the local amenity. Waste water from the treatment process is recycled on site.

General	
Principle 172: **Use of treated wastewater or imported water should not:** **a) cause a rise in groundwater level sufficient to detrimentally affect structures or ecosystems;** **b) adversely affect the natural flow of water or the quality of surface or groundwater; or** **c) adversely affect the productive capacity of the land by causing nutrient accumulation, heavy metal** **contamination or increasing salinity, water logging, perched water tables, unlocking toxic elements in the soil or other such impacts.**	Waste water will not be discharged directly to the environment and therefore will not affect the natural flow of water at the site or the quality of surface or groundwater.
Storage of Chemicals and Other Materials	
Principle 173: **Development involving or requiring storage of chemicals or other materials should incorporate suitable cover, bunding storage, security and other measures to prevent:** **a) polluted water discharge from the site;** **b) contamination of land;** **c) dispersal of litter or other materials or substances; and** **d) airborne migration of pollutants.**	The control of stormwater and any potentially polluted water on the site is outlined in the LEMP. Soil brought into the site will be stored under covers, contained during processing by either being held within an enclosed treatment chamber or retained on the concrete slab by means of temporary bunding and the interception drain. Prevention measures with respect to soil contamination are described within the LEMP. Minimal volumes of chemicals will be stored long term on the site. Chemicals utilised on site will be stored in a covered bund and the site is to be secured by a 1.8 metre high cyclone mesh fence within the existing IWS Northern Balefill facility that is also fenced. Control of airborne particulates is outlined within the LEMP and includes the use of enclosed receiving shed, enclosed treatment chambers, vegetated mounds, an interception fence and the actual siting and orientation of the buildings.
Appearance of Land and Buildings	
Principle 185: **Building development should be located and designed in respect of its form, siting, bulk, colour, finishes, architectural style and materials of construction to harmonize with the desired character described by the objectives for the zone or policy area or otherwise the predominant character of other building development in the locality**.	The character of the buildings associated with this development are sympathetic to the rural character of the surrounding land use, being consistent with larger machinery or poultry sheds. The materials employed will be of galvanised steel with a painted exterior that is light green in colour and sympathetic to the surrounding landscape and other on site buildings.

General	
Principle 191: **Building development particularly in rural zones should be located and designed so that it is not prominently visible from a primary or secondary arterial road as shown on the Structure Plan, Map Mal/1 (Overlay 1).**	The soil receiving shed is located approximately 700 metres from the access road and Port Wakefield Road and is screened by the perimeter vegetation and vegetated mounds, so that it will not be prominently visible.
Building Setbacks	
Principle 197: **Buildings and structures excluding advertisements or advertising displays are to be setback:** **a) at least 50 metres from the road boundary of the Port Wakefield Road outside defined township and settlement zones;** **b) at least 20 metres from the road boundary (other than Port Wakefield Road) in any area outside of a defined township, settlement or rural living zone boundary; and** **c) at least eight metres from the road boundary within defined township, settlement or rural living zones, unless otherwise stated within the specific zone or policy area provisions**.	The buildings are approximately 700m from the property boundary that is adjacent to the access road and Port Wakefield Road.
Bushfire Protection	
Principle 293: **Buildings and structures should be located away from areas that pose an unacceptable bushfire risk as a result of one or more of the following:** **a) vegetation cover comprising trees and shrubs;** **b) poor access;** **c) rugged terrain;** **d) inability to provide an adequate building protection zone; or** **e) inability to provide an adequate supply of water for fire-fighting purposes.**	The facility is not located within an area that poses an unacceptable bushfire risk. Access is provided for emergency vehicles and the facility has an adequate supply of water for fire fighting purposes.

GENERAL FARMING ZONE

OBJECTIVES

Objective 1: **Maintenance of general farming activities and land use on large property holdings.**	The site is maintained as a single large holding and the proposed facility is located entirely within this property. The surrounding land use as general farming remains unaffected by the proposed facility.
Objective 2: **Reinforcement of the existing open rural character of the area.**	The character of the area will not be altered by this development as the facility is located within the boundary of the existing landfill site. The existing and proposed landscaping and revegetation at the site improves the local amenity while retaining the rural character.
Objective 3: **Preservation of features of scenic or environmental significance.**	There are no features of scenic or environmental significance at the site.
Objective 4: **Recognition of the flooding potential of the Light River, Gawler River and Templers Creek.**	The location of the proposed development is not identified as being prone to flooding from these waterways. The proposed site is beyond the area likely to be subject to coastal inundation.

PRINCIPLES OF DEVELOPMENT CONTROL

Principle 1: **Development should be primarily for cereal production and livestock grazing on large land holdings with associated buildings.**	The proposal does not affect the use of land or land in the locality. The proposed development is entirely within an existing waste management facility.
Principle 2: **Development of a business/commercial or industrial nature should not take place unless it:** **a) is associated with the processing or handling of primary produce, is for the purpose of organic waste processing and would be of significant benefit to the rural community;** **b) would not cause traffic problems or ribbon development along roads;** **c) would not prejudice the use of the land in the locality for primary production and associated residential use;** **d) would not impair the amenity of the locality;**	The proposed site of this facility is entirely within the existing IWS Northern Balefill facility. It will not result in ribbon development nor will it cause traffic problems, as the rates of flow and physical arrangements are such as to be entirely within the capacity of the existing design. The development is proposed on a site that is currently used for waste management purposes and will not prejudice agricultural pursuits of adjoining land. The location is suitable as it is well separated from established residential areas and townships where it would be inappropriate. Co-location of this facility within the existing waste facility is entirely appropriate.

e) cannot be accommodated on alternative sites within the defined township, settlement or industrial zones; and **f) would be more effectively and appropriately located in this zone.**	
Principle 6: **New buildings and structures or alterations and extensions to existing ones should, where possible, be of traditional style and appearance and be clustered with other buildings, and in all respects designed and landscaped to enhance the amenity and complement the existing character of the locality.**	The style of building and infrastructure is consistent with the style of buildings located within the General Farming Zone and are positioned close together to improve efficiency and amenity. Landscaping undertaken at the facility will be consistent with the existing landscaping for the site and will utilise locally collected plant source material.
Principle 14: **The external walls and roof of buildings should be of subdued colours which complement the predominant colours of the land and vegetation in the locality, or, in the case of outbuildings, have an unpainted galvanised iron finish which will weather to a dull grey.**	The shed and worker amenity buildings will be light green in colour complementing the local environment.
Principle 18: **Development involving the reception, storage, treatment or disposal of waste, except for the processing of organic waste should not occur.**	The application is entirely encompassed within the area of the current land use and involves the storage and treatment of contaminated materials within the existing IWS Northern Balefill waste management facility. Accordingly there is no change of use.
Principle 19: **The following kinds of development, including:** **a) change of use to the listed use; or** **b) the erection, conversion, alteration, addition or extension of listed buildings, with the exception of building work to an existing retained building on its existing site, are non-complying in the General Farming Zone:** **Disposal, treatment and/or storage of contaminated soil and waste referred to in Schedule 2 of the Waste Management Regulations, 1998.**	The site has been the subject of approvals as part of a Major Project and accordingly approvals pursuant to Section 46 of the Development Act 1993. It is also noted that the Waste Management Act 1987 was repealed following the proclamation of the Environment Protection Act 1993, Schedule 2 of the Waste Management Regulations 1988 referred to in this Planning Principle, which has effectively been incorporated into Schedule 1 of the Environment Protection Act 2003. The development approval has been varied to include the receipt of contaminated soil and therefore this proposal to receive contaminated soil for treatment so that it would be rendered either suitable for disposal on-site in compliance with the present development approval and EPA licence conditions, or treated on the site so that it could be utilised off-site for landfill means that no contaminated soil that does not meet the existing criteria will be disposed of on-site.

	This proposal is for the receipt and treatment of additional waste types at the existing site and therefore a variation to the existing approval.

The site is currently licensed by the EPA to receive LLCW, that includes waste soil or other industrial and commercial waste that meets the chemical criteria specified in Table 3 (attached to the EPA licence) and LTPR. The development approval has been varied to include the receipt of contaminated soil, and therefore this proposal to receive contaminated soil for treatment so that it would be rendered either suitable for disposal on-site in compliance with the present development approval and EPA licence conditions, or treated on the site so that it could be utilised off-site means that no contaminated soil that does not meet the existing criteria will be disposed of on-site.

7 CONCLUSION

This variation application for a soil storage and laydown area will form part of the proposed Multi-Purpose Waste Treatment Facility. The facility will enable IWS to offer a suite of waste management services at a single consolidated location within the existing IWS Northern Balefill site.

This proposal encompasses key objectives of South Australia's Waste Strategy 2005-2010 in that it will contribute to development of the multi-function waste treatment operation which will **foster sustainable behaviour** by providing a mechanism by which contaminated material can be treated and re-used, resulting in **better managed treatment of wastes** in South Australia and hence reduced waste to landfill.

The proposal is able to integrate into the existing IWS Northern Balefill site, utilising much of the existing infrastructure and the landfill environmental management program. Further, the proposal has addressed the relevant planning provisions and does not prejudice the design or function requirements of the Development Plan.

The removal of this type of material from populated urban areas will reduce potential environmental effects on the local environment and communities.

This proposal to vary the existing Development Approval for the IWS Northern Balefill to incorporate the contaminated soil storage, treatment and laydown area has significant merit and offers substantial community benefit.

For these reasons, the proposal warrants most favourable consideration.

8 REFERENCES

District Council of Mallala Consolidated (2007) Development Plan. Planning SA, Government of South Australia [*http://www.planning.sa.gov.au/edp/pdf/MAL.PDF*], 18 January 2007.

P & M Borrelli & Sons Pty Ltd (1996) Mallala Solid Waste Landfill Environmental Impact Statement, February 1996.

Integrated Waste Services Pty Ltd (1997) EIS Solid Waste Balefill, Response to Submissions, May 1997.

IWS (current) Northern Balefill EPA License

IWS (2006) Northern Balefill Landfill Environmental Management Plan (LEMP)

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E

APPENDIX F

APPENDIX G

APPENDIX H

APPENDIX I

APPENDIX B

PUBLIC AND GOVERNMENT SUBMISSIONS

G1

Government of South Australia
Primary Industries and Resources SA

AGRICULTURE
FOOD AND WINE
Level 9
101 Grenfell Street
Adelaide SA 5000
GPO Box 1671
Adelaide SA 5001
DX 667
Tel (08) 8226 0310
Fax (08) 8463 3363
www.pir.sa.gov.au

Our reference: 07/0350
Please refer to: PLAN F2008/000262
Telephone No: 8204 1421

RECEIVED
26 FEB 2009
DEPT. PLANNING & LOCAL GOVT.

24 February 2009

Attention: Lee Webb

A/Manager Assessment Branch
Department of Planning and Local Government
GPO Box 1815
Adelaide SA 5001

DEPT. PLANNING & LOCAL GOVT.
Document No. eA72477
File No.

Dear Mr Webb

IWS Northern Balefill, Dublin - EIS Amendment

Thank you for the opportunity to comment on this EIS Amendment.

The proposal will not impact on agriculture and PIRSA Agriculture Food & Wine has no comment.

If you have any queries regarding PIRSA's advice on this Development Application, you can contact me by telephone on 8204 1421 or by e-mail – harris.keith@saugov.sa.gov.au.

Yours sincerely

Keith Harris
MANAGER, DEVELOPMENT PLANNING AND POLICY
PIRSA AGRICULTURE, FOOD & WINE

G2

Webb, Lee (DPLG)

From: Ness, David (DTEI)
Sent: Tuesday, 3 March 2009 3:34 PM
To: Webb, Lee (DPLG)
Cc: Jenkins, Robert (DTEI); Llewellyn, Ian (DTEI); Wauchope, Maree (DTEI); Loughron, Reece (DTEI)
Subject: Comments on EIS amendments 1) Northern Landfill, Inkerman; and 2) IWS Northern Balefill, Dublin

Dear Lee

Thanks for opportunity for OMPI to comment on these 2 proposals.

1) Northern landfill, Inkerman: additional waste types

Reference is made to Development Plan considerations (7.3).
PDC 195 notes: "Landfill activities that have a total storage capacity exceeding 230 000 cubic metres should sustainably utilise landfill gas emissions. For smaller landfill activities, if the sustainable utilisation of the gas emissions is not practically feasible then controlled flaring is appropriate....."
I note that the northern landfill has a waste capacity of 12 000 000 cubic metres (well in excess of 230 000).
The proponent should comment on this requirement.

Reference should also be made to the Strategic Infrastructure Plan for SA
http://www.dtei.sa.gov.au/infrastructure/strategic_infrastructure_plan
See page 150-153 Waste Management. It is noted here (page 150-151) that "Technologies for the recovery of energy from waste provide additional potential opportunities..." and "Modern Landfills in SA are required to be lined and to treat leachates and burn (or flare) or capture for energy the landfill gases emitted from the sites".

2) IWS Northern Balefill, Dublin - Proposed development of multi-purpose waste treatment facility

The proposal to proviode a suite of waste management services at a single consolidated location within the existing site is consistent with the broad strategies of the Strategic Infrastructure Plan for SA eg "promoting shared and multiple use of assets through co-location..." (page 6) and "exploring options for redevelopment.... of existing assets and design of adaptable multi-purpose facilities for shared use."

Furthermore, the Strategic Infrastructure Plan states (page 6) "It means ...employing advances in technology that offer innovative infrastructure solutions or new supply sources eg in the case of energy....". In this regard, a similar comment to that for Inkerman applies ie utilising landfill emissions to produce energy.

Pleased to discuss further

Kind regards

David

Dr David Ness
Office of Major Projects and Infrastructure
Department for Transport, Energy and Infrastructure
Ph: (08) 8463 6236
Fax: (08) 8463 6229
Mobile: 0401 122 651
Email: david.ness@saugov.sa.gov.au

G3

Government of South Australia
Department for Transport, Energy and Infrastructure

In reply please quote 2009/00037, 3180105
Enquiries to Miss F Hurley
Telephone (08) 8343 2699

→ Lee 10/3/09 KF

TRANSPORT SERVICES
33-37 Warwick Street
Walkerville, SA 5081

PO Box 1
Walkerville SA 5081

Telephone: 61 8 8343 2222
Facsimile: 61 8 8343 2565

2 March 2009

RECEIVED
- 6 MAR 2009
PLANNING SA
EMailed 4.3.09

A/Manager
Assessment Branch
5th Floor
136 North Terrace
ADELAIDE 5000

Dear Sir/Madam,

IWS NORTHERN BALEFILL, DUBLIN - EIS

Your letter of:	11 February 2009
Application by:	Integrated Waste Services Pty Ltd
Development:	IWS Northern Balefill – EIS Amendment for proposed development of a multi purpose waste treatment facility
Location:	Port Wakefield Road, Dublin

The Transport Services Division of the Department for Transport, Energy & Infrastructure (DTEI) provides the following comments on the above proposal:

- The traffic information submitted within the EIS documentation is considered insufficient to enable a proper assessment to be undertaken. Accordingly DTEI request that a Traffic Impact Study be undertaken that includes:
    - An assessment of vehicle types intended to use the site, and details of any Restricted Access Vehicles that are intended to access the site.
    - Assessment of the implications for the adjacent road network.
    - Potential solutions for traffic management to ensure that road safety at this location is not jeopardised by the increased traffic movements associated with this proposal.
    - Any proposed changes to the existing roadway configuration to cater for the increase in traffic.

Yours faithfully,

for **MANAGER, TRAFFIC AND ACCESS STANDARDS**
For **COMMISSIONER OF HIGHWAYS**

G3

Government of South Australia
Department for Transport, Energy and Infrastructure

In reply please quote 2009/00037, 3180105
Enquiries to Miss F Hurley
Telephone (08) 8343 2699

TRANSPORT SERVICES
33-37 Warwick Street
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2 March 2009

A/Manager
Assessment Branch
5th Floor
136 North Terrace
ADELAIDE 5000

Dear Sir/Madam,

IWS NORTHERN BALEFILL, DUBLIN - EIS

Your letter of:	11 February 2009
Application by:	Integrated Waste Services Pty Ltd
Development:	IWS Northern Balefill – EIS Amendment for proposed development of a multi purpose waste treatment facility
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    - Potential solutions for traffic management to ensure that road safety at this location is not jeopardised by the increased traffic movements associated with this proposal.
    - Any proposed changes to the existing roadway configuration to cater for the increase in traffic.

Yours faithfully,

for **MANAGER, TRAFFIC AND ACCESS STANDARDS**
For **COMMISSIONER OF HIGHWAYS**

FACSIMILE MESSAGE

Government of South Australia

Department for Transport, Energy and Infrastructure

TRANSPORT SERVICES DIVISION
33-37 Warwick Street
Walkerville SA 5081

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Telephone: 08 8343 2222
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ABN 92 366 288 135

ATTENTION	**Lee Webb**
ORGANISATION	Planning SA
FACSIMILE NO	8303 0782
TOTAL PAGES	4
DATE	4 March 2009
FROM	**Fran Hurley**
PHONE	(08) 8343 2699
FAX	8343 2725
MOBILE	
EMAIL	frances.hurley@saugov.sa.gov.au

Subject

Hi Lee,

Please find attached a copy of the Transport Services Responses for the Northern Balefill and Northward Fill EIS documents.

If you have any queries don't hesitate to contact me on 8343 2699.

Regards,
Fran Hurley

Webb, Lee (DPLG)

From: Ferguson, Karen (DPLG)
Sent: Monday, 2 March 2009 10:47 AM
To: Webb, Lee (DPLG)
Subject: FW: Please ring Fran Hurley 8343 2699, Dept Transport re referral of Northern Balefill

Hi Lee,
I spoke to Fran Hurley as above. The transport planning group is likely to want further traffic impact study to be undertaken. They will include this in their comments (due on 4 March) to forward to the proponents.

Karen

From: Gartner, Jacky (DPLG)
Sent: Monday, 2 March 2009 10:20 AM
To: Ferguson, Karen (DPLG)
Subject: Please ring Fran Hurley 8343 2699, Dept Transport re referral of Northern Balefill

Jacky Gartner
Administrative Officer
Assessment Branch
Department of Planning and Local Government
Phone: 8303 0752
Fax: 8303 0753
Email: gartner.jacky@saugov.sa.gov.au

G4

Webb, Lee (DPLG)

From: Callaghan, Frank (Health)
Sent: Wednesday, 4 March 2009 5:23 PM
To: Ferguson, Karen (DPLG)
Cc: Webb, Lee (DPLG); Lease, Chris (Health)
Subject: IWS Northern Balefill, Dublin - EiS Amendment for Proposed Development of a Multi-Purpose Waste Treatment Facility

Dear Karen

Thank you for the opportunity to comment on the above proposal. The potential public and environmental health impacts of the application appear to have been appropriately addressed.

If you have any comments or queries, please do not hesitate to contact me.

Regards

Frank Callaghan
Principal Scientific Officer - Health Impact Assessment
Applied Environmental Health Branch

Public Health and Clinical Co-ordination Division
SA Health
Government of South Australia

Level 1, 11 Hindmarsh Square
Citi Centre
ADELAIDE SA 5000

PO Box 6 Rundle Mall
ADELAIDE SA 5000

Tel: (61) 08 8226 7145
Fax: (61) 08 8226 7102
Email: frank.callaghan@health.sa.gov.au

Website: www.health.sa.gov.au/pehs/

I am not always at my desk and only check my email 2-3 times per day. If your matter requires my urgent attention, please contact me on (08) 8226 7100

GS

EPA
South Australia

EPA 05 14448/1

Karen Ferguson
A/Manager, Assessment Branch
Department of Planning and Local Government
5th Floor
136 North Terrace
ADELAIDE SA 5000

Dear Ms Ferguson

Thank you for the opportunity for the Environment and Conservation Portfolio to comment on the proposed amendment of the Environmental Impact Statement (EIS) for the IWS Northern Balefill development at Dublin.

The attachment to this letter contains comments on the proposed EIS amendment from the Department for Environment and Heritage, Department of Water, Land and Biodiversity Conservation, Environment Protection Authority, and Zero Waste SA.

These comments include:

- issues that should be addressed by the proponent in the Response to Submissions
- requests for additional information on particular issues.

For further information on this matter, please contact me on 8204 9821 or geoffrey.bradford@epa.sa.gov.au. Alternatively, contact the officer indicated in the attached comments.

Yours sincerely

Geoff Bradford

SENIOR PROJECT OFFICER
SCIENCE & SUSTAINABILITY DIVISION
ENVIRONMENT PROTECTION AUTHORITY

Date: 4 March 2009

ATTACHMENT - COMMENTS ON THE PROPOSED EIS AMENDMENT FOR THE IWS NORTHERN BALEFILL DEVELOPMENT AT DUBLIN

DEPARTMENT FOR ENVIRONMENT AND HERITAGE

The Department for Environment and Heritage has no comment to make on the proposed EIS amendment.

Further information

John Barker, Senior Conservation Policy Planner, ph: 8463 4824, email: barker.john@saugov.sa.gov.au

DEPARTMENT OF WATER, LAND AND BIODIVERSITY CONSERVATION

- Section 1.1 highlights that 'revegetated perimeter buffer zones & retention of existing revegetation where possible' to be incorporated as one of the key features of the *Multiple Waste Treatment Facility* (MWTF). It is suggested this statement reads:
    - *'Revegetated perimeter buffer zones using locally indigenous species & retention of existing revegetation where possible'*

  and is incorporated as one of the key features of the MWTF.
- The Department notes that many of the management and mitigation measures for the MWTF will be outlined in the *Landfill Environmental Management Plan* (LEMP). The Department would like the opportunity to comment on the LEMP particularly for the management of runoff from the site and stormwater management systems that will be included when it is developed.

Further information

Dearnne Popow, Planning Officer, ph: 8463 6861, email: popow.dearnne@saugov.sa.gov.au

ENVIRONMENT PROTECTION AUTHORITY

General

Section 1

In Section 1 it is stated that:

'It is planned that Stage 2 will commence development within 12 months of the Stage 1 Facility commencing receipt of listed waste'.

The EPA has previously advised that it does not support a two-staged development of the facility. The EPA will however consider 2 staged development conditional to Stage 2 being completed within 12 months of Stage 1 commencing construction. If Stage 2 is not developed within 12 months as proposed, then operations of the facility should be suspended.

Section 1.2

There is reference to ***'by-products of remediation'***. This depends on what is being treated and how. Some precursor contaminants break down to form more toxic by-products.

'The treatment of listed waste is expected to produce low level contaminated waste suitable for onsite disposal or reusable material options. There are no by-products of significance expected to be produced during facility operation'.

In order to justify the above assertions, the proponent must either:

- Undertake remediation trials, or
- Provide examples where the treatment of proposed waste streams have been treated with the proposed methods to produce treated wastes to levels that will be acceptable for reuse or disposal as low level contaminated waste (LLCW). The expected contaminant concentration levels in the treated wastes have not been provided in the proposal.

Table 1

Maximum Leachabilty Values are an order of magnitude above those for the SA Environment Protection Authority (EPA) and US EPA and justification for the values has not been provided. Treated wastes must be disposed of as per the current leachability criteria. Trials need to be conducted on proposed waste streams to determine pre-treatment leachability values. TCLP/MEP must be done before and post-remediation based, for example, on the following concerns:

- Some fixation techniques are affected by interfering Ions and can affect immobilisation and alter leachability, for example, the sulfide treatment of Hg is pH dependent.
- Bio remediation treatment of long chain hydrocarbons unlikely to significantly degrade.

It is worth noting the following items contained in Table 1.

- Comment for Semi-volatile Organic Compounds (SVOCs) states that treatment could be a range of options depending on composition. It then refers to more sophisticated treatments and trials. Treatment and trials must be subject to EPA approval to ensure compliance with the *Environment Protection Act 1993* and associated Regulations and Policies.
- SVOCs also have leachability values to be provided.
- "TBA" - Acceptance, treatment and disposal criteria will need to be developed in consultation with the EPA for chemicals not listed in the LLCW/LTPR facility schedule. The proponent needs to be aware that the existing LLCW/LTPR schedules are disposal criteria and can only therefore be used for that purpose. The fate of treated waste that is still above LLCW/LTPR criteria has not been addressed in the proposal. Trials need to be conducted on proposed waste streams to determine pre-treatment leachability values
- Remove poly chlorinated biphenyls (PCBs) from SVOC's table.

- PCBs must be disposed in accordance with the PCB management Plan. http://www.environment.gov.au/settlements/publications/chemicals/scheduled-waste/pubs/biphenyls.pdf
- **Note 5** refers to the disposal of material being dictated by leachate concentrations. This is unacceptable to the EPA since LLCW/LTPR disposal criteria have been developed based on dry weight chemical concentrations and leachate concentrations. Disposal must be dictated by licence conditions and disposal classification criteria as per guideline or as otherwise approved by EPA. Table 1 headings need to be edited to read appropriately, i.e., Total dry weight chemical concentrations (mg/kg) and Maximum leachate concentrations (mg/L).
- **Note 7** This note can only make sense only if and after the trigger values proposed in Table 1 have been justified.

Table 2 future options - this can't be approved until pre-trials have been undertaken.

Section 2.1

Refers to PCB treatment in future technologies. PCBs have also been included in SVOCs. This is ambiguous and in any event incorrect as PCBs cannot be heat treated (if remediating in bio-piles which will be the main methodology for volatile's/SV) as stable. This needs to be deleted from this section.

The remediation technologies will utilise a variety of materials, both biological and chemical, to treat the contaminants of interest and remediate the waste to an appropriate level. "Appropriate level" needs to be qualified.

Section 2.2

The second paragraph refers to leachability criteria. Again, the proponent is pre-supposing that the proposed leachability values are acceptable to the EPA and this is not the case.

Section 2.2.1.2

The second paragraph states that material will be re-used as per existing licence conditions. EPA Licence 11275 does not permit the reuse of any material above waste fill criteria.

Section 2.3

Paragraph five refers to bioremediation processes "normally" require.....This suggests that this may or may not occur. This is ambiguous.

Section 3

The proposed MWTF will be located at the IWS Northern Balefill at Dublin. This is a balefill site with EPA approval of certain wastes including LLCW in a specific cell designed for the disposal of such wastes. The activities and management of the proposed MWTF however do not mimic those of a landfill. The approved Landfill Environment Management Plan (LEMP) is inadequate to deal with the proposed

activities in the proposed MWTF. The proponent should submit to the EPA for assessment an Environmental Management Plan (EMP) specifically tailored to the remediation technologies to be used in the proposed MWTF. In the event that the MWTF is approved, conditions of licence will be developed specific to the MWTF.

Table 7

- No. 2 Odour 4th dot point states that MWTF will operate undercover. This only relates to stage 2.
- No. 5 Stormwater states that all listed waste will be 'stored in a roofed facility or covered with low perm material'. No. 6 Groundwater then states that no listed waste will be stored outside the MWTF. This requires clarification.
- Table 7 should be revised and incorporated in the EMP.

Section 4

The EPA has previously advised that it does not support a two-staged development of the facility. The EPA will however consider 2 staged development conditional to Stage 2 being completed within 12 months of Stage 1 commencing construction. If Stage 2 is not developed within 12 months as proposed, then operations of the facility should be suspended.

Summary

Environmental Management Plan

The treatment of highly contaminated wastes as proposed in the application presents a higher level of risk to human health and the environment compared to waste disposed at the landfill or in the Low Level Contaminated Waste Cell (LLCWC). The approved Landfill Environment Management Plan (LEMP) is inadequate to deal with the proposed activities. The proponent should submit to the EPA for assessment an Environmental Management Plan (EMP) specifically tailored to the remediation technologies to be used in the proposed MWTF. This EMP will form part of the Development Application.

The proposal needs to clearly state expected sources or types of wastes, e.g., leaking petroleum storage tank soils, liquor from mining activities, etc, in addition to the components that will be treated. The degree of contamination or toxicity will then determine the management and operational procedures to be developed to deal with the wastes.

The type of information required in the EMP should include, but not be limited to:

- The types and quantities of wastes expected
- Where each of the different treatments activities is to take place
- Whether treatments will be undertaken undercover or in the open
- What pollutants or hazards are expected to be generated & how they will be managed
- How stockpiles will be contained and maintained
- How waste liquids will be collected and dealt with (including bunding,

containment, collection, and disposal)

- How polluted stormwater will be contained, collected and disposed of
- How clean stormwater will be kept separate from polluted stormwater
- How clean stormwater will be dealt with
- How groundwater will be protected.

Other

The proponent has defined their own criteria for trigger concentration. The proponent must either:

- undertake remediation trials, or
- provide examples where the treatment of proposed waste streams have been treated with the proposed methods to produce treated wastes to levels that will be acceptable for reuse or disposal as LLCW. The expected contaminant concentration levels in the treated wastes have not been provided in the proposal.

Further information

Patrick Nganga (EPA), Senior Adviser Waste Management, ph: 8204 1639, email: patrick.nganga@epa.sa.gov.au

Noise

There are currently no noise problems from the site. Operating hours will be during day light hours.

A 520m buffer will be maintained between the operation and residents; this will provide an adequate noise attenuation buffer.

Further information

Max Browne, Senior Noise Adviser, ph: 8204 2073, email: max.browne@epa.sa.gov.au

Air Quality

There is not sufficient information provided to accurately assess the potential odour impact from this proposal.

- A range of treatment options are provided, but there is no indication of which options would be used or their efficacy in odour removal.
- Odour modelling was provided for emissions from the receival storage building only, with the emissions being directed to a biofilter. No modelling was provided for any activities undertaken outside of the building. The odour emission rates used were from data from Victorian gas works remediation site. The reports states that this would be considered worst case for this proposal. The modelling assumes that the treatment area would be kept under negative pressure.

- There is no indication of the potential odour rates for the various materials that are to be stored or treated. There may be a potential odour impact as there is no indication of what odours will be emitted from the open storage of contaminated soils in stage 1.
- The proposed EIS amendment indicates they may treat persistent monocyclic aromatic hydrocarbons, organic pollutants, poly chlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs). There is no modelling of the potential ground level concentrations of the emissions.

Air Quality Conclusion

- No details are provided on the odour reduction efficiency of the various technologies proposed.
- The proposed EIS amendment does not address the potential odours from the stage 1 of the proposal.
- The proposed EIS amendment does not address the potential emissions and potential ground level impacts of the emissions of materials such as monocyclic aromatic hydrocarbons, organic pollutants, PCBs and PAHs.

Further information

Chris Harris, Principal Adviser Air Quality, ph: 8204 2077, email: chris.harris@epa.sa.gov.au

Stormwater Management

The proponent has failed to provide sufficient information to adequately assess the amendment and its likely impact on stormwater.

Information Request: It is recommended that the proponent be asked to submit an Environmental Management Plan (EMP) specific to the Multi-purpose Waste Treatment Facility (MWTF) that provides a clearer indication of the pollutants and hazards that are likely to be produced and undertake a detailed risk assessment of them that indicates the level of risk and how it will be managed. Although an Environmental Impact Risk Assessment is provided it is very general in nature and needs a greater level of detail.

Refer above for the suggested information to be included in the EMP.

Further information

Peter Newland, Manager Water and Catchments, ph: 8204 1318, email: peter.newland@epa.sa.gov.au

ZERO WASTE SA

Zero Waste SA is supportive of initiatives that contribute to the achievement of the targets in *South Australia's Waste Strategy 2005-2010 (the Waste Strategy)* and South Australia's Strategic Plan (SASP). The proposed development of *a multi-purpose waste treatment facility* at Dublin has potential to result in the diversion of some waste that would otherwise be consigned to landfill and hence to the

achievement of the Waste Strategy and the SASP target of reducing waste to landfill by 25% by 2014.

Accordingly Zero Waste SA has no objection to the proposal subject to meeting environmental impact requirements of the Environment Protection Authority.

Further information

Ian Harvey, Manager Strategy and Programs, ph: 08 8204 1954, email: ian.harvey@zerowaste.sa.gov.au

Webb, Lee (DPLG)

From: Bradford, Geoffrey (EPA)
Sent: Wednesday, 4 March 2009 3:44 PM
To: Ferguson, Karen (DPLG)
Cc: Webb, Lee (DPLG)
Subject: EIS Amendments Northward Fill and IWS Northern Balefill
Attachments: EIS Amendment Northern Balefill Portfolio Response 09.03.04.doc; EIS Amendment Northward Fill Portfolio Response 09.03.04.doc

Karen,

Attached are copies of the Environment and Conservation Portfolio responses to the proposed EIS amendments for the following:

- Northward Fill, Inkerman – a proposal to accommodate additional waste types
- IWS Northern Balefill, Dublin – proposed development of a multi-purpose waste treatment facility.

Please note that as arranged with Lee Webb, the EPA may submit an addendum to these comments, which will be submitted by 11 March 2009.

Hard copies will be forwarded to you shortly.

Regards,

Geoff

Geoff Bradford
Senior Project Officer
Environment Assessment Branch
Environment Protection Authority
geoffrey.bradford@epa.sa.gov.au
Ph: (08) 8204 9821
Fax: (08) 8124 4673
GPO Box 2607, Adelaide, S.A. 5001, AUSTRALIA
http://www.epa.sa.gov.au

(G6)

Lee 5/3/09
KF

District Council of Mallala

05.16.03.03 Reg No 391

Our Ref. Your Ref.

4 March 2009

The Minister for Urban Development and Planning
Attention: A/Manager, Assessment Branch
5th Floor
136 North Terrace
Adelaide SA 5000

RECEIVED
5 MAR 2009
DEPT. PLANNING & LOCAL GOVT.

EMAILED 4.3.09

Dear Sir/Madam,

IWS NORTHERN BALEFILL, DUBLIN – EIS AMENDMENT FOR PROPOSED DEVELOPMENT OF A MULTI-PURPOSE WASTE TREATMENT FACILITY

In August 2008 Council provided a response to Planning SA in relation to the proposal by IWS Pty Ltd to vary the Development Authorisation relating to the IWS Northern Balefill at Dublin.

Further to this response I write on behalf of Council, and provide the following comments relating to the EIS Amendment provided as an addendum to the variation application, pursuant to Section 48B(5) of the *Development Act, 1993*, to assist the Minister in reaching a decision on the proposal.

Nature of Development

It is understood that the EIS Amendment seeks to vary the existing EIS to incorporate a Multiple Waste Treatment Facility (MWTF) to receive and treat contaminated waste within the existing IWS Northern Balefill site at Dublin, within a General Farming Zone as identified in Council's Development Plan. The MWTF is proposed to be developed in two stages.

Stage 1 consists of a bunded concrete pad storage and laydown area for the receival and interim storage of contaminated materials (principally contaminated soil), and Stage 2 the development of the overall MWTF for the handling and treatment of contaminated materials. It is expected that the development of Stage 2 will commence within 12 months of Stage 1 receiving waste material.

DEPT. PLANNING & LOCAL GOVT.
Document No. eA72841
File No.

2a Wasleys Road
(PO Box 18)
Mallala SA 5502

Tel: 8527 2006
Fax: 8527 2242

info@mallala.sa.gov.au
www.mallala.sa.gov.au

Staging of development

Council has some concern over the proposed staging of development, particularly in relation to potential environmental and health impacts on properties adjoining and in close proximity to the subject land, and on the subject land itself. This issue is significant considering the applicant intends to store contaminated materials on-site before the treatment facility is established in Stage 2.

Council would prefer that the development is undertaken in one stage so that contaminated materials are able to be processed upon delivery.

Wind blown contamination

The general locality, zoned as General Farming, is an important primary production area for open grazing and intensive animal keeping catering for local and international markets. Council has concern over the potential for wind blown material to impact on these rural activities and residents of the locality. Although contaminated material is proposed to be covered, the delivery and movement of material by machine may have adverse impacts.

Building Rules Assessment / Waste Control System

It is noted that all proposed structures will require a building rules assessment, and any amenities will required a waste control system approved by Council.

General

Council is aware of community concerns relating to the EIS Amendment and variation application, particularly in relation to potential environmental and health impacts, and the impact of future sea level rise on the proposal. A level of confusion also exists in relation to the scientific and technical aspects identified in the EIS Amendment.

Council requests to be kept informed in relation to this proposal, in particular in relation to how the identified issues have been addressed. There may also be merit in the EPA conducting a 'Community Forum' in Dublin whereby experts from both Government & Industry are able to explain the full proposal and ongoing operating procedure including all measures undertaken to minimize any risk.

Council also requests that the development be adequately monitored to ensure on-going compliance with the details submitted as part of the application (including the EIS Amendment and Landfill Environmental Management Plan), and any conditions of approval.

Council has no objection to this submission being made available for public inspection.

Please do not hesitate to contact myself at the Council Office for further information in relation to this report.

Yours faithfully,

Brendon Schulz
TEAM LEADER - DEVELOPMENT ASSESSMENT

Cc

Environment Protection Authority
GPO Box 2607
Adelaide SA 5001

Attention - Hayley Riggs
A/Team Leader – Development Assessment

Webb, Lee (DPLG)

From: Brendon Schulz [BSchulz@Mallala.sa.gov.au]
Sent: Wednesday, 4 March 2009 4:31 PM
To: Webb, Lee (DPLG)
Cc: Henri Mueller; Damien Moloney; Steve Bateman; Riggs, Hayley (EPA)
Subject: Submission on EIS Amendment - District Council of Mallala
Attachments: SUBMISSION - EIS AMENDMENT.pdf

Hi Lee

Further to our recent discussion please find attached our submission on the EIS Amendment relating to the proposed Multi-Purpose Waste Treatment Facility at the IWS Northern Balefill site at Dublin. A hard copy is in the post.

Regards

Brendon Schulz

Development Assessment Officer
District Council of Mallala

PO Box 18
MALLALA SA 5502

Ph: 08 8527 2006 Fax: 08 8527 2242
Mobile: 0428 400168
E-mail: brendon.schulz@mallala.sa.gov.au

(P1)

Dublin & District Ratepayers Association
C/O Chris Lawrence
PO Box 29 Lower Light
SA 5501
3-3-09

Re Application for Multiple Waste Treatment Facility EIS Amendment by Integrated Waste Services.
The Dublin and District Ratepayers Association wish to raise the following concerns re the above application.
The proposal document is of a technical nature and therefore difficult for the average lay person to comprehend and in that case response is difficult. In the interest of fairness to the community, a public forum must be initiated long before any approval is given, by which ever authority is responsible. Local knowledge must be taken into consideration for a more satisfactory outcome for all.
We request relevant departments take into account the following dot points.

- This site operation has a history of breaches of licence conditions including various EPA protection orders. Prescribed waste namely asbestos not bound in cement matrix but disposed of in a dangerous manner without due care for employees and surrounding residents. Unresolved subterranean fire, time frame from March 2003, still unresolved with many complaints re combustion to the EPA support service 1800623445 as recent as 3-3-09 complaint number 127457. To date little or no response from the EPA.
- Local knowledge re groundwater reinforces the fact of abundant ground water reserves as progress north on the site creating a greater potential for contamination.
- As climatic changes is an accepted science now, other water contamination issues must be considered, such as tidal influences, salt marsh environments, increasing sea levels, flooding of salt marsh areas including areas in and around the site.
- The treatment of this dangerous material in an open are where high winds are the norm. Example weather condition on 3-3-09
- If this proposal is approved, original EIS post closure would be compromised by the very nature of materials, compounds, dangerous chemicals, heavy metals etc.
  A new Post closure must be addressed.
- If approval is given the District Council of Mallala should be required to rezone as "special use" with a much extended buffer required, to protect the proponent, public, amenities area and the multi million dollar livestock and agriculture of the surrounds
- Greater buffer zone requirements and properties within the buffer zones should be offered market value compensation.

Summary

This proposal is a new application and should not be considered an amendment to the original EIS. The severe and dangerous nature of contaminants being proposed for treatment, warrant a new and complete independent EIS. Past history suggests the Government, the EPA, Planning SA, the Residents and the Public should have little or no confidence in Integrated Waste Services ability to handle this new Multiple Waste Treatment Facility.

We wish to receive notification and or receipt of submission

Yours Faithfully
Chris Lawrence
On behalf of the Dublin and District Ratepayers Association and Residents.

O'Donnell, Jane (PlanningSA)

From: Chris Lawrence [chasseur@chariot.net.au]
Sent: Wednesday, 4 March 2009 10:43 AM
To: PLNSA:Public Submissions
Cc: Webb, Lee (DPLG)
Subject: Fw: Submission re Multiple Waste Treatment Facility EIS Amendment
Attachments: Integrated waste EIS amendment proposal.doc

Subject: Submission re Multiple Waste Treatment Facility EIS Amendment

4-3-09

Dear sir

On behalf of the Dublin and District Ratepayers Association,
please find attached, submission re Integrated Waste Services Multiple Waste Treatment Facility EIS Amendment application.

Your Faithfully
Chris Lawrence
Secretary
Dublin & District Ratepayers Association

Webb, Lee (DPLG)

From: Chris Lawrence [chasseur@chariot.net.au]
Sent: Wednesday, 4 March 2009 10:43 AM
To: PLNSA:Public Submissions
Cc: Webb, Lee (DPLG)
Subject: Fw: Submission re Multiple Waste Treatment Facility EIS Amendment
Attachments: Integrated waste EIS amendment proposal.doc

Subject: Submission re Multiple Waste Treatment Facility EIS Amendment

4-3-09

Dear sir

On behalf of the Dublin and District Ratepayers Association,
please find attached, submission re Integrated Waste Services Multiple Waste Treatment Facility EIS Amendment application.

Your Faithfully
Chris Lawrence
Secretary
Dublin & District Ratepayers Association

(P2)

CONFIDENTIAL

SAL GOV'T.

32162

RE: Public Submission in relation to IWS Northern Balefill at Dublin [redacted]

Further to Planning SA's public notification seeking comment on the above application by IWS to develop a hazardous waste treatment facility at the Dublin Balefill site, [redacted] has reviewed the provided documentation and has the following points to submit to the department for consideration.

1. The proposal indicates that operations proposed as part of this hazardous waste treatment facility are equivalent to current activities as assessed by previous regulatory submissions (the site EIS and various amendments). Potential environmental and social impacts from these hazardous material types as identified in the submission are considered to be extreme. Generally in this instance management and handling processes are generally onerous and complicated to minimise such impacts.

   Receipt of materials currently accepted at the Dublin site would not require the same level of management as required for the proposed waste stream and as such it is unlikely that previous documentation would have considered all relevant requirements and impacts associated with the development. From our understanding, documents such as the EIS Response document for the Dublin Balefill facility specifically state that:

   "Wastes accepted at the balefill will be restricted in accordance with the licence conditions for the site. These will prohibit certain types of wastes, for example hazardous wastes, liquid wastes and will limit concentration of other types of wastes to environmentally acceptable levels".

   With these sorts of commitments given previously, we fail to understand how previous documentation contemplates its receipt at the site.

2. It is proposed to only build and operate Stage 1 (soil stabilisation and bioremediation) at this stage. The proposal states that Stage 2 will be "within 12 months of the Stage 1 facility receiving listed waste". Further, reference to Table 1 of the proposal indicates that the simplistic stabilisation and bioremediation methodologies forming the Stage 1 proposal are to be employed for the majority (if not all) of contaminated soils entering the site. In addition, there does not appear that there would be any regulatory or other controls requiring them to implement the Stage 2 improvements.

   The above does not indicate a strong commitment or requirement on behalf of the proponent to improving environmental performance by implementing the methodologies included in Stage 2 of the proposal. Therefore, it appears that there is a strong possibility that the Stage 2 activities would not be developed by the joint venture.

3. Stage 1 is a rather simplistic soil treatment, and not considered to be "technology", nor best practice. The proposed methods do not rank well for a broad range of contaminants in the

USEPA Treatment Technologies Screening Matrix (refer attached). Stage 1 of the development appears to be for a facility that is likely to provide second-rate treatment and environmental performance in comparison to what could be achieved with a commitment to achieving best practice, clever application of appropriate technologies combined with investment in appropriate equipment and plant design and management systems.

4. The likely treatment method stated in the proposal for volatile organics is bioremediation (ref to Table 1 of the proposal). The bioremediation methodology proposed includes screening and mechanical mixing of the soil, without capture and treatment of organic compounds volatilised during these processes.

   This is not considered an acceptable remediation practice for volatile organic compounds, as during mixing and screening activities, the majority of these compounds present in a given contaminated soil will be simply volatilised to the atmosphere, with no real break-down of these contaminants occurring. This basically results in air pollution by these compounds. Management and monitoring of air emissions from these compounds and processes have not been considered in the proposal.

4. The proposed treatment of acid sulfate soil by chemical stabilisation may not be in accordance with best practice for these materials, including the accepted hierarchy for acid sulphate soil management (refer QASSIT, Vic EPA and others) which encourages on avoidance and on-site management methods. The ready availability of a treatment facility may discourage appropriate and better-practice onsite avoidance and management techniques for these materials being adopted by waste producers.

5. Chemical stabilisation of acid sulfate soil, depending upon the fixative used, may not prevent acidification and associated environmental impacts. Once acidification processes in acid sulfate materials have commenced, for example via disturbance, dewatering and aeration via mixing, it is almost impossible to stop the process continuing, as once initiated under aerobic conditions, the acidification processes can still continue (albeit with changed chemistry) under anaerobic conditions.

6. The proposal does not provide an adequate level of detail regarding the proposed methodologies and management of the soil-swapping facility and quality of swapped-out soils. For example, the proposal does not detail how the quality of the various incoming and outgoing soils treated at the facility will be verified. Further, the proposal does not detail how specific management requirements of particular swapped-out soils, such as acid sulfate materials, would be communicated and monitored to ensure that soils are provided that are appropriate for the intended reuse.

7. The proposal does not provide an adequate level of detail regarding the proposed soil quality testing and QA/QC regimes to be employed as part of the facility operations to ensure that the soil quality is adequately controlled and monitored. This is particularly concerning in terms of the "soil-swapping" part of the proposal - it would be expected that outgoing soils should be "certified" against appropriate "clean-fill" and site-specific soil quality criteria (such as those set out for protection of human health and the environment in the NEPM (Assessment of Site Contamination), or other site-specific criteria derived via the NEPM(AOSC) risk assessment process) for their destination site prior to transport offsite.

8. The proposal does not specify how the quality of the land & groundwater environment surrounding the facility will be assured. This is particularly concerning in relation to the proposed use of unknown proprietary solvents / fixatives etc. These materials are often highly mobile within the environment, and could have potential to adversely impact upon human health and the environment if not properly managed and monitored during and after the treatment process.

9. Section 3 of the submission contains an environmental risk assessment which upon review is believed to have a number of shortcomings. For instance rather than just focusing on environmental risks, social impacts should similarly be considered. Consideration of the

handling storage and treatment of contaminant loaded solutions is also not considered in sufficient detail. Additionally, with a number of the materials proposed to be received at the site having the ability to cause significant health issues, including multiple deaths in a worst case scenario, we believe a broadened scope should be included this assessment process.

Furthermore, the risk assessment provided seems overly optimistic when considering the consequences of potential impacts arising from operations at the site. Again due to the nature of the materials being received at the site, the impact of any of these incidents could be quite major should they occur and we find it difficult to understand how of 14 different scenarios assessed, only 2 have a moderate consequence rating with the remainder being deemed insignificant or minor.

[redacted] thanks you for the opportunity to comment on the proposed development and would be pleased to provide any further assistance necessary.

Regards,

[redacted]

TABLE 3-2: TREATMENT TECHNOLOGIES SCREENING MATRIX

Rating Codes
● Above Average
◐ Average
○ Below Average
NA – "Not Applicable"
ID – "Insufficient Data"
◎ – Level of Effectiveness highly dependent upon specific contaminant and its application

Technology	Development Status	Treatment Train	Relative Overall Cost & Performance: O&M	Capital	System Reliability & Maintainability	Relative Costs	Time	Availability	Nonhalogenated VOCs	Halogenated VOCs	Nonhalogenated SVOCs	Halogenated SVOCs	Fuels	Inorganics	Radionuclides	Explosives
Soil, Sediment, Bedrock and Sludge																
4.1 In Situ Biological Treatment																
4.1 Bioventing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.2 Enhanced Bioremediation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.3 Phytoremediation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.2 In Situ Physical/Chemical Treatment																
4.4 Chemical Oxidation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.5 Electrokinetic Separation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.6 Fracturing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.7 Soil Flushing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.8 Soil Vapor Extraction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.9 Solidification/Stabilization	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.3 In Situ Thermal Treatment																
4.10 Thermal Treatment	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.4 Ex Situ Biological Treatment (assuming excavation)																
4.11 Biopiles	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.12 Composting	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.13 Landfarming	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.14 Slurry Phase Biological Treatment	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.5 Ex Situ Physical/Chemical Treatment (assuming excavation)																
4.15 Chemical Extraction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.16 Chemical Reduction/Oxidation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.17 Dehalogenation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.18 Separation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.19 Soil Washing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.20 Solidification/Stabilization	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.6 Ex Situ Thermal Treatment (assuming excavation)																
4.21 Hot Gas Decontamination	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.22 Incineration	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.23 Open Burn/Open Detonation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.24 Pyrolysis	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.25 Thermal Desorption	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.7 Containment																
4.26 Landfill Cap	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.27 Landfill Cap Enhancements/Alternatives	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.8 Other Treatment																
4.28 Excavation, Retrieval, Off-Site Disposal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ground Water, Surface Water, and Leachate																
4.9 In Situ Biological Treatment																
4.29 Enhanced Bioremediation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.30 Monitored Natural Attenuation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.31 Phytoremediation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.10 In Situ Physical/Chemical Treatment																
4.32 Air Sparging	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.33 Bioslurping	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.34 Chemical Oxidation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.35 Directional Wells (enhancement)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.36 Dual Phase Extraction	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.37 Thermal Treatment	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.38 Hydrofracturing Enhancements	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.39 In-Well Air Stripping	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.40 Passive/Reactive Treatment Walls	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.11 Ex Situ Biological Treatment (assuming pumping)																
4.41 Bioreactors	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.42 Constructed Wetlands	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.12 Ex Situ Physical/Chemical Treatment (assuming pumping)																
4.43 Adsorption/Absorption	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.44 Advanced Oxidation Processes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.45 Air Stripping	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.46 Granulated Activated Carbon/Liquid Phase Carbon Adsorption	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.47 Groundwater Pumping/Pump & Treat	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.48 Ion Exchange	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.49 Precipitation/Coagulation/Flocculation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.50 Separation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.51 Sprinkler Irrigation	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.13 Containment																
4.52 Physical Barriers	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.53 Deep Well Injection	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.14 Air Emissions/Off-Gas Treatment																
4.54 Biofiltration	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]
4.55 High Energy Destruction	[illegible]	NA	ID	ID	[illegible]	[illegible]	ID	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]
4.56 Membrane Separation	[illegible]	NA	ID	ID	[illegible]	[illegible]	ID	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]
4.57 Oxidation	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]
4.58 Scrubbers	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	ID
4.58 Vapor Phase Carbon Adsorption	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ID	[illegible]

TABLE 3-1: DEFINITION OF SYMBOLS USED IN THE TREATMENT TECHNOLOGIES SCREENING MATRIX

Factors		● Above Average	◐ Average	○ Below Average	Other
Development Status Scale status of the available technology		Implemented as part of the final remedy at multiple sites, well documented, understood, etc.	Has been implemented at full-scale but still needs improvements, testing, etc.	Not been fully implemented but has been tested (pilot, bench, lab scale) and is promising	◎ Level of Effectiveness highly dependent upon specific contaminant and its application/design
Treatment Train Is the technology only effective as part of a treatment train?		Stand-alone technology (not complex in terms of number of needed treatment technologies, may be core "basic" technology at a site)	Relatively simple (two-or-three combo) and well understood, widely applied, etc.	Complex (more technologies, residuals to be treated, generates extensive waste, etc.)	
Relative overall cost and performance	**O&M** Operation and Maintenance Intensive	Low degree of O&M intensity	Average degree of O&M intensity	High degree of O&M intensity	
	Capital Capital Intensive	Low degree of capital investment	Average degree of capital investment	High degree of capital investment	
	System Reliability/Maintainability The expected range of demonstrated reliability and maintenance relative to other effective technologies	High reliability and low maintenance	Average reliability and average maintenance	Low reliability and high maintenance	NA "Not Applicable"
	Relative Costs Design, construction, and operations and maintenance (O&M) costs of the core process that defines each technology, exclusive of mobilization, demobilization, and pre- and post-treatment	Low degree of general costs relative to other options	Average degree of general costs relative to other options	High degree of general costs relative to other options	ID "Insufficient Data"
	Time Time required to clean up a "standard" site using the technology — in situ soil	Less than 1 year	1-3 years	More than 3 years (for in situ soil)	
	— ex situ soil	Less than 1/2 year	1/2-1 year	More than 1 year for ex situ soil	
	— groundwater	Less than 3 years	3-10 years	More than 10 years for water	
Availability Number of vendors that can design, construct, and maintain the technology		More than 4 vendors	2-4 vendors	Fewer than 2 vendors	
Contaminants Treated Contaminants are classified into eight groups: - Nonhalogenated VOCs - Halogenated VOCs - Nonhalogenated SVOCs - Halogenated SVOCs - Fuels - Inorganics - Radionuclides - Explosives		Effectiveness Demonstrated at Pilot or Full Scale	Limited Effectiveness Demonstrated at Pilot or Full Scale	No Demonstrated Effectiveness at Pilot or Full Scale	Same as above

(P3)

lee.

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Document No. eA 72749
File No.

G. & S. Tauchnitz,
C/- Post Office,
Lower Light. SA 5501
(Old Dublin Rd, Dublin)

27th February, 2009

Minister for Urban Development and Planning
Attention: A/Manager, Assessment Branch -
'Northern Balefill (Dublin) EIS Amendment'
Department of Planning and Local Government
GPO Box 1815
ADELAIDE. SA 5001

Dear Sir/Madam,

Re: IWS Northern Balefill, Dublin
EIS Amendment for Proposed Development
Of a Multi-Purpose Waste Treatment Facility
Development Act 1993

It was with incredulous disbelief that we came across the above advertisement placed in the 'Plains Producer' (11/02/09).

Incidently, this ad was placed on page 6 with page 7 giving full page coverage to proposed marine parks! The site is close to Thompson's Beach, Webb Beach, Port Parham as well as Dublin, all with many residential homes. The beaches are frequented by crabbers and boaties alike both from Adelaide and surrounding areas. Dublin is a popular town for tourist stop-offs with tourist dollars being spent in the various businesses.

The mind boggles to think that these operators are asking for approval to dump heavy metals, pesticides, arsenic and mercury to name but a few, when they were *exposed* just last year (March 2008) for the incorrect transportation and disposal of asbestos. The asbestos was dumped in such a way that the asbestos fibres were able to be carried around the district by the prevailing winds. If the operators hadn't been exposed, they would have been left to carry on dumping the asbestos whatever way they felt like with blatant disregard for the health of nearby residents. It can be asked exactly how long this practise had been going on for beforehand. If they hadn't been *caught*, they would have continued on doing what they had already been happy to do - the wrong thing!

As Dublin residents we are appalled to think we could be living close to numerous toxic and dangerous materials (some being semi-volatile). To learn that we could have been exposed to asbestos fibres whirling around the district by the prevailing winds is very disturbing, and now we are being asked to again risk health issues by giving these incompetent operators approval. You don't reward previous bad behaviour by giving them what they want.

It does not give us a warm and fuzzy feeling by looking at the nice little pie-graphs and charts that the operators are going to do the right thing. Quite the opposite. It is well known that just because someone says they *are* going to do the right thing doesn't automatically mean they *will* do the right thing. The past has proven this to be true. They cannot be trusted.

Toxic wastes such as those described in the development plan have the potential to permeate water tables either by building design flaws, incorrect disposal, human error or incompetence and find their way to the sea through underground water tables, rainfall runoff etc. An article in the 'Plains Producer' titled 'Dangerous waste list revealed for Dublin' (25/02/2009) states "Of moderate risk was stormwater, which could transport pollutants if the waste was exposed to potential water runoff". A risk is still a risk however low, moderate or high and this area cannot afford *any* risks.

The dump balefill site is only located 60 kms from Adelaide with National Highway One running by their front gate and is surrounded by boating and crabbing beaches, many residential homes, livestock markets, piggeries, cropping land, grazing stock, and native animals. The site is not situated hundreds of kilometres inland in the middle of nowhere. It can be argued that the waste has to go somewhere, but this site is *totally* inappropriate. South Australia is a huge state and a more suitable site to accept these materials will have to be found.

A travesty of commonsense will occur if the government grants these dump operators approval. Let's trust that common sense prevails - for the sake of the people, the animals, the marine life and the land.

Yours faithfully,

G. & S. TAUCHNITZ

FROM STEPHEN JONES

(P4)

RECIEVED FROM EPA 5.3.09

TO EPA 4-3-09.

SUBMISSION MULTIPLE WASTE TREATMENT FACILITY.
I W S DUBLIN BALEFILL.
TO WHOM IT MAY CONCERN.

I WISH TO RAISE SOME CONCERN RE PROPOSAL FOR A MULTIPLE WASTE TREATMENT FACILITY AT I W S DUBLIN BALEFILL

- ON GOING ISSUE OF INTERNAL / SUBTERRANEUM COMBUSTION WITH EXISTING CELL MOUNDS SINCE MARCH 2003 COMPLAINT CONCERNS RE AIR QUALITY DIRECTED TO EPA AND EPA SUPPORT SERVICES WOULD CONFIRM THIS AND ENVIROMENT PROTECTION ORDERS HAVE ALSO BEEN ISSUED

EVIDENCE OF COMBUSTION FROM SITE STILL EVIDENT AS OF 3 3 09 REFERENCE Nº 127457.
INFORMATION VIA INTERNET AND ELSEWHERE INDICATES UNCONTROLLED COMBUSTION WILL PRODUCE A WIDE RANGE OF BIPRODUCTS AND COMPOUNDS EG DIOXINS ETC WHICH WILL BE RELEASED BY AIR EMISSION AND GROUNDWATER RELEASE THE VERY NATURE OF THESE COMPOUNDS AND NEW CHEMICALS WERE NEVER FACTORED INTO CELL LINER CAPABILITIES AND LOW TECH NATURE.
THERE IS NOW A GROWING CONCERN RESIDENTS HEALTH STATUST HAS BEEN COMPROMISED BY WIND DIRECTION CARRING LANDFILL EMISSIONS.
I HAVE STRONG CONCERNS THAT THIS ISSUE HAS NEVER BEEN SUBJECT TO ANY REAL OR THOUGHER INVESTIGATIONS INVOLVING AND INCLUDING RESIDENT STAKEHOLDERS.
HOW CAN WE HAVE CONFIDENCE IN ANY MANAGEMENT STRUCTURE FOR THIS NEW HIGH IMPACT PROPOSAL WHEN CONTROL OF INTERNAL COMBUSTION ISSUES REMAIN
THE PROBABILITY OF GROUNDWATER CONTAMINATION MUST INCREASE DUE TO THIS UNCONTROLLED COMBUSTION AND THEREFOR COASTAL SABAKAS AND SALT MARSH WETLANDS ARE, DUE TO CLOSE PROXIMITY TO SITE MUST ALSO INCREASE, IT MUST ALSO BE NOTED THAT NEW MARINE PROTECTION AREAS WILL INCLUDE ALL

ALL SABAKAS AND SALT MARSH WETLANDS BECAUSE OF SEAWATER INCURSIONS WHICH IS NOW A REALITY (SEE DC WALLA COASTAL REPORTS FLOODING

THE VALUE OF RESIDENTS HEALTH LIVESTOCK AGRICULTUR INTENSIVE (NATURE OF) PROXIMITY SALEYDS PERCEPTIONS OF HEALTHY LIVESTOCK VERSUS NOXIUS ACTIVITIES AMENITIES AIR QUALITY SHOULD AND MUST BE CONSIDERED.

FINALY

DUE TO TECHNICAL AND INTRICATE NATURE OF THIS PROPOSAL PROPER PUBLIC CONSULTION MUST TAKE PLACE TO ENABLE ALL RESIDENTS TO BE BETTER INFORMED, NO ONE SHOULD EVER BE AFRAID OF TRUTH OR THE APLICATION OF FACTS IF THEY ARE NOT EMPLOYED IT ONLY LEADS TO SPECULATION RUMOUR AND INUENDO.

THANKING YOU

STEPHEN JONES

SEJones 8/3/09

PLEASE PROVIDE RECIEPT OF THIS SUBMISSION ON 85202466

PS

→ Lee
10/3/09
KF

Box 25
Lower Light
SA 5501

23rd February 2009
Minister for Urban Development and Planning
Attention: A/Manager, Assessment Branch –
'Northern Balefill (Dublin) EIS Amendment'
Department of Planning and Local Government
GPO Box 1815
ADELAIDE SA 5001

Dear Sir,

Re- Northern Balefill (Dublin) EIS Amendment.

I am alarmed to read that Integrated Waste Services Pty Ltd (IWS) Dublin has applied to receive a higher level of contaminated wastes than it is currently authorised to accept. The additional materials would include those contaminated by heavy metals, hydrocarbons and persistent organic pollutants. These are significant contaminates and deserve serious consideration.

I am concerned that in the future (or, at any time, by human error) toxins leaching from the award winning cells that IWS have in place will be the cause of enormous grief. Air-borne contaminants are also a huge potential hazard. No doubt there is monitoring now but how can we be certain that the system will keep our environment safe in the future. I read of rising sea levels and am concerned that this will affect the safety of the stored high level contaminants as much of the technology involved with the disposal of materials is in a formative stage. Our coast is fragile and needs strong advocates to secure its future.

Within 'coo-ee' of the IWS site there are a number of families involved in intensive animal farming many who have Quality Assurance goals to meet. They do not need the possible complication of environmental pollutants.

Over the years, the management of the IWS site has not endeared itself to the local community when it has accepted unsecured asbestos, allowed ongoing fires, and has an general unwillingness to have an open-door policy to the community. This goes a long way towards vindicating the local community's original opposition to the establishment of the Landfill.

I am quite certain that there are answers already formed for the issues I raise, but we all must consider the worst scenario and how we will be judged by our peers and those generations who follow us. It is my opinion that the higher level contaminated waste proposal should definitely not be allowed to proceed within this farming community which is situated so close to an already compromised coast.

Sincerely

Francie Brechin

Francie Brechin (Mrs)

(Copy: Mallala District Council.)

APPENDIX C

PROPONENT'S RESPONSE TO SUBMISSIONS

CONNOR HOLMES
Development Advisors

Ref No: 2828-005

3 April 2009

Mr. Lee Webb
Chief Environment Officer
Environmental Impact Assessment Unit
Development Assessment Branch
Department of Planning & Local Government
GPO Box 1815
Adelaide 5001

Dear Mr Webb,

IWS NORTHERN BALEFILL, DUBLIN – PROPOSED MULTIPLE WASTE TREATMENT FACILTIY (MWTF) – RESPONSE TO AGENCY, COUNCIL AND PUBLIC SUBMISSIONS

Thank you for the opportunity to respond to the various Agency, Council and public submissions received in response to the public consultation phase for the Amendment to the EIS for the proposed Multiple Waste Treatment Facility (MWTF) at the IWS Northern Balefill, Dublin.

We note that the following Agency and public submissions were received in relation to the proposed MWTF:

Agency Submissions:

(No comment and/or no concerns raised):

- PIRSA – Agriculture, Food and Wine
- SA Health – Public Health and Clinical Co-ordination Division
- Department for Environment and Heritage

(Comments and/or issues raised):

- Office of Major Projects and Infrastructure
- Department for Water, Land and Biodiversity Conservation
- Commissioner of Highways (Manager, Traffic and Access Standards)
- Environment Protection Authority

Council Submission :

- District Council of Mallala

Public Submissions:

- Dublin and District Ratepayers Association
- Confidential Submission (Authors details withheld)
- G. & S. Tauchnitz
- Mr Stephen Jones
- Mrs Francie Brechin

We note that the majority of comments received in relation to the proposal relate to the technical specification and operation of the proposed MWTF with the exception of several public submissions which raised concerns with the historic and ongoing operation and management of the site.

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The attached 'Technical Memorandum' prepared by Golder Associates (ref # 087663311 013 M Final dated 3 April 2009) specifically addresses and responds to the comments received in relation to the public notification of the proposed MWTF application.

Community Consultation:

Integrated Waste Services Pty. Ltd. have always sought to inform and consult the local Dublin community of ongoing site operations, process and management including community and stakeholder engagement to provide a high level understanding of site operations and activities. This has in the past included the establishment of a Local Community Consultative Committee which provided a forum for community, Council and IWS dialogue – particularly in relation to evolving site management practices and operations.

Whilst there is no statutory obligation for Integrated Waste Services Pty. Ltd. to coordinate or participate in community consultation in relation to the proposed MWTF application, IWS have agreed to participate in an informal community information session which is to be facilitated by the Mallala Council with representation and input from both the Department of Planning and Local Government (DPLG) and the Environment Protection Authority (EPA). The information session is scheduled to be held at 6.30pm on Monday 6 April 2009 and the purpose of the session is to provide some clarity and information on the nature of the proposed application and to seek to appease any concerns in relation to some of the more technical aspects of the proposal and ongoing site operations.

The information session will be held in good faith, without prejudice and is in no way directly connected to the procedural assessment and or determination of the application by the Governor under Section 48B of the *Development Act*, 1993..

Accordingly, IWS are seeking a prompt and favourable determination of the application irrespective of the outcome or actions arising from (or that could arise in relation to) the pending information session.

The Demonstrated Need for a MWTF:

The proposed MWTF represents important infrastructure for South Australia given currently there is no licensed facility to accept, treat or store soils containing listed wastes in the State. Currently soils containing listed wastes are either :

- treated and remediated in-situ often in close proximity to local communities with little opportunity to apply necessary or recognised environmental management and mitigation controls; or
- 'capped' in an untreated state in-situ (often in close proximity to local communities and with the potential for ongoing environmental issues and impacts); or
- transported over large distances, to existing licensed interstate facilities; or
- left untouched on the site which remains un-developed (ie. sites that are considered 'too hard' to remediate are left undeveloped with the potential for ongoing environmental issues and impacts).

The urgency for a waste treatment facility has also recently been compounded by the discovery of extensive contaminated soil at Birkenhead. Currently there is no approved or licensed facility in South Australia to treat this contaminated soil and treatment in-situ would be problematic in the context of the surrounding resident population, and the difficulty of applying suitable mitigation controls to manage potential environmental impact.

Accordingly, the proposed waste treatment facility would provide the necessary infrastructure to treat and remediate the contaminated soil at Birkenhead (as well as other contaminated soil on alternative metropolitan sites) in a remote purpose built licensed and monitored facility, applying 'worlds best practice' techniques and management practices.

There is also a recognised need for a licensed facility to treat listed wastes in South Australia since the South Australian parliament passed the Environment Protection (Site Contamination) Amendment Bill 2007 (assented by the Governor on 1 November 2007). This legislation adds

provisions to the *Environment Protection Act*, 1993 in relation to site contamination and assigns responsibility for site contamination, establishes a statutory audit system for South Australia and gives the Environment Protection Authority (EPA) powers to deal with site contamination.
The legislative provisions form part of a set of measures to ensure that site contamination is adequately managed in South Australia. The establishment of a facility to receive and treat contaminated soils containing listed wastes in South Australia will be essential to ensure that systems, processes and facilities exist to support this new legislation. In particular, the proposed facility will be required to manage and treat the anticipated increase in contaminated soil identified and registered in association with the new powers of the EPA under this Act to:

- issue assessment and remediation orders (under section 103H and 103);
- require a site owner, occupier, auditor or consultant to notify the EPA in writing of the existence of site contamination that affects or threatens underground water (Section 83A); and
- declare areas where site contamination exists in a wider or numerous areas, or is suspected to exist, as 'Special Management Areas' to allow the EPA to work with relevant stakeholders on forming agreements that will cover the assessment and remediation of any site contamination (Section 103).

Other possible future amendments to the *Development Act*, 1993 are also envisaged that could potentially increase the contaminated soil identified and registered in the State including a requirement that planning authorities must require the submission of a site contamination audit for sites where a sensitive land use is proposed and a prescribed potentially contaminated activity has occurred (or known contamination is recorded).

The proposed facility will therefore directly support the EPA in fulfilling the legislative provisions of this new legislation by providing a fully licensed, purpose built facility to appropriately manage and treat the growing volume of identified and registered contaminated soil in the State.

Another advantage associated with the development of a facility to treat soils containing listed wastes in South Australia is the ability for the plant and associated laboratory and facilities to be commissioned for potential alternative or unforeseen circumstances and / or emergencies at the discretion and/or direction of Government.

In the same way a brewery is recognised as important infrastructure that can be commissioned by Government in the public interest for emergency purposes (ie a laboratory for the mass production of medicines as may be required in the event of a National pandemic etc) the waste treatment facility could be commissioned for currently unforeseen emergency purposes (ie. utilised for the treatment and safe disposal of carcases of diseased animals in the event of the breakout of contagious diseases (ie hendra virus, foot and mouth, bird flue etc). Whilst these alternative uses are not envisaged nor proposed in association with this application, there are strong benefits in the construction of a facility that could be used to provide important infrastructure and facilities that could be adapted, commissioned and used for alternative 'emergency' purposes in the interest of the State.

Clearly there is an identified need in South Australia for a purpose built waste treatment facility to treat soils containing listed wastes. The proposed waste treatment facility will :

- reduce the potential impacts on communities and the environment compared with treatment of contaminated soils in-situ within populated urban areas and/or contaminated soils remaining 'capped' or untreated in existing urban environments (with inherent risk of migration of pollution and ground water contamination);
- offer a facility in South Australia to manage and treat the expected increase in contaminated soil identified and registered in association with the new powers of the EPA under the Environment Protection (Site Contamination) Amendment Bill, 2007; and
- provide important infrastructure and facilities that could be adapted, commissioned and used for alternative 'emergency' purposes in the interest of the State (at the absolute discretion and direction of Government).

Site Suitability:

There are clear benefits and advantages derived from the siting of the facility within the existing IWS Northern Balefill site as follows:

- the facility is located on the periphery of *Greater Adelaide*, approximately 30 kilometres from the current Urban Growth Boundary, in an area unlikely to be required for urban purposes and based on current population growth and projections for *Greater Adelaide* - is unlikely to be subject to encroaching urban development for the anticipated life of the facility as a waste disposal depot over the next 100 years;
- siting of the facility to the north of Adelaide reduces the risks associated with transport of listed wastes through metropolitan Adelaide (ie. the site is closer to the origin of the majority of contaminated land, waste generators and developing industrial and commercial land);
- existing safe roads of adequate capacity to allow the safe transport of soils containing listed waste for treatment;
- no loss of valuable rural land currently utilised for primary production, recreation or water and nature conservation (given the existing poor and degraded condition of the land which is generally clear of native vegetation and with highly saline groundwater with no beneficial uses);
- the area is sparsely populated and appropriate buffers and separation distances to adjacent residential properties and sensitive receptors already exist;
- the site can be developed in a manner which will not result in any unreasonable visual intrusion on adjoining properties or the public realm;
- existing site infrastructure and services can be utilised, thereby reducing the environmental effects as compared to a new standalone facility;
- opportunity to leverage off the extensive environmental controls, systems and monitoring already in place at the site;
- the existing extensive knowledge of the site and area gained through the exhaustive EIS process and ongoing monitoring of the existing facility;
- the existing use of the site including the existing operation of a Low Level Contaminated Waste (LLCW) cell which already safely receives low level contaminated soil (allowing future contaminated soil treated in association with the proposed MWTF to be stored on site in accordance with the existing approved Landfill Environmental Management Plan (LEMP);
- the EPA approved LEMP for the IWS Northern Balefill site can be readily modified to incorporate considerations of the proposed infrastructure and associated processes;
- the suitable site geology with favourable natural clays (which act as an aquitard and provide a natural impervious barrier providing protection to ground water); and
- the suitable site climate with high levels of evaporation (exceeding precipitation) reducing the generation of leachate from disposed wastes (post treatment) and assisting in storm water management on site.

As demonstrated above, with the adoption of appropriate operational and environmental site management practices, the existing IWS Northern Balefill site is well positioned to accommodate the proposed new waste treatment facility given the suitable location and natural attributes of the site and given the strong synergies and ability to leverage from the existing use of the site as a waste disposal depot that already receives low level contaminated soil and other wastes.

We thank you in anticipation of your favourable consideration of the application as an amendment to an existing approval for a declared major development (the IWS Northern Balefill) under Section 48B of the *Development Act*, 1993.

Please do not hesitate to contact the undersigned on (08) 8232 9088 should you have any questions or queries in relation to any matter raised above or should your wish to discuss the proposed application for the waste treatment facility at the IWS Northern Balefill.

Yours sincerely
CONNOR HOLMES PTY LTD

RICHARD DWYER
Principal

Table 1: EIS Amendment Comments and Responses: Planning

EIS Comment	Response
Patrick Nganga, Senior Adviser Waste Management, EPA	
■ EPA does not support a two-staged development of the facility, however will consider 2 staged development conditional to Stage 2 being completed within 12 months of Stage 1 commencing construction. If not, operations of the facility should be suspended	■ The proponent will prepare a works outline and schedule outlining the activities and staged requirements for Stage 1 and Stage 2. This will be submitted to the EPA for approval. These may form of any future EPA Licence 11275 changes. ■ Stage 2 of the proposed development will be constructed within 12 months of Stage 1 commencing. An indicative schedule for progression of the facility is provided as introduction: ▪ construct bunded and concrete pad: 1 - 2 months: ▪ detailed design and procurement phase (concurrent with bunded and concrete pad): 3 – 6 months: ▪ commence staged construction of facility: 4 months: ▪ commissioning: 9 - 12 months ■ The MWTF will be completed prior to any treatment of received material. ■ Mixing or treatment of material will only be undertaken once the MWTF facility is completed.
■ Approved LEMP is inadequate. EMP specifically tailored to the remediation technologies to be used in the proposed MWTF required. EMP should include ▪ Types and quantities of wastes expected ▪ Where each of the different treatments activities is to take place ▪ Whether treatments will be undertaken undercover or in the open ▪ What pollutants or hazards are expected to be generated and how they will be managed ▪ How stockpiles will be contained and maintained ▪ How waste liquids will be colleted and dealt with ▪ How polluted stormwater will be contained, collected and disposed of ▪ How clean stormwater will be kept separate from polluted stormwater ▪ How clean stormwater will be dealt with ▪ How groundwater will be protected.	■ A facility specific Environmental Management Plan will be prepared and submitted to the EPA for approval as part of the site EPA Licence 11275 requirements. ■ The proponent will prepare and submit to the EPA for approval a Stage 1 interim Environmental Management Plan relating to storage of received waste until Stage 2 is completed, the facility operational and a final EMP completed with EPA approval. ■ Mixing or treatment of material will only complete once the shed style facility is completed.

EIS Comment	Response
■ In the event of MWTF approval, conditions of licence will be developed specific to the MWTF. ■ Table 7 should be revised and incorporated in to EMP ▪ Undercover operation of MWTF only relates to stage 2 (No.2) ▪ Storage of waste to be in roofed facility or outside of MWTF requires clarification (No. 5 and 6)	
■ EPA Licence 11275 does not permit the reuse of any material above waste fill criteria.	■ The development does not propose to reuse material above SA EPA waste fill criteria. ■ Waste treated to low level contaminated waste (LLCW) criteria can be disposed of onsite, as part of existing LLCW disposal operations. ■ The EIS Amendment proposes that material treated to LLCW leachability criteria can be disposed of to the approved LLCW cells, irrespective of primary concentrations of contaminants (eg, that have been chemically fixed to the soil matrix), pending EPA approval. This is current practise for contaminated waste treatment and disposal. ■ All treated material will be tested prior to disposal or reuse by a suitably qualified environmental consultant to review the suitability of disposal/reuse options.
■ Future options can't be approved until pre-trials have been undertaken. ■ Occurrence of Bioremediation is ambiguous	■ Future options would not be undertaken until necessary changes to the license had been made, with supporting process specific EMPs and trials. ■ The use of bioremediation as the treatment method will be matched to those contaminants that can be treated using bioremediation. ■ All received material will be tested prior to receipt to the MWTF and the results reviewed by a suitably qualified environmental consultant to review treatment options and any need for pre-treatment trials. ■ Pre-remediation trials will be conducted prior to receipt of material onsite for materials assessed to be difficult to remediate.
Brendon Schulz, Team Leader, Development Assessment, DC of Mallala	

EIS Comment	Response
■ On-site storage of contaminated materials before the treatment facility is established in Stage 2. Council would prefer the development to be undertaken in one stage so that contaminated materials are able to be processed upon delivery. ■ Proposed structures will require a building rules assessment, and any amenities will require a waste control system approved by Council.	■ The proponent will prepare a works outline and schedule outlining the activities and staged requirements for Stage 1 and Stage 2. This will be submitted to the EPA for approval. These may form of any future EPA Licence 11275 changes. ■ The proponent will prepare and submit to the EPA for approval a Stage 1 interim Environmental Management Plan relating to storage of received waste until Stage 2 is completed, the facility operational and a final EMP completed. ■ Stage 2 of the proposed development will be constructed within 12 months of Stage 1 commencing. An indicative schedule for progression of the facility is provided as introduction: ▪ construct bunded and concrete pad: 1 - 2 months: ▪ detailed design and procurement phase (concurrent with bunded and concrete pad): 3 – 6 months: ▪ commence staged construction of facility: 4 months: ▪ commissioning: 9 - 12 months ■ The MWTF will be completed prior to any treatment of received material. ■ The detailed design phase of the development will include application for other required regulatory and local government approvals including building regulations etc.
Chris Lawrence, Dublin & District Ratepayers Association, Public	
■ New Post Closure must be addressed.	■ Any material received and treated onsite will not be stockpiled at closure, but disposed of in accordance with regulatory requirements and EPA approval during facility operation.
■ The proposal should not be considered an amendment to the original EIS. ■ Rezone the site as “special use” with a much extended buffer required.	■ The proposed activity is consistent with current land use as a mixed waste management site. ■ Rezoning is not proposed as part of this assessment ■ The proposed facility is located within the current site. There are two residences within 520m of the eastern property boundary. These residences are located

EIS Comment	Response
	greater than 500m from the proposed development area. Based on the site specific odour modelling and the closed nature of proposed facilities there are no negative impacts expected to residences related to facility operations.
■ Properties within the extended buffer zones should be offered market value compensation.	■ The proposed activity is consistent with current land use as a mixed waste management site. ■ No negative impacts expected to residences related to facility operations.
Confidential, Public	
■ Risk assessment to include social risks and broadened scope ■ More detail on storage and treatment of contaminated waste ■ Risk assessment being overly optimistic	■ Health, odour and amenity impacts are addressed as part of the application. Based on this the risk assessment is considered adequate for the purposes of this application. ■ An EPA licence will be required for operation of the facility and be regulated by the EPA.
G. & S. Tauchnitz, Public	
■ Concern that the proprietors will 'do the right thing'	■ The proprietors will be required to act in accordance with relevant conditions of approval and the EPA approved Environmental Management Plan as part of a revised site licence. ■ Ongoing operation of the site will be regulated by the EPA.
■ Toxic wastes have the potential to permeate water tables either by building design flaws, incorrect disposal, human error or incompetence	■ All contaminated material received by the facility will be stored or treated on concrete sealed surfaces and covered. ■ Possible liquid or stormwater run-off from any contaminated received material will be contained in sealed sumps for treatment and disposal as contaminated material. ■ There is no direct contact with soil, ground or surface water proposed as part of facility design or operations. ■ A facility specific Environmental Management Plan will be prepared and submitted

EIS Comment	Response
	to the EPA for approval as part of the site EPA Licence 11275 requirements.
■ Unsuitable location surrounded by residential homes and livestock etc	■ The proposed facility is located within the current IWS Northern Balefill site. There are two adjoining residences within 520 metres of the eastern property boundary. These residences are located greater than 500m from the proposed development area. Based on the site specific odour modeling and the closed nature of proposed facilities, there are no negative impacts expected to residences related to facility operations.

Table 2: EIS Amendment Comments and Responses: Technical

EIS Comment	Response
Patrick Nganga, Senior Adviser Waste Management	
■ PCB must be disposed of in accordance with the PCB management plan.	■ Bioremediation and stabilisation are the two treatment options proposed at this time for use at the facility. Future options will require pre-trial assessments and EPA approval prior to use. ■ The treatment of PCBs is only a "possible future option", and approval for this type of treatment is not being sought as part of this EIS amendment. ■ PCBs would be treated in accordance with the *ANZECC PCB Management Plan*
■ Disposal of material being dictated by leachate concentrations is unacceptable to the EPA since LLCW/LTPR disposal criteria have been developed based on dry weight chemical concentrations and leachate concentrations (Note 5). ■ Table 1 ▪ Maximum Leachability Values are an order of magnitude above those for the SA EPA and US EPA. Justification for the values has not been provided. Treated wastes must be disposed of as per the current leachability criteria. ▪ Trials need to be conducted on proposed waste streams to determine pre-treatment leachability values. TCLP/MEP must be done before and post-remediation based, for example, on the following concerns: – Some fixation techniques are affected by interfering Ions and can affect immobilisation and alter leachability, for example, the sulphide treatment of Hg is pH dependent. – Bioremediation treatment of long hydrocarbons unlikely to significantly degrade. ▪ Comments for SVOCs state that treatment could be a range of options depending on composition. It then refers to more sophisticated treatments and trials. Treatment and trials must be subject to EPA approval to ensure compliance with the *Environment Protection Act 1993* and associated Regulations and policies. ▪ SVOCs also have leachability values to be provided.	■ The EIS Amendment proposes that the material treated to LLCW leachability criteria can be disposed of to the approved LLCW cells, irrespective of primary dry weight chemical concentrations of contaminants (eg, that have been chemically fixed to the soil matrix), pending EPA approval. This is current practise for contaminated waste treatment and disposal. ■ Pre-remediation trials would be conducted for contaminants that are above the criteria listed in Table 1 of the EIS Amendment (Trigger Concentrations) ■ Post-remediation testing would always be required in order to assess its suitability to be disposed of or reused, depending upon the method and desired outcome. This is standard current practise for any remediation process. All treated material will be tested prior to disposal from the MWTF by a suitably qualified environmental consultant to review the suitability of disposal options. ■ The proponent recognises bioremediation treatment of long chain hydrocarbons can be difficult, hence the comment in Table 1 that this *"would likely require either a mixture of bioremediation and stabilisation, or a more sophisticated treatment"* ■ Pre-remediation trials would be conducted for any technology that is not Contaminant Stabilisation (using chemicals such as cement, lime, MnO and fertilisers) and would include a process-specific EMP in addition to the EMP for the MWTF. ■ Leachability values that are available for SVOCs will be added. The proponent will liaise with the EPA to ensure the proponent has included the ones the EPA are

EIS Comment	Response
▪ "TBA" – Acceptance, treatment and disposal criteria will need to be developed in consultation with the EPA for chemicals not listed in the LLCW/LTPR facility schedule. The proponent needs to be aware that the existing LLCW/LTPR schedules are disposal criteria and can only therefore be used for that purpose. The fate of treated waste that is still above LLCW/LTPR criteria has not been addressed in the proposal. Trials need to be conducted on proposed waste streams to determine pre-treatment leachability values. ▪ Remove PCBs from SVOCs table. ▪ Table 1 headings need to be edited to read appropriately i.e., Total dry weight chemical concentrations (mg/kg) and Maximum leachate concentrations (mg/L) ■ Note 7 can only make sense only if and after the trigger values proposed in Table 1 have been justified. ■ Section 2.1 refers to PCB treatment in future technologies. PCBs have also been included in SVOCs. This is ambiguous and in any event incorrect as PCBs cannot be heat treated (if remediating in bio-piles which will be the main methodology for volatiles/SV) as stable. This needs to be deleted from this section. ■ "Appropriate level" in Section 2.1 needs to be qualified. ■ The second paragraph in section 2.2 refers to leachability criteria. The proponent is presupposing that the proposed leachability values are acceptable to the EPA ad this is not the case. ■ The proponent has defined their own criteria for trigger concentration. The proponent must either: ▪ Undertake remediation trials, or ▪ Provide examples where the treatment of proposed waste streams have been treated with the proposed methods to produce treated wastes to levels that will be acceptable for reuse or disposal as LLCW. The expected contaminant concentration levels in the treated wastes have not been provided in the	aware of. ■ It is common current practise to accept primary dry weight concentrations of contaminants above the LLCW criteria provided that the chemicals are not above the LLCW leachability criteria. It is the leachability that drives the risk, both from a health perspective (ie, how available is the contaminant?) and from a disposal perspective (ie, is the receiving facility designed to contain this material so that the surrounding environment is protected?). There are no facilities in South Australia that accept concentrations of contaminants in soils and sludges that are above the LLCW criteria. Therefore, there is an ongoing need for the EPA to accept materials into LLCW facilities based on their leachability alone for chemicals that cannot be practicably removed or destroy. (Note: using technology that removes contaminants actually produces a concentrate that can lead to an even more complicated waste management requirement). ■ PCBs will be removed from the SVOCs table and listed under "Other". ■ The treatments listed in Table 2 (Section 2 of the EIS Amendment) under "Future Options" are future options that would require prior EPA approval, and are not part of the treatment options that will initially be used at the facility. ■ "appropriate level" refers to the target remediation criteria. This could be Waste Fill criteria for possible reuse Intermediate Landfill Cover for disposal as daily cover in the balefill cells at the site, Low Level Contaminated Waste for disposal at the LLCW cells at the site, or LLCW (leachability only) for disposal at the LLCW cells at the site with EPA approval, ■ No soil will be accepted at the site without classification testing by a recognised environmental consultant, which will need to include primary and leachability concentrations for the range of contaminants listed in the LLCW license, and based on site history information (as per the NEPM). The trigger concentrations are provided as these levels of contaminants are readily remediated based on industry experience. ■ Based on industry experience, trigger concentrations were adopted to reflect the ability to treat such materials successfully using either stabilisation and/or

EIS Comment	Response
proposal. ■ Section 1.2 refers to 'by-products of remediation'. This depends on what is being treated and how. In order to justify the assertions in section 1.2, the proponent must either; ▪ Undertake remediation trials, or ▪ Provide examples where the treatment of proposed waste streams have been treated with the proposed methods to produce treated wastes to levels that will be acceptable for reuse or disposal as low level contaminated waste (LLCW). ■ The expected contaminant concentration levels in the treated wastes have not been provided in the proposal.	bioremediation techniques. ■ IWS will seek advice from suitably qualified environmental consultants to assess the need for pre-treatment trials of received material prior to receiving any material.
Confidential Public	
■ Stage 1 is a rather simplistic soil treatment, not considered to be technology, nor best practice. It doesn't rank well for a broad range of contaminants in the USEPA treatment Technologies Screening Matrix.	■ Soil treatment suitability will be assessed per material load and actual chemical composition. The methods proposed are well understood and commonly used methods. The ability to undertake these methods in a controlled environment (as proposed at the MWTF) is what makes it best practise. ■ Stage 1 proposed only receipt and temporary storage of material while detailed design and stage 2 construction activities are undertaken. Management of the material to control dust, odours and leachate will be carefully managed under a material specific EMP, and will be better than most "on-site" methods currently employed at sites surrounded by residential areas
■ The bioremediation methodology proposed includes screening and mechanical mixing of the soil, without capture and treatment of organic compounds volatilised during these processes.	■ Soil treatment suitability will be assessed per material load and actual chemical composition. ■ The mixing and screening will occur within the shed. Any volatilisation will be captured by facility bio-filters. This is an improvement on current practise in other waste management facilities, which is typically conducted in open air.
■ Proposed treatment of acid sulphate soil by chemical stabilisation may not be in	■ This facility will comply with SA regulations for acid sulphate soil and will not create

EIS Comment	Response
accordance with best practice for these materials. This includes the accepted hierarchy for acid sulphate soil management (refer QASSIT, Vic EPA and others) which encourages on avoidance and on-site management methods. The ready availability of a treatment facility may discourage appropriate and better-practice onsite avoidance and management techniques for these materials being adopted by waste producers. ■ Chemical stabilisation of acid sulphate soil, depending upon the fixative used, may not prevent acidification and associated environmental impacts. Once acidification processes in acid sulphate materials have commenced, for example via disturbance, dewatering and aeration via mixing, it is almost impossible to stop the process continuing, as once initiated under aerobic conditions, the acidification processes can still continue.	any acid sulphate soil through its construction ■ If the facility is ever used for ASS treatment (not likely as on-site treatment is the preferred option, but not always possible), then it will be done in accordance with SA EPA requirements (SA EPA Guidelines, EPA638/07, *"Site Contamination – Acid Sulfate Soil Materials"* November 2007) Chemical stabilisation would not be used. The addition of lime would be used so that any acid generation was buffeted by the presence of lime.
■ Inadequate level of detail on proposed methodologies and management of soil swapping facility and quality of swapped-out soils.	■ Soil quality testing will be undertaken to ensure compliance with SA EPA standards for material exported from the site and to the satisfaction of the owners of receiving site. This would be undertaken by suitably qualified personnel and NATA accredited laboratories, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure, 1999*. and relevant SA EPA guidelines. ■ Detailed management procedures will be prepared subsequent to detailed design. ■ The facility will be managed in accordance with future EPA Licence requirements.
■ Inadequate level of detail on soil quality testing and QA/QC regimes as part of the facility operations.	■ Soil quality testing will be undertaken to ensure compliance with SA EPA license for material disposed at the site. This would be undertaken by suitably qualified personnel and NATA accredited laboratories, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure, 1999* and relevant SA EPA guidelines, and include industry standard QA/QC procedures and testing. ■ Detailed management procedures will be prepared subsequent to detailed design. ■ The facility will be managed in accordance with future EPA Licence and regulatory

EIS Comment	Response
	requirements.
Francie Brechin, Public	
Concerned about toxins leaching	■ All contaminated material received by the facility will be stored or treated on concrete sealed surfaces and covered. ■ Possible liquid or stormwater runoff from any contaminated received material will be contained in sealed sumps for treatment and disposal as contaminated material. ■ There is no direct contact with soil, ground or surface water proposed as part of facility design or operations.

Table 3: EIS Amendment Comments and Responses: Stormwater

EIS Comment	Response
Deanne Popow, Planning Officer, Department of Water, Land and Biodiversity Conservation	
Would like the opportunity to comment on LEMP	■ The LEMP is an EPA regulated site management document which forms part of the EPA Licence 11275 for the site. ■ Activities at the proposed facility will be operated under a revised EPA site Licence 11275.
Peter Newland, Manager, Water and Catchments, EPA	
■ EMP specific to MWTF be submitted as proponent failed to provide sufficient information. ■ EMP to provide clearer indication of the pollutants and hazards that are likely to be produced and undertake a detailed risk assessment of them that indicates the level of risk and how it will be managed. Risk assessment requires greater level of detail.	■ A facility specific Environmental Management Plan will be prepared and submitted to the EPA for approval as part of the site EPA Licence 11275 requirements, including consideration of risk within the plan.

Table 4: EIS Amendment Comments and Responses: Air Quality

EIS Comment	Response
Brendon Schulz, Team Leader, Development Assessment, DC of Mallala	
■ Council has concern over the potential for wind blown material to impact on rural activities and residents of the locality. Although contaminated material is proposed to be covered, the delivery and movement of material by machine may have adverse impacts.	■ The risk of wind blown material impacting upon rural activities and residents of the locality is low. ■ Contaminated material will be transported in covered trucks. ■ Once Stage 2 is completed trucks would unload inside the shed with the doors closed. Mixing and screening would also take place in the shed with doors closed. Any storage of untreated the material in the undercover area would be covered with geomembrane or similar. Within the shed there will be no opportunity for dust to escape and odours will be collected and treated by the biofilter. ■ For Stage 1, unloading would be done onto the bunded concrete area under a water spay to minimise dust, and then the material would be covered with a geomembrane or similar, and managed under a specific Stage 1 interim EMP to the satisfaction of the EPA.
■ Chris Lawrence, Dublin & District Ratepayers Association, ■ Stephen Jones, Public ■ Francie Brechin, Public	
■ Concern in treatment of dangerous material in an open area where high winds are the norm.	■ Refer previous action
Chris Harris, Principal Adviser Air Quality , EPA	
■ No indication of which options would be used or their efficacy in odour removal	■ A biofilter is proposed for odour control with an assumed odour removal efficiency of 85%
■ Odour modelling was provided for emissions from the receival storage building only. No modelling was provided for any activities undertaken outside of the building.	■ There are understood to be no odour sources located outside the building;

EIS Comment	Response
■ The odour emission rates used were from data from Victorian gas works remediation site. The reports state that this would be considered worst case for this proposal.	■ This is correct – the removal of soil from ex-gas works sites has often been associated with odour complaint and is considered the worst case.
■ The modelling assumes that the treatment area would be kept under negative pressure	■ The biofilter design has not been finalized however, based on the current assumptions of flow rate passing through the bed it is highly unlikely that it will be sufficient to maintain a negative pressure within the building. Consequently the modelling conservatively assumed that the ventilation extraction system installed to serve the biofilter will only capture 50% of the emissions, with the remaining fugitive emissions discharging from the building.
■ No indication of the potential odour rates for the various materials that are to be stored or treated. There may be a potential odour impact as there is no indication of what odours will be emitted from the open storage of contaminated soils in stage 1.	■ As noted above the worst case was assumed. There is little data available for odour rates of emission from different types of contaminated soils. The other potential source of odour that has not been assessed is any manure that may be used as part of the composting process. ■ Contaminated soils are not proposed to be stored in the open, but under cover.
■ The proposed EIS amendment indicates they may treat persistent monocyclic aromatic hydrocarbons, organic pollutants, PCBs and PAHs. There is no modelling of the potential ground level concentrations of the emissions.	■ The proposed EIS amendment indicates they may treat persistent monocyclic aromatic hydrocarbons, organic pollutants, PCBs and PAHs. There is no modelling of the potential ground level concentrations of the emissions: ▪ PCBs contaminated soils are understood not to be proposed for treatment. Modelling can be conducted for the remaining contaminants, however it is difficult to estimate emissions from the soil surface. It is possible to provide emission flux data for a range of VOCs, based on previous experience with composting gas works soil, together with ambient air quality data upwind and downwind of a remediation site. The flux data could be used to estimate VOC emissions if actual likely soil surface areas can be determined and subsequently modelled.

Table 5: EIS Amendment Comments and Responses: Revegetation

EIS Comment	Response
Deanne Popow, Planning Officer	
Section 1.1 highlights that 'revegetated perimeter buffer zones & retention of existing revegetation where possible' to be incorporated as one of the key features of the MWTF. It is suggested this statement reads: *Revegetated perimeter buffer zones using locally indigenous species & retention of existing revegetation where possible'* And is incorporated as one of the key features of the MWTF.	■ noted

Table 6: EIS Amendment Comments and Responses: Groundwater

EIS Comment	Response
■ Chris Lawrence, Dublin & District Ratepayers Association ■ Confidential, Public ■ Stephen Jones, Public	
■ Local knowledge regarding GW reinforces the fact of abundant GW reserves as progress north on the site creating a greater potential for contamination ■ The proposal does not specify how the quality of the land & groundwater environment surrounding the facility will be assured. This is particularly concerning in relation to the proposed use of unknown solvents/fixatives etc.	■ On site groundwater monitoring undertaken as part of overall site management. ■ Reiterate sealed storage facility design and stormwater controls

Table 7: EIS Amendment Comments and Responses: Climate Change

EIS Comment	Response
■ Chris Lawrence, Dublin & District Ratepayers Association ■ Stephen Jones, Public ■ Francie Brechin, Public	
■ Concerns with rising sea level interfering with groundwater/stormwater issues.	■ The facility will be built at about 11 m AHD. Groundwater is expected to be at approximately 6 m AHD (i.e., 4 -5 m below ground surface level). Therefore, there will not be any interaction between the facility and groundwater during construction or during operation (which will be fully contained for any liquids inside the building). ■ The latest predictions by CSIRO are that sea level rises due to climate change are expected to be somewhere between 0.3m and 0.9m by 2100. Even if the upper prediction level (0.9m) occurred and groundwater rose by the same amount, this would not impact upon the facility or present any risk to groundwater from the facility. ■ Stormwater will not come in contact with waste materials and therefore will not be impacted.

Table 8: EIS Amendment Comments and Responses: Traffic

EIS Comment	Response
F Hurley(?), Manager, Traffic and Access Standards for Commissioner of Highways, DTEI	
The traffic information submitted within the EIS documentation is considered insufficient to enable a proper assessment to be undertaken. Accordingly EDTEI request that a Traffic Impact Study be undertaken that includes; ■ An assessment of vehicle types intended to use the site, and details of any Restricted Access Vehicles that are intended to access the site. ■ Assessment of the implications for the adjacent road network ■ Potential solutions for traffic management to ensure that road safety at this location are not jeopardised by the increased traffic movement associated with this proposal. ■ Any proposed changes to the existing roadway configuration to cater for the increase in traffic.	■ The proposed facility is not expected to cause significant impacts to road traffic volume or safety, therefore additional survey is not proposed. ■ On average, the proposed facility is expected to receive approximately 15,000 tonnes to 30,000 tonnes per annum. This is based on the use of B-double or semi-trailer tipper vehicles for the transport of soil, with a capacity of approximately 15 tonne per vehicle average. This equates to around 20 - 40 vehicles per week or 3-6 per day entering the facility. This further equates to approximately 6-12 two-way vehicle movements per day. ■ The traffic movements reported in the *Mallala Solid Waste Landfill Environmental Impact Statement* (February 1996) were 7,300 two-way movements per year along Port Wakefield Road. Therefore, the additional vehicle movements expected as a result of the proposed facility form less than 0.1 % of those reported in the EIS and can be described as negligible. ■ There is expected to be some additional vehicle movements if the removal of suitably treated soil off-site becomes viable, however, standard industry practice is to backload vehicles that have delivered contaminated soil.

Table 9: EIS Amendment Comments and Responses: Community Consultation

EIS Comment	Response
DC of Mallala	
■ Council request to be kept informed in relation to this proposal, in particular in relation to how the identified issues have been addressed. There may also be merit in the EPA conducting a 'Community Forum' in Dublin whereby experts from both Government & Industry are able to explain the full proposal and ongoing operating procedure including all measures undertaken to minimize any risk.	■ A community consultation information session will be undertaken on 6 April 2009 by IWS with attendees from the EPA and Local Council. This session will present EPA assessment processes and procedures as well as provide a project presentation and Q&A forum
■ Council has no objection to this submission being made available for public inspection.	■ No comment
Stephen Jones, Public	
■ public consultation must take place to enable all residents to be better informed.	■ A community consultation information session will be undertaken on 6 April 2009 by IWS with attendees from the EPA and Local Council. This session will present EPA assessment processes and procedures as well as provide a project presentation and Q&A forum. ■ The EIS Amendment was available for public comment as part of compliance with SA development requirements.

APPENDIX D

FURTHER ADVICE FROM THE ENVIRONMENT PROTECTION AUTHORITY

Environment Protection Authority
www.epa.sa.gov.au

EPA South Australia

GPO Box 2607 Adelaide SA 5001
250 Victoria Square Adelaide SA
T (08) 8204 2000 F (08) 8204 2020
Country areas 1800 623 445

EPA /11275

Mr. Lee Webb
Chief Environmental Officer
Environmental Impact Assessment Branch
Department of Planning & Local Government
GPO Box 1815
ADELAIDE SA 5001

Dear Lee,

Re: INTEGRATED WASTE SERVICES (IWS) NORTHERN BALEFILL, DUBLIN – PROPOSED MULTIPLE WASTE TREATMENT FACILITY (MWTF), EIS AMENDMENT

The EPA has reviewed two EIS public comment and response letters from Golder Associates and Connor Holmes consultants both dated 3 April 2009 and acting on behalf of IWS. These letters were submitted to the EPA for comment by the Department of Planning and Local Government (DPLG).

You have asked the EPA to provide you with another copy of its original response dated 8 April 2009 (hand delivered at our meeting on 9 April 2009).

As per our previous advice the EPA recommends that the following conditions be attached to the development approval for the proposed MWTF.

- Prior to transporting materials to the MWTF for treatment, the proponent will conduct *pre-remediation trials* on all contaminated materials to determine if the approved treatment methods will be successful. Trial results will be submitted to the EPA for assessment and approval.
- Prior to commencement of any works, the proponent will prepare a *works schedule* outlining the activities and staged requirements for Stage 1 and Stage 2. Stage 2 of the proposed development will be constructed within 12 months of Stage 1 commencing. The works schedule will be submitted to the EPA for assessment and approval.
- Prior to any development and prior to receiving any contaminated materials in Stage 1, the proponent will prepare and submit to the EPA for assessment and approval a *preliminary Environmental Management Plan (pEMP)* relating to storage of contaminated materials. No more than 3,500m^3 will be stored in Stage 1 prior to completion of Stage 2.
- Prior to commencing operations of Stage 2, the proponent will prepare and submit to the EPA for assessment and approval the *final EMP* for the MWTF facility that will also include details on the two proposed treatment methods - bioremediation and contaminant stabilisation using biological

and chemical additives.

- The proponent will prepare *post-remediation reports,* including of all test results on treated materials, to determine their suitability for disposal or reuse. Post-remediation reports need to be submitted to the EPA for assessment and approval prior to treated material being discharged from the MWTF.

For further information on this matter, please contact Patrick Nganga on (08) 8204 1639 or patrick.nganga@epa.sa.gov.au.

Yours sincerely

Marina Wagner
MANAGER
WASTE TO RESOURCES BARNCH
REGULATION & COMPLIANCE DIVISION
ENVIRONMENT PROTECTION AUTHORITY

Date: 5 August 2009

Development Act 1993

ASSESSMENT REPORT

For the Environmental Impact Statement for the

IWS Northern Balefill

Minister for Transport and Urban Planning
South Australia

ASSESSMENT REPORT

FOR THE ENVIRONMENTAL IMPACT STATEMENT FOR

THE

IWS NORTHERN BALEFILL

(FORMERLY THE SOLID WASTE BALEFILL - P & M BORRELLI & SONS PTY LTD)

MINISTER FOR TRANSPORT AND URBAN PLANNING
SOUTH AUSTRALIA

NOVEMBER 1997 ISBN NUMBER 0 7308 4943 0

ASSESSMENT REPORT
FOR THE ENVIRONMENTAL IMPACT STATEMENT
FOR THE IWS NORTHERN BALEFILL

CONTENTS **PAGE**

EXECUTIVE SUMMARY

This Environmental Impact Assessment (EIA) is being undertaken under Section 46 of the *Development Act 1993*. On 19 October 1994 the then Minister for Housing, Urban Development and Local Government Relations stated that an Environmental Impact Statement (EIS) was required for the development, by P & M Borrelli & Sons Pty Ltd, of a solid waste landfill depot in the District Council of Mallala. Guidelines for the EIS were issued and the *Solid Waste Balefill Environmental Impact Study at Mallala* was prepared by the proponent and placed on public display from 22 April 1996 to 7 June 1996. A public meeting to discuss the EIA process and the proposal was held by the Department of Housing and Urban Development on 15 May 1996. A response document titled *EIS Solid Waste Balefill - Response to Submissions*, in which the proponent responded to 49 public and government submissions, was released on 10 June 1997.

The EIS, the public and government agency submissions and the Response document, the comments of the Environment Protection Authority (EPA), the relevant Council (the District Council of Mallala), the Native Vegetation Council and other information have been considered in the preparation of this Assessment Report.

Integrated Waste Services Pty Ltd (IWS) (formerly P & M Borrelli & Sons Pty Ltd) propose to establish an above ground balefill, to be known as the IWS Northern Balefill, 3km south of Dublin ie. 50km north of Adelaide. The whole of the subject land is zoned as General Farming within the Development Plan for the District Council of Mallala.

Separate to this proposal, the proponent has been given Provisional Development Plan Consent, by the Development Assessment Commission decision on 13 May 1997, to construct a resource recovery, shredding and baling facility at Wingfield (IWS Wingfield Resource Recovery and Transfer Facility).

The proponent's existing landfill facility at Wingfield is approved to the year 2000 with ongoing use through the transfer station. With the closure of the Wingfield site for waste disposal, IWS require a site for the final disposal of shredded and baled waste and demolition and inert waste. The selected site is considered by the proponent to provide an opportunity to establish a commercially sustainable, environmentally sound balefill waste disposal facility, with a capacity of approximately 20,000,000 cubic metres and an estimated lifespan of 60 to 80 years.

The balefill (landfill) would receive processed waste products as part of an overall waste management strategy of recycling and waste minimisation to be undertaken at the baling facility. At the landfill site it is proposed to also store selected wastes, which may have potential to become future resources, in dedicated cells.

The locality is predominantly flat plains, with the subject land sloping gently down from east to west over its entire distance (approximately 4.5km), with a fall of about 10m (ie. 14-4m AHD). The land is generally open and rocky; extensive grazing has reduced native vegetation and the area is infested with rabbits and pest plants.

Soils on the site are of the mallee type overlying sheet calcrete of the type Ripon Calcrete, which in turn overlies low permeability Hindmarsh Clay some 45 - 55m thick. Below the clay is the confined aquifer of the Port Willunga Formation. Salinities of water in this aquifer range from 4000 - 7000mg/L restricting its suitability to stock watering or industrial use.

More recently part of the land has been excavated for its calcrete for road construction. Limited rehabilitation has taken place and consequently there has been no regrowth or revegetation in the excavated areas.

Adjacent land use is grazing, feedlotting, piggeries, poultry sheds and associated agricultural activities.

The proponent has researched internationally and believes that this proposal uses state of the art landfill techniques so ensuring that it is environmentally and technically acceptable to the community.

The proponent has made a commitment to operate according to a management plan based on a "continual improvement philosophy which allows for modification of practices to achieve performance improvements in operation, environmental and licence compliance". As part of this management plan a local community consultation committee is proposed.

The EIS and Response documents provide details of site preparation, operational procedures, potential environmental impacts of the project, together with proposed mitigation measures and long term rehabilitation proposals. Issues discussed are:

- groundwater;
- leachates;
- landfill gas and odour;
- operational staging;
- surface water management;
- buffers/visual amenity;
- proximity to dwellings;
- litter/dust;
- noise/traffic;
- meteorology;
- sea level rise;
- site rehabilitation;
- post closure management.

The proponent has stated that all impacts will be minimal and, where problems could arise, suitable mitigation measures would be applied to alleviate the problem. The proponent is confident that this proposal meets the established policies and objectives of the EPA.

IWS intend to incorporate a financial assurance package that is to the satisfaction of the EPA, in accordance with industry standards, with funds allocated to cover the liability for current operations together with ongoing monitoring and post closure programs.

The EPA has concluded on 11 September 1997 that,

> "…the proposed site for the IWS balefill could be developed to its satisfaction provided that high standard environmental management systems and practices are established and maintained for the active life of the facility and post closure monitoring period." (Refer Appendix A for details).

The Assessment Report concludes that the proponent has demonstrated that the site is suitable for development as a landfill/balefill facility. The proposal's operational procedures, as documented through the EIS, Response document and Clarification of Issues document, provide confidence in the proposal.

1 INTRODUCTION

This Assessment Report, prepared by the Minister for Transport and Urban Planning, assesses the social, economic and environmental impacts of the proposed balefill depot in the District Council of Mallala. While the Report is intended to be a "stand-alone" document the detailed information on which it is based is contained within the *Solid Waste Balefill Environmental Impact Statement Study at Mallala* (EIS), *EIS Solid Waste Balefill Response to Submissions* (Response document) and *Solid Waste Balefill - Clarification of Issues*, (prepared for the EPA), which are all publicly available.

Reference has been made in the EIS and Response document to the EPA document "Interim Criteria for Major Landfill Depots" (SA-EPA Interim Criteria). Several draft versions of this document have been issued during the consideration of this proposal. The "Consultation Draft October 1997", was released for public comment on 30 October, 1997 for submissions by 12 December, 1997.

1.1 THE PROPOSAL

Details of the proposal are set out in Section 1.6 of the EIS and Sections 2.1 and 2.2 of the Response document.

Integrated Waste Services Pty Ltd (IWS), formerly known as P & M Borrelli & Sons Pty Ltd, propose to develop a balefill on farming land situated near Dublin in the District Council of Mallala, the facility is to be known as the IWS Northern Balefill.

The balefill would be a regional waste disposal site for central and northern metropolitan Adelaide, providing waste disposal/landfill space for approximately 20 million cubic metres of municipal solid waste over a 60 to 80 year lifespan. Final landforms would be at 23 metres (m) Australian Height Datum (AHD) at their highest point (ie. 9m above the level of Port Wakefield Road at the site access point).

The site itself is located in a rural area, approximately 50km north of the Adelaide CBD (Map 1), and was chosen based on the availability of suitable land. The site has been severely degraded through the clearance of native vegetation, subsequent grazing and invasion of pests (particularly rabbits).

A portion of the site and other land in the locality have been recently excavated for calcrete, which was used in the development of National Highway 1.

The proposal is principally a **balefill** method of landfilling - where waste is delivered to the site in an already baled and compacted form from a new Resource Recovery and Transfer Facility on an existing waste management site at Wingfield. Provisional Development Plan Consent for this latter facility was given by the Development Assessment Commission in May 1997. Unbaled material would comprise demolition and inert wastes.

The balefill cells would be developed such that separate materials baled at Wingfield may be stored in different cells. Should future technologies enable the use of that material as a secondary resource, the material would be able to be recovered for that purpose in the future.

Individual bales would be a maximum size of 1.2m wide, 0.8m high and 1.6m long and weigh approximately 1.2 tonnes. A typical cell would be 150m x 150m with a maximum working face 50m wide. Each lift would consist of 3 bales plus daily cover to obtain maximum efficiency. At an average weekly intake of 2,000 tonnes of baled waste it would take approximately 9 to 12 months to complete a cell.

Balefill cells would be self contained with full environmental controls including groundwater control, base liner system, leachate collection system, daily/intermediate/final cover system, landfill gas control system.

Progressive landfill staging, completion, revegetation and rehabilitation, moving away from Port Wakefield Road and existing dwellings, would be a standard operational procedure.

Low permeability clays (Hindmarsh Clay) underlying the site would be re-engineered and utilised as a lining for landfill cells.

Stormwater management systems have been designed to prevent concentration of flows, minimise sediment load and divert flows away from balefill zones. Separated leachate and surface water management and treatment systems and landfill gas (LFG) control and extraction systems are proposed.

Extensive landscaping incorporating existing remnant stands of native vegetation and revegetation of perimeter buffer zones is proposed. Environmental monitoring and post closure planning would be undertaken in accordance with statutory requirements.

In addition the proposal would provide infrastructure such as a weighbridge, office, rejected vehicle turning path, sealed entrance roadway and vehicle wheel wash.

In response to government and public submissions received during the display period, the proponent has revised aspects of the proposal (Response, Section 2.2) to include:

- relocation of the perimeter of the landfill cells to a minimum of 520m distance from residences compared with the 400m in the EIS, and to provide wider vegetation buffers;

- the landform has been modified to meet the SA-EPA interim criteria. This has resulted in a revised shape and increased height from 18m to 23m AHD and revision of the proposed groundwater protection system;

- reworking of the staging to widen gaps between the areas comprising the landfill stages to allow stormwater flow paths to be maintained, to improve the visual aspect of the site, operational maintenance, fire protection benefits and environmental performance criteria;

- reordering the proposed staging to maximise the benefit of buffering of the operations by the first stages;

- the buffer between the Penrice mining leases (western) has also been increased from 25m to 500m;

- revision of landfill cell engineering details to ensure environmentally sound construction, operation and monitoring features, particularly groundwater protection and leachate control;

- community consultation and input - the proponent would be required to prepare a Landfill Environmental Management Plan (LEMP) as a condition of licensing by the EPA, which incorporates ongoing management and liaison with the community including consultation and input into future use and management of the land;

- waste type control - incorporated in the LEMP will be the requirement that any waste delivered for disposal must have passed through an accredited, licensed Resource Recovery Facility. The accreditation would be based on the protocol for management of wastes including a recording process to identify source of material, and its storage location on site.

1.2 ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURES

Procedures for Environmental Impact Assessment (EIA) for Major Developments or Projects in South Australia are set out in Sections 46, 47 and 48 of the *Development Act 1993*.

At the time the proposal was submitted, the Minister formed the opinion that this development was of major social, economic or environmental importance under Section 46 of the *Development Act 1993*. On 19th October 1994 the Minister required an Environmental Impact Statement (EIS) for the IWS proposal to develop a landfill in the District Council of Mallala and draft *Guidelines* outlining the scope of the EIS were subsequently placed on public exhibition for one month, during which period comments were received from the community and government agencies.

The proponent conducted baseline studies and prepared an EIS which was placed on public display for a period of 8 weeks, (April to June 1996), during which time Government agency and public comments were invited.

Following the display period the proponent prepared a Response document (*EIS Solid Waste Balefill Response to Submissions*) addressing matters raised in public submissions and government comments on the EIS.

Pursuant to Section 46 (9) of the *Development Act 1993*, in this Assessment Report, the Minister has taken into account the EIS, the submissions and the proponent's response to the submissions, the comments of the EPA and the District Council of Mallala, the Native Vegetation Council and any other matters the Minister has considered appropriate.

On completion of the Assessment Report the Governor, pursuant to Section 48(7) of the *Development Act 1993* must, when making a decision, have regard to the provisions of the appropriate Development Plan and the relevant regulations, building rules (if relevant), and the Planning Strategy. Further, when making a decision on an "activity of environmental significance" as listed in the Act, the Governor must have regard to certain provisions of the *Environment Protection Act 1993*. In particular, the Governor must have regard to the Objects of the Act, the general environmental duty under the Act and any relevant environment protection policies. The Governor must also, pursuant to Section 48 (5)(e) of the *Development Act 1993*, have regard to the EIS and the Assessment Report. Further, in Section 48 (7) the Governor may specify conditions which should be attached to a development authorisation that must be complied with in

the future and under some circumstances may vary or revoke conditions to which the development authorisation is subject or attach new conditions to the development authorisation.

This Report considers the development concept as defined by the EIS and Response document in total, and further clarified by additional documentation. Additional specific information would be required in a Landfill Environmental Management Plan (LEMP) which would address monitoring and mitigation measures to satisfactorily ameliorate impacts. A satisfactory LEMP would be required by the EPA for licensing purposes. Licensing requirements, which address operational aspects and issues, may be subject to variation in the future without amendment to any development authorisation for the proposal, which predominantly addresses land use matters.

1.3 PUBLIC CONSULTATION

The *Development Act 1993* allows for public input during the exhibition of the draft *Guidelines* and the EIS, by inviting written comment. In addition, the EIA Branch of the former Department of Housing and Urban Development (DHUD) conducted a public meeting during the exhibition period of the EIS.

Draft *Guidelines* outlining the scope of the EIS were placed on public display for 1 month on 5 December 1994.

The EIS was placed on public exhibition for 8 weeks from 24 April 1996 to 7 June 1996. During this time the Minister received 40 submissions from the public and 9 submissions from government departments and agencies. All submissions were forwarded to the proponent, Integrated Waste Services Pty Ltd.

The issues raised in the submissions were analysed and the proponent's responses set out in the Response document, released on 10 June 1997. Key issues raised were:

- impacts of litter, vermin, odour, dust, noise;
- potential to pollute the Gulf of St Vincent;
- engineering (base of landfill) aspects of the proposal;
- zoning requirements;
- adequacy of meteorological data;
- land values;
- health impacts;
- traffic on Port Wakefield Road;
- adequacy of buffers;
- groundwater flow management;
- leachate management.

The public meeting convened by the former DHUD was held on 15 May 1996 and attended by approximately 150 people. Representatives from DHUD, the Office of Environment Protection and Integrated Waste Services Pty Ltd were present to provide information on the assessment process and the proposal as outlined in the EIS document.

1.4 AGENCY, PRESCRIBED AUTHORITY AND COUNCIL CONSULTATION

The Office of Environment Protection (OEP) was consulted at each stage of the assessment process. Section 46B (5) and (9) of the *Development Act 1993* requires that the EPA is consulted and EPA comments are set out or included in the assessment. The EPA comments and report (received in September 1997) addressed the EIS and the Response documents. The statutory requirement is for the EPA to comment and report on the EIS, no formal mechanism exists to require comment on the Response document, however EPA (and OEP) input is integral to an assessment of a landfill activity. A copy of the EPA comments concerning the proposal is provided in Appendix A of this Report.

The amendments to the Act in January 1997 also required that the relevant Council in whose area the development is proposed, be consulted and their comments set out or included in the Assessment Report . The exhibition of this EIS occurred prior to those amendments however the Council comments are included in Appendix C1 and C2 to this assessment as required by the amended Act.

The Native Vegetation Council was also consulted pursuant to Regulation 3 of *the Native Vegetation Regulations 1991*. Their comment is included wholly in Appendix D.

Other Government agencies provided comment in relation to various aspects of the proposal and these are outlined in the appropriate places in this Report.

2. PROJECT DESCRIPTION

This chapter summarises the proposed development with respect to site facilities, method and hours of operation (including procedures for site management) and environmental protection measures, details of which are set out in the EIS and Response document.

2.1 PROJECT JUSTIFICATION

The EIS (Section 1.4) states that the proponent's existing landfill facility at Wingfield is approved until the year 2000 and to continue operating a commercially sustainable, orderly and attractive waste management service, a new facility will be required. In relation to the proposal the proponent provides a series of company objectives and lists the aims of the proposal (EIS, Section 1.7).

Further, (EIS, Section 1.8) the proponent believes that, given the majority of Adelaide's landfills will be closing in the next 10 years, this proposal is consistent with the Environmental Protection Authority's (EPA) regionalisation and rationalisation program for waste depot locations.

The Office of Environment Protection in their submission of 24 June 1996 stated that,

> "The basic concept of the proposal is, however, broadly consistent with the principles embodied in the EPA's Integrated Waste Management Strategy Discussion Paper."

The EPA has since concluded on 11 September 1997 that,

> "…the proposed site for the IWS balefill could be developed to its satisfaction provided that high standard environmental management systems and practices are established and maintained for the active life of the facility and post closure monitoring period." (Refer Appendix A for details).

2.2 PROPOSED SITE

The proposed balefill site is located 50 km north of Adelaide, approximately 3 km south of Dublin and to the west of Port Wakefield Road (Map 1).

The land on which the proposed balefill is to be developed is zoned General Farming (GF) in the Development Plan for the District Council of Mallala. Under the principles of development control for the zone, the proposed activity was considered a merit application at the time of the preparation of the EIS. Subsequently the Council has prepared a Plan Amendment Report in which the proposal became non-complying, the Amendment was authorised on 1 May 1997.

The site under consideration comprises:

Table 2.1 Certificates of Title *

Volume	Folio	Other Description	Section	Hundred
3465	50		310	Dublin
3465	55		312	Dublin
3469	82		311	Dublin
4056	704		Portion 304	Dublin
4056	705		Portion 304	Dublin
4056	706		Portion 305	Dublin
4056	707		Portion 305	Dublin
4056	708		Portion 304	Dublin
5312	333	Allotment 76 in Deposited Plan 26412		Dublin

**(EIS, Section 2.2.3)*

The total land area is approximately 455 hectares of which approximately 298 hectares would be used for the balefill.

The site is predominantly flat with a gentle slope from 14m AHD in the east (adjacent to Pt Wakefield Road) to 4m AHD on the western boundary, a distance of 4.5 km.

Most of the area has been cleared of its native vegetation with only a few stands remaining (EIS, Section 2.7). The site has been heavily grazed which together with limited cropping has resulted in severe degradation and subsequent pest plant and rabbit infestation. Extraction of the calcrete has taken place in the eastern portion of the site for the upgrading of Port Wakefield Road. Partial restoration has taken place but there has been no revegetation or regrowth in the mined areas. Currently the site is being used for grazing.

The site is characterised by a thin layer of Ripon Calcrete overlying generally low permeability Hindmarsh Clay (40-50m thick). Below this is the confined aquifer of the Port Willunga Formation with water salinities of 4000-7000 mg/L limiting it to stock watering or industrial use.

The whole of the land is owned by Integrated Waste Services Pty Ltd (Response, Section 1.4).

2.3 PROPOSED DEVELOPMENT

This section describes the proposed development and outlines the proposed method of operation.

2.3.1 Method of Operation

Site Preparation

Prior to landfill liner construction, the hard veneer of calcrete overlying the site would be ripped and removed. The crushed material could be used for onsite roads and hardstand areas (Response, Section 5.1).

Cell staging would take place progressively (Figure 1) commencing from the eastern boundary (adjacent to Port Wakefield Road) and working towards the west (Response, Section 2.21 and Figure 2.2).

Development would be over 9 stages with individual stages containing between 6 to 14 cells, each measuring 150m x 150m (Response, Section 4.5). Cell preparation would consist of installation of a groundwater interception system, preparation of a 1m thick clay liner (Figure 2) to a 1×10^{-9}m/s or lesser permeability and the installation of a leachate collection system. The quality of liner compaction to meet specification would be achieved by preparing three compacted layers to make up the full liner. Geotechnical testing would be carried out by a NATA registered authority. Areas that fail the test would be reworked to meet the specification. The liner system would be constructed over the whole landfill base and extended up the sides, to provide full encapsulation. Groundwater levels would be maintained below construction level until each cell was capped (Response, Section 5.3). The leachate drainage system would consist of a high porosity material (gravel or geonet) sloped at 2% to collection drains run at 1% slope to the external sump. This would provide a preferential path for any leachate to flow to the external collection sump. A groundwater control system is proposed to prevent localised fluctuations of the watertable from subjecting the liner to uplift prior to bale placement. The hydrogeological aspects of this are discussed in the EIS (Section 7.2), and the Response document (Section 2.2.3 and Figure 2.4), and assessed in Section 4.7 of this Report. Liner material would be obtained from the site (Response, Section 2.2.2).

Site Operation

Bales would be delivered from the IWS Wingfield Resource Recovery and Transfer Facility to the site in covered vehicles and unloaded and placed in the cell by a fork lift (Response, Section 2.2.3 and 4.6). Waste would be received between 7.00 am and 7.00 pm seven days per week (Response, Section 4.6). Interim and daily cover would be sloped to ensure drainage of surface water away from waste disposal areas.

Individual bales measuring 1.2m wide, 0.8m high and 1.6m long and weighing between 0.8 and 1.2 tonnes would be placed in the cell. Using a working face 50m wide, each lift would comprise 3 bales plus daily cover. With an average weekly intake of 2000 tonnes of baled waste it is expected to take between 9 to 12 months to fill a cell.

Operational waste cells would be progressively capped with a 0.6m thick low permeability clay cap directly above the waste, overlain by a 0.6m thick layer of plant growing and moisture control medium. The cap is to be sloped at least 3% to ensure surface water drainage resulting in minimal infiltration of rainwater (Response, Section 2.2.3).

Landfill gas collection pipes are to be installed in each cell, this is discussed further in Section 2.3.2 of this Report.

Daily cover material would be obtained from the site (Response, Section 2.2.2).

Surface water diversion and storage were discussed in the Response document (Section 2.2.4). The staging would allow for the natural drainage paths of the site to be retained, so preventing any off site adverse impacts occurring. Both internal and external surface water drains would be

provided, with respective holding ponds, or dams, on the site. Runoff from waste disposal areas would have a separate collection and holding system.

The proponent has also stated that there would be ample provision for checking material entering the site, and only material from approved recovery or transfer facilities would be received (Response, Section 4.1). Should it become necessary to accept waste from surrounding areas, a recovery and baling facility could be constructed on the site (Response, Section 4.1). The proponent has also indicated (J. Borrelli pers. comm. May 97) that material that may have an economic value at some later time will be logged and stored in accessible cells.

The proponent recognises that for a long duration project, there needs to be a mechanism for upgrading site operational practices to reflect advances in waste handling and treatment/disposal methods, as they become economically viable. The proposed layout shown in the Response document with independent stages and cells, allows changes to the design philosophy with no implications for previous balefill stages. This is unlike conventional landfills where waste, leachate, groundwater and gas control systems are connected across stages. The design therefore incorporates the flexibility to allow continuous improvement subject to the approval of the relevant authorities (IWS pers. comm. Aug 97).

2.3.2 Leachate and Air Emissions

As stated in the EIS (Section 7.2) and Section 2.3.1 of this Report, a leachate collection system would be installed in each cell prior to filling the cell. The proponent has stated that, with this method of waste disposal, there is little likelihood of leachate being formed (EIS, Section 8.4). Notwithstanding this statement, which has been confirmed by computer modelling (Response, Section 5.4 and Appendix A) a leachate collection system would be installed (Response, Section 2.2.3 and Figure 2.4). An outline of what is proposed is described in Section 2.3.1 of this Report. The revised staging would allow for "progressive stage closure" to take place. Each cell would be provided with separate leachate and groundwater collection systems and sumps. This allows for monitoring of leachate and groundwater quality on a cell by cell basis resulting in rapid detection of contaminants and application of mitigation measures in the event of leachate escape from a cell. A system of monitoring wells is proposed (Response, Section 5.7 and Figures 4.3 and 5.5).

While a number of leachate treatment methods were proposed in the Response document (Section 5.6) evaporation in clay lined ponds is the simplest option. Design of the pond would consider leachate and stormwater separation before the complete coverage of the cell floor with waste and daily cover.

The Response document (Section 5.5 and Appendix A) provides detailed calculations on a number of scenarios related to leachate production and was analysed by the OEP. The effectiveness of what is proposed is discussed in Section 4.7 of this Report.

The proponent states (EIS, Section 12.3.3) that the balefill method would ensure no odours will be detectable beyond the immediate working area. Further in the Response document (Section 9.2.1), it is stated that given the meteorological conditions at the site, the buffer distances provided and the balefill method of disposal, odours from the active cell would rarely be detected.

A series of landfill gas collection pipes would be installed progressively in each cell to facilitate the removal of gas from the facility (Response, Section 2.2.5). Extracted gas would be either flared or utilised commercially (EIS, Section 8.3 and Response, Section 7.3).

The potential for landfill gas to migrate through the liner would be controlled by utilising a vacuum extraction technique, effectively reducing the pressure within each cell (Response, Section 7.5). Gas monitoring wells are to be placed around the perimeter of each cell ensuring early detection and remedial action of any leakage (Response, Section 7.5).

2.3.3 Pest Plants, Vermin and Litter

The EIS (Section 3.15) identifies 10 introduced plant species of which 2 are considered for eradication. While not specifically stated, eradication should take place during normal operational procedures and any revegetation activities. The introduction of weed species would be controlled (Response, Section 9.4) in several ways viz.

- no bulk vegetation to be accepted for landfilling;
- all baled and shredded waste not conducive to weed growth;
- transfer trucks to pass through wheel wash.

The proponent makes a commitment to the control of scavenging birds and rats, mice and flies (EIS, Section 10.10) by appropriate fencing to keep out large vermin and use of a professional pest exterminator where normal management practices are ineffective. The Response document (Section 9.4) states the Landfill Environmental Management Plan (LEMP) will establish an appropriate monitoring program. There is a commitment to reviewing the control measures, as required, and making results available to the relevant authority.

The EIS (Section 10.6) and Response document (Section 9.2.2) discuss litter control methods. While little or no windblown litter is predicted, given the nature of the balefill operation, each working area of a cell would have a 1.8m high relocatable fence around it to contain fugitive material - most probably resulting from a broken bale. Inspection and collection of litter would take place around the perimeter of the site.

The proponent believes that the mitigation measures proposed will minimise pest plant, vermin and litter problems.

2.3.4 Noise

The proponent has stated in the EIS (Section 10.8) that all requirements of the *Environment Protection Act 1993* relating to noise control and emissions will be met. In response to public submissions, the Response document (Section 9.3) provides details of studies carried out to determine existing noise levels, predicted levels and rationale for using industrial standards in a rural region. The findings are discussed further in Section 3.5 of this Report.

2.3.5 Rehabilitation

The balefill would be progressively rehabilitated as each cell is completed. This approach would allow for early closure of the site before the predicted date, without the need for major large scale rehabilitation. Chapter 11 of the EIS and Sections 2.2.6 and 10.10 of the Response document discuss this.

2.4 REGULATIONS, GOVERNMENT POLICIES AND PLANNING STRATEGY

This proposal is subject to the requirements of the Major Developments and Projects section of the *Development Act 1993* as outlined previously. The proponent, if development approval is granted, will then be required to negotiate the terms of an EPA waste licence for the ongoing operation of the site. These licences are issued and reviewed by the EPA at the end of each 12 month period. The proponent has adequately outlined the requirements under the *Environment Protection Act 1993* in Section 1.10 of the EIS.

The South Australian waste management strategy discussion paper titled "Options for an Integrated Waste Management Strategy for the Adelaide Metropolitan Area: 2015 and Beyond" (EPA, 1995) was not prescriptive on site selection for waste sites but did indicate that current landfill capacity will be filled in the next 10 years or so and that alternative sites will need to be developed. It also indicated a preference for larger, well operated sites close to but not necessarily in the metropolitan area. The IWS solid waste balefill proposal would appear to meet these principles.

In line with the objectives of the Integrated Waste Strategy for Metropolitan Adelaide, 1996-2015, EPA, June 1996 (IWSMA) an interdepartmental government committee, the Waste Management Infrastructure Steering Committee, was established late in 1996 to consider the longer term waste management infrastructure needs of Adelaide. The committee has not concluded its deliberations.

Planning Strategy

The Planning Strategy for South Australia is produced by the Premier of South Australia. It is a blueprint for the type of development that the South Australian Government wishes to promote in order to achieve economic, social and environmental goals. The effects of the proposal should be consistent with the provisions of the Planning Strategy, or the extent to which they are inconsistent outlined. This may be taken into account in assessment and decisions on Major Developments or Projects. The Strategy is divided into 2 parts, one for metropolitan Adelaide and one for country South Australia. The Planning Strategy Volume 2 Country, 1994 contained little of specific relevance to this proposal. Notwithstanding, there were statements in regard to protection of the environment and public health and safety. The Country Strategy was reviewed and amended in 1996. The Planning Strategy Volume 2 Country, August 1996 now applies.

The Environment and Resources, Community Health and Resources section of the Strategy (August 1996) indicates that "Storage, collection, transport and disposal of waste requires high standards to safeguard public health and safety and minimise environmental impact". Recycling and re use of waste are also strongly encouraged.

Under the same Environment and Resources section, strategy number 14 is relevant and is outlined as follows:

"14. Locate waste facilities in an orderly and rational manner.

a. Minimise the impact of waste operations on public and environmental health and safety.
b. Encourage, promote and coordinate efforts to improve efficiencies and economies of scale in solid waste management.
c. Ensure the protection of the community from liabilities arising from poor waste management practices by upgrading existing practices.
d. Minimise the contribution of food and other putrescible waste to the solid waste stream."

Strategy 13 on Pollution in the Water Resources section of the Strategy is also relevant to the proposal under consideration and states:

"13. Protect water catchment and storage areas from poor land use and management practices.

a. Provide incentives and information on managing pollution at source.
b. Regulate waste disposal and management of polluting activities through codes of practice, licences and guidelines.
c. Provide farm management advice and develop skills to reduce pollution potential from dryland farming activities, minimise the impact of land clearing and dryland salinity and, where possible, increase farm returns.
d. Identify sources of pollution for each region, catchment and ground water basin.
e. Protect underground water supplies from overuse and pollution.
f. Establish regional water quality standards for waste disposal and reuse.
g. Develop, monitor and update pollution management plans."

The Outer Metropolitan Adelaide (Northern Outer Metro Strategies) makes specific mention to the location of waste disposal proposals.

"identify appropriate remote areas within the Mallala district suitable for the location of specialised industries such as waste disposal, stock or slaughter yards and tanneries."

There is also mention of this type of development in the Manufacturing and Mining section of the Outer Metropolitan Adelaide portion of the Country Strategy:

"Advantages also work in the western parts of the region, for the attraction of specialised industries such as waste disposal, stock or slaughter yards. The strategic location and comparative ease of access provides a serious option for accommodating such activities."

2.5 CONSEQUENCES OF NOT PROCEEDING AND ALTERNATIVE SITES

The proponent states (EIS, Section 12.5.7) that not proceeding with this proposal will necessitate the development of alternative methods for treating a large part of Adelaide's waste. Six alternatives are cited and for various technical and economic reasons dismissed.

In response to questions raised in Public Submissions regarding site selection criteria and rationale used in selecting this site, the proponent has provided in the Response document (Section 3.2) a discussion clarifying the methodology and criteria used. The proponent considers that the land is:

- the most appropriate zone in the district for the kind of use proposed;
- within a generally sparsely settled locality;
- of adequate size to enable separation from other sensitive uses;
- in very poor condition for any general farming activities, having been used for mining and other activities with no significant input into rehabilitation;
- characterised by remnant small areas of native vegetation which can be conserved and reinforced thus encouraging native fauna;
- readily accessible from main roads without passage through densely populated areas;
- capable of being developed and planted to have little visual impact from the surrounding properties or public areas; and able to be developed having proper regard to heritage issues.

3. SOCIAL AND ECONOMIC ISSUES AND IMPACTS

3.1 ZONING AND LAND USE

3.1.1 Zoning

The proposed solid waste balefill site is located within a General Farming zone in the Development Plan for the District Council of Mallala.

The District Council of Mallala produced a Plan Amendment Report, which obtained interim control on 22 August, 1996 (authorised on 1 May, 1997) that made all forms of Waste Transfer Depots or Dumps non complying in this zone, regardless of the type of material.

The proposal, whilst not conforming with some of the objectives and principles of development control for the zone, is not considered to be seriously at variance with the Development Plan current at the time of lodgement of the proposal in 1994.

The most relevant Development Plan policies (Plan dated 7/10/93) are as follows:

> "Region Wide - Rural Development
>
> Principle of Development Control No 91
>
> Land which is particularly suitable for agriculture should be used or remain available to be used, for primary production, unless it is designated for township extension, rural living, or is required for public purposes or for other uses consistent with the objectives for the zone or policy area."

It appears that the subject land is not particularly suitable for agriculture in its existing state and not highly valued for the majority of rural production pursuits.

> "Region Wide - Protection of Physical and Economic Resources"

As a consequence of the sites proximity to a coastal area the following principle is worthy of consideration.

> "Principle of Development Control 145
>
> Development outside of urban zones should not take place if there is the potential for significant conflict with likely development which benefits the wider community based on any of the special economic or physical resources of coastal areas such as:
>
> Tourist attractions
> Harbour and Jetty Sites
> Aquaculture Sites
> Marina Sites
> Mineral Deposits of State or National importance."

It is not envisaged the proposal will significantly conflict with any likely developments of wider community benefit. The site is a sufficient distance from the coast to not conflict with the majority of developments listed. The Department of Road Transport (DoT) operated a borrow pit in the vicinity. The proponents have stated that the DoT have advised that it "has now concluded its mining activities and the resources from this land taken".

There are a number of mining leases adjacent to the locality for the extraction of salt and it is important to ensure leachates do not enter the water table as this could effect proposed salt extraction operations. The method of operation and control measure indicated in the EIS, Response document and Clarification of Issues document are such that leachates should not be a problem.

> "General Farming Zone
>
> Objectives:
>
> 1. Maintenance of general farming activities and land use on large property holding
> 2. Reinforcement of the existing open rural character of the area
> 3. Preservation of features of scenic or environmental significance
> 4. Recognition of the flooding potential of the Light River, Gawler River and Templers Creek."

The Development Plan goes on to explain that "the characteristics of the district favour the continuance of cropping and grazing uses and it is desirable not only that they remain, but also that good land management practices be encouraged to control proclaimed pest plants, vermin and soil erosion and that revegetation of certain areas be undertaken."

Whilst this proposal reduces the area available for cropping and grazing uses on the subject land, if managed as stated, soil erosion will be halted and revegetation of a denuded area will be undertaken.

> "Principal of Development Control 17
>
> The following kinds of Development are prohibited in the General Farming Zone:
> "....."
> Disposal, treatment and/or storage of contaminated soil and waste referred to in Schedule 2 of the Waste Management Regulations 1988
> .....
> Waste Transfer Depot or Dump (comprising the handling or storage of hazardous waste)"

It is not proposed to treat, store or handle contaminated soil or hazardous waste. Therefore, at the time of development application lodgement the proposal was not considered prohibited within the zone.

A plan amendment came into effect on 22 August 96 (interim control - authorised 1 June, 1997) which removed the handling or storage of hazardous waste statement. In effect this means that the proposal is a non complying form of development pursuant to the relevant Development Plan in force now. The Principles of Development Control have remained almost identical although in places the numbering has changed.

3.1.2 Current Land Use

The land appears to have been heavily grazed and the eastern portion contains a disused borrow pit. The borrow pit was mined by the DoT for road making material.

The major adjacent land uses are grazing, intensive animal keeping and mining tenements (Penrice Soda). A residential dwelling exists on the subject land which would be used as the caretakers residence.

There is a residential dwelling quite close to the south eastern boundary. The proponent has stated that "fill" will not be placed within 520m from the dwelling. The EIS (Section 2.7) describes the adjacent land use.

The general character of the land is quite bare and denuded, with remnant pockets of native vegetation evident.

3.1.3 Implications of Proposed Land Use Change

The proposed change of use will alienate the land for grazing or cropping which is the major use envisaged in the Development Plan. The long term gains to the community in terms of replanting indigenous species, creation of native fauna habitat and improvement in soil stability should offset the loss of grazing land. The loss of this parcel of grazing land is not expected to affect the agricultural viability of the region as a whole.

The impact a landfill site could have on the adjacent mineral leases (salt extraction) is an important consideration, however the EIS and Response document address the issue of leachates and conclude it is unlikely that there would be a detrimental impact on this adjacent land use. While Mines and Energy SA (MESA) has advised that "… no adverse effects on the groundwater resources of the area will result from the proposed landfill operation", Penrice Soda expressed concerns regarding potential leachate contamination of its future evaporation ponds. Leachates are discussed in Section 4.7 of this Report.

Whilst the issue of a buffer between the operations and the closest existing dwellings has been addressed, a 500m buffer round the operations has not been provided within the subject land. This could have an impact on the future division of adjoining land and siting of dwellings. Regardless of where an applicant wishes to construct a dwelling it is likely that a 500m separation of new dwellings from the boundary of the subject land could be imposed pursuant to the *Development Act 1993*. Any division of land would have to be of sufficient size to ensure a dwelling could be sited 500m from the balefill. It is acknowledged that due to the size of existing adjacent parcels this is not a major problem and it is unlikely that the adjacent land will be required for denser division in the foreseeable future, however, it is a minor restriction on adjoining landholders. Based on existing land ownership, small amounts of land belonging to seven landowners would be affected.

3.1.4 Listed Wastes

Neither the EIS or Response document envisage the receipt of Listed Wastes as set out in Schedule 1, Part B of the *Environment Protection Act 1993*. In the event the proponent should, at some later stage, wish to handle and receive listed wastes, further development authorisation would be required.

3.2 VISUAL IMPACT

The visual impact of the proposed landfill has been raised as a significant community concern, for both the operational phase and following final closure of the site. Generally, this type of land-use will impose the following features on the landscape which can reduce the visual amenity of an area if not adequately mitigated:

- built structures (eg. office, amenity building, rainwater/fuel tanks and gatehouse/weighbridge);
- infrastructure (eg. fencing, signs, internal roads and car parking);
- earthworks, screen mound and stockpiles;
- machinery (eg. bulldozers, excavator, graders, impact rollers and articulated forklift);
- vehicles (eg. cars, water tanker and trucks);
- working face and final landforms.

3.2.1 Existing

The site is located on the gently sloping coastal plain and has been described as falling gently to the west, towards the coast. The highest point on the site is 14m AHD, which is equivalent to the elevation of Port Wakefield Road to the immediate east. The site is only partially visible from Port Wakefield Road as roadside vegetation, several stands of remnant native vegetation and the slightly undulating topography currently screen it to some degree. Views from along Prime Beach Road (Response Figs. 8.5 and 8.6) are only partially screened by native vegetation. Stands of native vegetation along the southern site boundary help screen views from surrounding land uses in that direction. An existing house, which would be used as the managers residence, is currently screened by well developed plantings.

The eastern portion of the site has previously been excavated for road building materials and, while partially rehabilitated (ie. topsoil replaced but no significant re-establishment of vegetation cover), does not match natural ground levels. The land in this area has also been used for illegal off-road vehicle use which, along with the degraded nature of the land (resulting from agricultural activities) surrounding the sheds in Section 305, further reduces the visual attractiveness of the site.

3.2.2 Operational Phase

The EIS (Section 4.1) and Response document (Sections 3.7 & 3.8) propose to mitigate the visual impact of the site using a combination of existing screening and boundary plantings. Existing stands of native vegetation would be retained as a natural screen and indigenous species would be selected for revegetation, using a combination of seeding and tube stock planting. A proposed buffer zone (50m minimum width) would be established along the site boundary, comprising a 25m wide vegetation screen (5m wide strip of shrubs; 20m wide strip of trees), fire break, surface water drains and perimeter road. In addition, the proponent now intends to construct a 3m high earthen mound, where required, (ie NE & E sides), as part of the buffer, upon which trees/shrubs would be established as part of the proposed vegetation screen (Figure 3).

In general, the proponent intends to begin the establishment of screen plantings prior to site works commencing (ie. approximately 2 years in advance) to allow vegetation to grow and to provide a limited buffer before the site becomes operational. Given the low level of soil moisture availability experienced in the area, screen plantings can be expected to progressively develop (depending on climatic conditions) to a suitable height and density to reduce the long-term visual impact of the landfill (ie. tree species to reach an average height of 3m within 5 years and 6-8m within 10 yrs; shrub species to an average height of 2-3m within 5 yrs and senescent in 10-15 yrs). In addition, the proposed 3m high earthen mound would provide an immediate visual screen of balefill operations during the filling of early cells and would considerably improve the overall screening value of plantings. It is expected that vegetation would be established or reinforced around the entire perimeter of the site to provide an adequate screen and buffer zone between neighbouring properties, surrounding viewpoints and landfill operations.

The screening (and ecological) value of the stands of existing native vegetation within the site should be improved by supplementary plantings and/or encouraging natural regeneration, especially of understorey species. Other existing stands in adjoining areas should be linked by suitable wildlife corridors wherever possible. Ideally, strategies for the management of native vegetation on site should be extended to remnant stands on adjoining properties and along roadside verges, in co-ordination with landowners and the D.C. Mallala. Section 4.3 and Appendix B of this Report contain further details on revegetation aspects.

Whilst not solely under the control of the proponent, to provide additional screening and wildlife habitat it is recommended the following options should be investigated:

- revegetation of the road reserve along Prime Beach Road (in conjunction with the DC Mallala and the community);
- revegetation of the road reserve along Port Wakefield to further reduce views from the eastern direction (in conjunction with the DoT);
- plantings on private property along fence lines adjoining the site (in conjunction with landowners and the local community).

The use of highly saline borewater for 'damping down' (dust control) could result in the contamination of topsoil and covering materials with salt and significantly reduce the success of revegetation, therefore, it is recommended that damping down using borewater should be restricted to within the landfill area. This saline water could then be collected by the leachate collection system.

It is also recommended that alternative measures for controlling erosion (eg. hydro mulch seeding of the earthen buffer mound, establishing native grass cover on stockpiles and areas of bare earth, using rubble for internal roads etc) be investigated and adopted where practicable.

Buffer Zone/Perimeter Screen

In accordance with EPA criteria the Response document (Figure 2.8) now proposes to establish greater buffer distances, which are further discussed in Section 3.7 of this assessment.

Whilst the Response document (Section 2.2.6) states that landscaping of buffers will be completed before earthworks for each stage are commenced, due to the potentially slow establishment and growth conditions of the site, it is considered that all perimeter plantings should be started as early as possible to achieve maximum amelioration of visual impacts and establishment of habitat. In particular, the establishment of plantings along Prime Beach Road is not proposed to commence until the completion of Stages 4 - 6 (Response Figure 2.10), however, it is recommended that plantings along the north-western boundaries should also commence immediately. Boundary plantings should also be extended along the north-eastern section that adjoins a stand of remnant native vegetation.

Adequate screening could be established using a suitable mix of endemic species and careful site preparation and greater long-term screening can be achieved progressively by establishing vegetation cover up the final landform slope rather than relying on an immediate visual barrier provided by screen plantings at the base of the mound. Fast growing colonising species, such as Acacias, are ideal for achieving an immediate screen, whilst providing nitrogen to the soil, shelter for plantings and erosion control. In addition, options for establishing multi-use plantings (eg. fast growing, irrigated sterile tube plantings of hardwood Eucalypt species for timber, native shrub species for the cut flower or seed market etc.) should be investigated and adopted, where suitable, to either supplement proposed plantings on site or to provide an additional buffer on adjoining properties. This type of activity would be ideally conducted in co-operation with local landowners, and in consultation with the proposed Local Community Consultation Committee (LCCC).

The proposed location of a fire break and external drainage channel between the perimeter fence and the vegetation screen is likely to significantly reduce the wildlife corridor/habitat value of the proposed plantings. In response to concerns expressed by the Native Vegetation Council, to minimise or avoid clearance of remnant native vegetation both firebreaks and drainage swales for surface water external to the site should follow the internal edge of the remnant vegetation rather than the property boundary. In the event that drainage channels are required to be located close to the site boundary, they should be redesigned to form low-lying wetland/saltmarsh communities as part of the vegetated screen.

The EIS (Section 4.1.3) proposes to establish a cover of grass or groundcover species on finished cells, whilst Sections 4.1.4 to 4.1.7 of the EIS present the types of species and methodologies that would be adopted for revegetation. Whilst many of the species are endemic to the area, others are either introduced or considered unsuitable, therefore, it is recommended that revegetation aspects (ie. final species selection, screen density and composition and methodology) be determined during the preparation of a detailed Vegetation Management and Revegetation Plan as part of the LEMP (Assessment Report, Section 4.3 and Appendix B for further details).

Built Structures and Infrastructure Requirements

To improve the visual appearance of the main access point to the site, the proponent intends to develop an architecturally designed entrance way and associated infrastructure to present a high standard image, similar to other modern landfills in Australia.

The Response document (Figure 4.1) indicates the entrance facilities would be screened by a combination of existing vegetation and a 20m wide landscaped buffer zone around the section boundary. The car parking area, workshop and staff amenity building should be further screened by amenity plantings around their boundaries. A 1.5m high post and wire perimeter fence (vermin proof wire to a height of 1m; two strands of barbed wire above) is proposed to be erected around the site boundary, which would be highly visible from outside views unless screened by existing vegetation. The whole length of the internal access road is proposed to be sealed, which will continue up to the first balefill stages. It is expected that all other internal haul roads would be constructed with crushed rock.

To reduce the visual impact it is recommended that all built structures be immediately screened using suitable amenity plantings in accordance with a Vegetation Management and Revegetation Plan, the perimeter fence be screened by suitable plantings where adequate natural screening is not provided, and all internal roads should be screened by plantings where practicable.

Earthworks, Screen Mounding and Stockpiles

Earthwork activities are expected to be visible during the initial stages of construction, with the level of visual impact would be determined by the type of activity, the progress of boundary plantings and the level of existing screening, however, the 3m high buffer mound would provide an immediate effective screen for most activities. The earthen mound would be highly visible during the initial stages until screened by plantings. Stockpiles also have the potential to be highly visible, therefore, it is recommended they be located in areas that are adequately screened (ie. near areas of existing vegetation).

The EIS (Section 9) states that stockpiles and internal roads will be sprayed and dampened for dust control, however if saline water is used, this would be detrimental to successful revegetation (and the effectiveness of screening measures) and may exacerbate soil salinity. It is recommended, therefore, that the use of saline water for erosion control (esp. on the buffer mound) should be avoided and that alternative measures be investigated and adopted. For example, construction of the mound and the establishment of vegetation cover could be timed to ensure the exposure of bare earth is minimised. Alternatively, a “spray-on” type of mulch/seed mix could be applied to the mound to provide both erosion control and vegetation cover as a method of “best practice” management. Follow-up spraying would be required to cover any unsatisfactory or eroded areas.

Working face

The base of each balefill stage would be excavated to well below the ground surface level and initial operations would not be visible. As cells become completed the outer wall of each stage

would be constructed to form an earthen mound, which would then provide adequate screening of above-ground operations. The Response document (Section 8.1) proposes to place a 1.8m high chain wire litter control fence around the active waste cell. Thus, it is expected that the fence, balefill machinery and working face would be adequately screened from near views by the outer wall of each stage and from far views by the screen mound and boundary plantings.

3.2.3 Rehabilitation

The final landforms are proposed to be developed progressively as each stage is filled and rehabilitated. The proponent has modified the original final landform shape from three long, almost linear mounds to a series of eight flat mounds staged from east to west, which are designed to maintain as much of the existing surface water drainage patterns between stages as possible and to break up the final profile of the site**.** Final heights are proposed to reach a maximum or peak crest level of 23m AHD. which is 9m above the level of Port Wakefield Road. The exterior slopes will have a relatively flat slope of 1 vertical in 5 horizontal, which will flatten out to a minimum slope of 3% at the top of the slope to form a rounded profile and to maintain drainage.

The Response document (Section 3.7) proposes only to vegetate the visible "shoulder point" of the final mound (due to existing screening provided by interposing vegetation and local topography) to screen views from Port Wakefield Road, however, this is considered insufficient. Consideration should also be given to near views and the amenity, habitat, and erosion control value of vegetation cover, therefore, it is recommended that the entire landform be planted with appropriate types of vegetation. Refer to Section 4.3 of this Report for further details on revegetation aspects. Satisfactory long-term screening would be achieved progressively by establishing vegetation cover up the final landform slope, supplemented by the visual barrier provided by existing native vegetation and screen plantings established between the base of the mound and the site boundary.

The requirements in the post closure phase will depend on the intended end use of the site. The EIS (Section 11.2) states the end use of the site will be open grazing and cropping, however, care would need to be taken to avoid effects detrimental to the maintenance of vegetation cover and the control of erosion. As recommended by the Native Vegetation Council, a stock proof fence could be erected and maintained around the boundaries of native vegetation to ensure the exclusion of grazing, in the event stock are allowed access to the site. The Response document (Section 2.2.8) states the determination of interim and post closure land uses of the site needs to be undertaken in association with the Local Community Consultation Committee. This matter would be dealt with in the LEMP.

Visual impact after site rehabilitation

Landfill operations are proposed to have a lifespan of between 60 and 80 years, during which time vegetated buffer zones would have become well established and attained a height that is expected to provide adequate screening of landfill operations.

In conclusion, the visual impact of the proposed landfill would be expected to change over time. Initially, the creation of the screen mound and the outer slope of each active stage would gradually establish prominent features on the landscape that, whilst screened to a large degree by vegetation, would be highly visible due to their large scale and slightly elevated height (ie. compared to relatively flat nature of the local topography). They would also remain obvious because of their green cover of native vegetation, especially during times of the year when the surrounding country has 'browned off'.

The completed site is expected to have the appearance of a series of large vegetated mounds within a largely cleared flat landscape. Progressive and final revegetation of the landfill and the establishment of screen plantings around the site perimeter, and possibly adjoining roadside reserves, should adequately mitigate the visual impact of the site, especially from Pt. Wakefield Road and Prime Beach Road.

3.3 WASTE TRANSPORT

3.3.1 Vehicle Description

The EIS (Section 12.3.6) states wastes are likely to be delivered in B-Double trucks (30 tonnes), in the case of baled wastes from transfer stations, or loads of 20 tonnes in the case of demolition wastes. Vehicles for waste transport would be licensed by the EPA.

3.3.2 Truck Access Route

Following the release of the EIS, a number of respondents raised concerns over access to the site and impacts on neighbouring residents.

The proponent has indicated (EIS, Section 12.3.6) that nearly all of the baled waste would be expected to arrive from the south ie. from the IWS Wingfield Resource Recovery and Transfer Facility or other baling operations likely to be established in the metro area. A "controlled access" road already exists along the eastern boundary of the site, therefore no impact on local roads is anticipated.

The EIS (Section 12.3.6) predicts a daily average of 25 trucks of various configuration entering and leaving the site. Table 3.1 of the EIS provided vehicle numbers and classification based on 1993 data. In Section 9.5.1 of the Response document, 1995 data is used and a more detailed analysis provided. The proponent has estimated that most cover material would be available on site (EIS, Section 7.6, Response, Section 4.10). Importation of cover material is, therefore, not expected to significantly increase truck numbers to the site.

The proponent has assumed that all vehicles would enter the site from the south and exit south along Port Wakefield Road.

The proponent believes that the existing opening from Port Wakefield Road to the service road, with modifications shown in the EIS (Figure 6.2), would be adequate for vehicular movements. The Department of Transport (DoT) in its submission concurs with this view but also states that detailed design of the opening and associated left turn deceleration lane, as well as the construction, should be completed to the satisfaction of DoT, with all costs being borne by the developer. This approach would meet government requirements.

The Country Fire Service (CFS) have expressed concern that the potential for accidents that they would be expected to attend occurring as a result of heavy vehicles crossing Port Wakefield Road, has not been addressed in the EIS.

To lessen dust the internal road leading to the first balefill stage would be sealed (Response, Section 9.5.3).

In conclusion the proponent believes that, given the numbers of vehicles involved (an increase of 4%) the proposal does not create an additional traffic hazard along Port Wakefield Road or interfere with existing local traffic (Response, Section 9.5.1).

3.3.3 Washdown Area

The proponent has provided a wheel washdown area for vehicles at the entrance to the landfill. Neither the EIS nor the Response document provide sufficient technical or operational detail to demonstrate how this would operate, on what criteria washdown would be required, and what provisions for container or truck tray cleaning would be made. All washdown waste waters would be directed to the leachate storage area (Response, Section 4.9).

Full working plans of this aspect of the proposal need to be provided in the Landfill Environmental Management Plan (LEMP) prior to a licence being granted by the EPA.

3.4 INFRASTRUCTURE REQUIREMENTS

For operational purposes the site would require power, water and sewage facilities.

An existing house on site would become the site manager's residence and additional buildings including a cashier's hut and office, an amenities building, workshop and weighbridge, would be constructed. A septic system, to comply with the South Australian Health Commission's standards would be installed (EIS, Section 4.2).

Electricity is already supplied to the existing building on site and upgrading of services, as required, would be arranged with ETSA Corporation. An existing bore has sufficient capacity to provide water for dust control and fire fighting. Reticulated water to the existing buildings would also have to provide water for irrigation systems for new plantings as the bore water is too saline. A telephone service is connected to the property (EIS, Section 3.20).

While the proponent has stated in the EIS (Section 4.4.1) that a 2m high chain wire security fence is to be constructed in two stages, the Response document (Section 8.1) refers to a 1.5m high rural, stock and vermin proof fence. This fence is not expected to create a visual barrier to the open nature of the surroundings. A 1.8 m high chain wire (litter control) fence is to be placed around the active waste cell. No adverse impacts are anticipated from this construction.

The provision of these facilities should not create adverse environmental impacts.

3.5 NOISE

The EIS (Section 10.8 and 12.3.2) and Response document (Section 9.3) outline the noise impacts anticipated from the proposal.

The proponent (EIS, Section 10.8) has made a commitment to comply with the requirements of the *Environment Protection Act 1993* and subsequent regulations and policies, in particular the Industrial Noise (Schedule 2) and Machine Noise policies (1994). There is also a commitment to quarterly monitoring of the site and adjacent areas.

Following concerns raised in submissions on background noise levels, predicted noise levels, impacts on residents and mitigation measures, the proponent carried out additional studies (Response, Section 9.3). Measurements presented are correlated to meteorological conditions at the time of measurement.

The Office of Environment Protection is of the opinion that "the predicted noise levels would comply with the requirements of the *Environment Protection (Industrial Noise) Policy* (the "Noise Policy") between the hours of 7 am and 10 pm for an area described as predominantly rural, and that "the noise emissions would therefore be considered acceptable during those hours". However, it is stated that "the noise would not be acceptable before 7 am or after 10 pm". The EPA will require compliance with the provisions of the Environment Protection (Industrial Noise) Policy relating to rural areas.

This noise assessment is based on the proximity of proposed operating equipment to existing dwellings. Once the first two stages of the balefill are completed and equipment moves further away and is screened to some extent by the completed stages, noise levels would decrease. It is, however, possible that other dwellings may be established in the vicinity during the operational life of the balefill and constraints on operating hours appropriate for the first two stages may not be appropriate later.

There is a slight chance that during cell preparation some blasting may need to take place to fracture the calcrete layer. Any blasting must be carried out in compliance with Australian Standard 2187.

3.6 LITTER

All existing Adelaide landfill operations have had air borne litter problems, with paper and plastic supermarket bags being the chief offenders. Sections 10.6 and 12.3.4 of the EIS discuss potential problems and methods of control. Section 9.2.2 of the Response document addresses public concerns regarding litter.

As a balefill operation the proponent anticipates negligible litter to be produced.

The EIS (Section 10.6) indicates that no loose waste material would be received. The proponent further states that unbaled waste (presumably demolition waste) likely to produce litter will be covered immediately. Further control is to be obtained from a 3m high bund around each cell.

The Response document (Section 9.2.2) further states that demolition and industrial waste would have been through a resource recovery facility resulting in the minimisation of litter. A 1.8m high relocatable wire fence would be placed around each cell which would help contain windblown litter. Further, the proponent makes a commitment to collecting litter from the boundary fence and neighbouring properties as and when required.

This approach meets the requirements of both the Department for Transport, Urban Planning and the Arts (DTUPA) and the OEP in relation to litter minimisation and management. The EPA considers that shredding and baling provides a means of reducing potential litter problems (Assessment Report, Appendix A).

3.7 BUFFERS

The proponent, when preparing the Response document, has referred to the EPA Draft Buffer Guidelines issued in December 1996 which require a minimum separation distance of 500m from landfill to the nearest residence. Subsequently these were superseded by the Interim Criteria which adopt a 500m buffer zone within the depot between the discharged waste and the property boundary. The Interim Criteria provide that " the buffer zone within the depot between the discharges waste and the property boundary should be at least 500m. A lesser buffer zone within the depot may be approved by the EPA if justified by the compatibility of adjacent landuse".

There have been three versions of the buffer guideline document, none of which have any legal status.

The proponent received many comments about buffer zones during the public display period, resulting in a revision of the site layout. The Response document (Section 3.4 and Figure 4.3) provides new buffer distances. The proponent believes that this approach complies with the EPA Interim Criteria for major landfill depots. Further, the proponent states that as the proposal is for a balefill as opposed to a conventional landfill an additional "....attenuation of impacts..." will occur.

The proposal has allowed for 520m buffers from the two nearest residences and a 500m buffer to the Penrice mineral lease area, with a minimum of 50m buffers along other boundaries. In the event that a property owner wishes to develop closer to the common boundary, then the buffer distance will be reduced accordingly. However, such development would be undertaken with

knowledge of the presence and impact of the landfill activity. These issues have been discussed further in Sections 3.1.3 and 3.2.2 of this Report.

3.8 AIR QUALITY

Gas and odour generation are part of the waste decomposition process. In the public submissions many respondents expressed concerns that there would be a deterioration in air quality at nearby residences and townships including Dublin, Port Parham, Thompson Beach and Webb Beach. The proponent is of the opinion (Response, Section 9.2 and 9.2.1) that buffer distances and the distances between the balefill and townships are sufficient to "...maintain a healthy living environment".

The proponent (EIS, Section 12.3.3) proposes to control and minimise odour generation by:

- regular covering of waste with material identified as being particularly odorous buried immediately;
- baling and shredding of waste;
- monitoring and inspection of cover materials for cracks;
- maintaining moisture content in surface materials;
- pro-active Landfill Gas (LFG) management system;
- management and monitoring of leachate.

The proponent must comply with provisions of the *Environment Protection Act 1993* with respect to air quality (including odours). The EPA would determine specific requirements during licensing.

The use of saline ground water for dust control is likely to result in salinisation of areas of the site and affect areas of revegetation by spray drift. Staff working at the site should be aware of these problems and work on suitable days.

3.9 FIRE RISK AND PREVENTION

Section 7.4 of the EIS deals with fire management and provides a 4m firebreak between the boundary fence and the perimeter screen plantings. A 6m wide access road is provided adjacent to the deposition area. The Response document, with the revised cell structure, does not discuss fire issues again, as the proposed cell system would minimise fire hazard. The Response document (Section 7.5) states that landfill gas monitoring would, by monitoring carbon monoxide levels, detect if any underground fires exist. A perimeter access road is indicated between the internal surface and external surface water drains (Response, Figure 2.6) and it is assumed this will be maintained to a standard required for emergency access to a cell. Further, Figure 2.8 of the Response document shows a 4m wide external fire break and an 8m wide perimeter road.

A condition of licensing would be that adequate fire safety precautions and control measures, including access tracks, are provided within the balefill complex. These can be addressed in the Landfill Environment Management Program (LEMP).

3.10 HOURS OF OPERATION

Depot operating hours are proposed to be 6.00 am to 7.30 pm seven days per week (daylight hours only) with wastes being accepted from 7.00 am to 7.00 pm only (EIS, Section 6.2 and Response, Section 4.6).

The proponent is of the view (IWS pers comm. September 1997) that to provide an essential service to the community and adequately service the waste disposal needs of the metropolitan area a 7 day operation would be required. The argument is further supported by the fact that baled waste can not be stored at the IWS Baling Facility at Wingfield for longer than 24 hours.

The hours of operation would be determined in the licensing process should development consent be granted.

Local residents indicated in their submissions that weekend operation (particularly Sunday) would be an unacceptable impact on them.

3.11 HERITAGE

3.11.1 Aboriginal Heritage

The former Department of State Aboriginal Affairs advised that there is no indication of either sites or objects of significance having been identified at the subject site, however there are known to be Aboriginal sites in the general area.

An archaeological survey as part of a study by the Kaurna Aboriginal Heritage Committee has been completed for the whole site. While nothing was found of significance some blowouts incorporated within a dune formation were identified for monitoring during the excavation of material from those parts of the site.

Operators and construction personnel should be made aware of the identified monitoring areas and should be aware of and comply with the requirements of the *Aboriginal Heritage Act 1988.* Any burial sites, skeletal material or significant discovery is to be reported immediately to the Aboriginal Heritage Branch of the Department of the Environment, Heritage and Aboriginal Affairs (DEHAA).

3.11.2 Non-Aboriginal Heritage

There are no items within the site that have other heritage significance.

3.12 ECONOMIC

IWS Pty Ltd have indicated that the estimated total annual cost of the Wingfield and Mallala operations is $5 million. The estimated bulk haulage cost from Wingfield to Mallala for baled waste is $0.12 per tonne/kilometre which is lower than the normal bulk haulage rate of $0.15 per tonne/kilometre for loose waste. Balefill costs are less because of the high densities achieved in a bale and, therefore, greater transport economies.

The investment of an estimated $10 million, the employment of 20 personnel together with the proposed power generation using landfill gas (LFG) and the creation of a Community Trust Fund (Clarification of Issues, Section 5) are all considered, by the proponent, to have a positive economic impact on the State.

The direct economic benefit to the local community has not been identified other than to state that the proposal will provide employment opportunities and use of local skills and services.

There would be a significant, although unquantified, short term investment generated through the construction of the Wingfield recycling, shredding and baling facility and establishment of the Mallala balefill site.

Other waste treatment alternatives, except for conventional landfilling and enclosed vessel digestion and composting, are not economically viable in South Australia. Balefill has the advantage in that enclosed vessel digestion and composting does not have a proven track record in Australia and conventional landfill does not have the advantage of baled waste. Loose waste needs more extensive controls with respect to visual amenity, litter, dust and odour.

IWS have proposed to commit themselves to an industry standard financial package in the form of insurance which would be provided as part of the Landfill Environmental Management Plan (LEMP) for the purpose of management and potential environmental remediation works (pre and post closure) and would require approval from the EPA. The fund levels would change depending on how the facility develops and as practice and procedures change so would the need for funds. Financial consideration would need to change according to need and risks.

The funds allocated would cover the liability control for the current operation together with ongoing monitoring and post closure program that would be required for each balefill stage. The established principle for prudent cover would be in two parts, a public liability policy and a financial package to be progressively established at the site to be developed to cover any cost of remediation works.

The site and operation would be covered by a public liability insurance with up to a maximum of $5 million cover.

The financial aspects discussed above would be addressed by the EPA under licensing processes.

Property values

The extent of impact on dollar value of any residential property is difficult to determine. The proposal may influence land prices. The EIS (Section 12.5.6) estimates that the worst case scenario would result in a reduction of property value by 10-15%.

Eleven public submissions raised the issue of property devaluation. The proponent has in the Response document (Section 9.8) again acknowledged the potential of the proposal to impact on land values, which it considers a reasonable occurrence. Further, the proponent is of the view that other proposals, of a rural nature, could also affect property values.

The proponent's longer term view is that the amenity of the site will be enhanced by extensive revegetation and maintaining only a small working/tipping area exposed at any one time.

Agricultural activities

A number of submissions expressed concern about the impacts on surrounding agricultural activities. In particular the quarantine status of poultry and broiler sheds, and the risk of disease from avifauna and mice. The Dublin and Districts Ratepayers Association Inc and the DC of Mallala claim that the region and State would suffer major economic loss through the establishment of the balefill, although no corroborative evidence has been provided.

It has been ascertained that animal health (Assessment Report, Section 3.9.2) is not at risk from this proposal, therefore, no negative economic effects on the poultry, piggery, cattle or sheep industries in the immediate area are anticipated.

It should be noted that a chicken processing plant, and food warehouse are sited within 1km of the Wingfield landfills and no problems have been identified.

The impact on farming land is likely to be minimal as the landfill should have no impact on the ability to farm the adjoining land, providing the facility operates within its licence conditions, particularly, in regard to the control of vermin, dust, litter and the management of surface and ground waters.

Livestock Exports

The proximity of the balefill to the Nasser feedlot could create a perceived health risk to the livestock in the feedlot and may make the animals unsaleable in some overseas markets. The body of evidence (Fedorak, 1991) would indicate that there is, on balance, no greater health risk from the balefill than there would be from another intensive livestock activity on the same site.

The concerns expressed to the EPA by the Dublin and Districts Ratepayers Association Inc. regarding the potential for transmission of diseases to animals in the Nasser feedlot with resultant loss of export earnings of $20 million to $30 million, have been followed through by the EDA and DHUD. Consultation with Department of Primary Industries and Natural Resources (DPINR), AQIS and A L Mukairish Aust Pty Ltd (agents for Nasser) have not substantiated the claims made by the Ratepayers Association. The matter is seen only as a "perceived" risk by principals of the exporting company who have asked to be kept fully informed on the proposal (Mukairish pers. comm. Sept. 1997).

4. BIOLOGICAL AND PHYSICAL ISSUES AND IMPACTS

4.1 Biological Environment

The proposed site is located in the Mallala Environmental Association, which is described as an undulating plain with occasional dunes, used for rotation cereal cultivation and livestock grazing (Laut et al, 1977). The proposed site has been extensively cleared of native vegetation that would have provided habitat for native fauna, apart from several small remnant stands of mallee and saltmarsh communities. Agricultural land-uses in the region have significantly modified the natural environment to such an extent that much of the existing habitat is now reduced to isolated stands and roadside verges, with a majority of understorey species being absent due to grazing pressure. The existing fauna in the region now comprise species that are adapted to agricultural landscapes, ie. the more common reptile and bird species.

Whilst not a key determinant in this assessment, the following provides additional detail which should assist promoting successful outcomes particularly in relation to remnant vegetation enhancement and revegetation which depend on good quality planning and preparation at the outset.

4.1.1 Native Vegetation

The EIS (Section 3.15) identified the native vegetation on site as Tall shrub and Open scrub formations dominated by Mallee species, with an Acacia-chenopod understorey. The principal indigenous tree species is *Eucalyptus gracilis*, with *E. dumosa* and scattered clumps of *Melaleuca lanceolata*. Tree cover is described as sparse, with patchy areas of shrubs and groundcover and an understorey that is sparse to non-existent. Most tree species are senescent and no natural regeneration has occurred. Species diversity is low, reflecting geographic location, soil type, past land uses and practices. A saltmarsh-like system, which contains *Halosarcia halocnemoides*, *Threlkeldia diffusa*, *Atriplex paludosa* and other saltmarsh and salt tolerant species and groundcovers, occurs in the south-western corner of the site.

Whilst a species list has been included in the EIS, a scientific description of vegetation communities (ie. structure, cover, abundance, condition etc.) and distribution map for the site have not been provided, therefore, it is recommended that for monitoring purposes they be prepared for inclusion in the Vegetation Management and Revegetation Plan. None of the species listed are considered rare or endangered, however, *Santalum acuminatum* is rated as Uncommon in the Northern Lofty Region and *Pittosporum phylliraeoides* and *Geijera linearifolia* have not been formally rated. According to Kraehenbuehl (pers. comm. 1997) remnant vegetation represents only 6.7% of original cover in the Northern Lofty Region (approximately less than 2% in the general locality).

A vegetation survey of the Mallala District Council area by Pedler and Matheson (1993) identified several species in patches close to the site that contain species which were classed as 'endangered plants' (eg. *Westringia rigida*, *Helipterum sturtianum*, *Pimelea serpyllifolia* and *Scaevola spinescens*). It should be noted that these ratings only apply to the council area and are not official ratings for the State, therefore, they should be used as a guide only.

Thus, whilst the remnant native vegetation on the site is not considered to be significant from a State conservation perspective, it could be threatened on a local scale. This would need to be further examined in preparation of a Vegetation Management and Revegetation Plan

Whilst the proponent does not intend to clear native vegetation, it is uncertain whether this includes low-lying saltmarsh communities, therefore, it is recommended that these areas be protected from further degradation (esp. from any increased inundation) and measures be adopted to improve their ecological value, especially if such areas are to be used for the management of surface water. This can be further addressed in the Vegetation Management and Revegetation Plan.

Existing vegetation (esp. the sensitive root zone) will need to be protected from disturbance during site preparation and landfill operations, therefore, it is recommended that all activities (inc. vehicle movements) avoid remnant stands and individual trees to a minimum distance of 5m (ideally 10m) from the dripline of the canopy edge. Such a buffer should be delineated using clearly visible marker pegs and site operators should be made aware of the need to avoid native vegetation.

In conclusion, the detrimental impacts of the proposal on existing native flora are expected to be minimal, with any disturbance to native vegetation being far outweighed by proposed revegetation and weed control measures.

However, further detailed investigations and the preparation of a Vegetation Management and Revegetation Plan are required to ensure the successful establishment of plantings and the sustainable management of existing communities.

4.1.2 Native Fauna

Pedler and Matheson (1993) consider the fact that there are no large expanses of remnant vegetation anywhere in the district means that only a reduced selection of the native fauna can still exist. The species of mammals, birds and reptiles which remain will be small in number and will represent those which are best able to survive in very open habitat, that cropped and grazing paddocks provide. This is certainly the case for bird species, with those that need an understorey (and its accompanying insect fauna) or leaf litter/rotting wood layer being absent.

Whilst the EIS (Sections 3.16, 3.17, 3.18 & 3.19) provides species lists for avifauna, mammals, amphibians and reptiles, these are sourced from literature and data base surveys, not site surveys. It should be noted that many of the native species listed are, therefore, unlikely to occur on the site due to a lack of preferred habitat. The EIS (Section 12.4.3) recognises that the reduction in native flora has led to a consequent reduction in the number of native faunal species in the area and those remaining are those that have been able to successfully adapt and survive in open habitat. Population densities, especially small mammals, are typically low in similar areas and reptiles are particularly predominant. There are no sites of biological or ecological significance for protected rare/endangered species within or adjacent to the site. The closest sites of significant fauna habitat in the region are considered to be the coastal and marine ecosystems of the Gulf St Vincent, the Clinton Conservation Park and the Dublin Scrub.

In conclusion, the potential impacts on existing native fauna are expected to be minimal, with any disturbance to fauna being far outweighed by the proposed expansion and improvement of available habitat in the area, provided existing stands of native vegetation are sustainably managed, suitable revegetation is successfully undertaken and pest plants and animals (including Silver gulls and Ravens) are adequately controlled.

4.1.3 Impacts on Biological Communities and Ecosystems

Generally, due to previous reductions in species populations resulting from past and present agricultural practices the impacts of the proposal are not expected to detrimentally effect local ecosystems. No significant species of conservation value have been recorded on site. It is expected the proposals for revegetation and the control of introduced plant and animal species will greatly improve habitat in the area and would encourage increased populations, especially avifauna.

From a regional perspective, the proposed landfill may pose a slight risk to coastal and marine ecosystems associated with the Gulf of St. Vincent. In the event that leachate escapes from the groundwater protection system into the underlying and/or unconfined (ie. local) aquifer, there is only a very slight potential for pollutants to enter the Gulf via groundwater transmission. The actual threat to the Gulf is considered to be very low, given the stringent design requirements of the liner system and the low groundwater flow rate on the coastal plain (Assessment Report, Section 4.7). Rigorous monitoring of groundwater quality downstream of the site and local surface water drainage networks (especially those associated with coastal flooding) should provide an adequate early warning system for detecting any leaks and the subsequent implementation of suitable remedial measures.

Existing and created habitat may be affected by the following threatening processes, which currently operate on site or may result from landfill operations :

- grazing pressure from stock, introduced pest species and insects (resulting in a loss of understorey vegetation, lack of natural regeneration and restricted growth);
- any vegetation clearance/disturbance (resulting in exposed conditions, ‘edge effect’ impacts and increased mistletoe densities);
- land degradation resulting in increased soil erosion and salinity;
- unfavourable soil conditions (due to nutrient deficiencies/imbalances/toxicity, salinity or leachate escape);
- modified hydrology (increased inundation/coastal flooding, groundwater mounding and surface water contamination by leachate or salt).

These factors would need to be suitably managed to ensure the success of revegetation, protection of existing ecological assets and habitat improvements. The EIS (Section 10.11) states that monitoring of flora will be undertaken and records will be taken to provide baseline data, whilst the Response document (Section 8.4) further states that a vegetation management plan forms part of the total management package for the site. It is recommended that the proposed Vegetation Management and Revegetation Plan should also address the management of threatening processes.

4.2 WEED AND PEST CONTROL

The potential risk of landfill activities to public health and the financial viability of surrounding agricultural enterprises is a significant concern raised by the community. In particular, the transmission of disease by animal vectors, such as rats, mice, Silver gulls and Ravens, from the landfill site to local food and water supplies has been raised in public submissions as a threat to intensive animal keeping industries (ie. sheep export trade, chicken rearing, beef feedlots and beef stud farms) and drinking water supplies for residents and communities (esp. the Dublin, Prime Beach and Thompson Beach townships).

4.2.1 Existing Problems

Generally, the condition of the site has been affected by the impacts of traditional agricultural activities practised in the region (ie. grain cropping and sheep grazing), including vegetation clearance, land degradation (mainly by wind erosion), and the spread of introduced plant and animal species. The worst affected areas involve the land surrounding the sheds to the north-west of Section 305 and the previously mined mineral extraction areas.

The EIS (Section 3.15) identifies a number of pest plants occurring on site. A site inspection also revealed the presence of Soursob (Oxalis sp.)*, Long-fruited wild turnip (*Brassica tournefortii*)*, Tread iris (*Gynandriris setifolia*)*, Ice plant (*Mesembryanthemum aitonis*)* and Bridle creeper (*Myrsiphyllum asparagoides*)*.

The EIS (Section 3.17) notes the introduced mammal species that occur on site. In addition, the pest species Silver gull (*Larus novaehollandiae*), Australian white ibis (*Threskiornis molucca*), Common starling (*Sturnus vulgaris*)*, Ravens/Crows (*Corvus* spp.), Domestic pigeon (*Columba livia*)*, Brown hare (*Lepus capensis*)* and invertebrates (eg. flies and mosquitoes) are also expected to be found at the site. [* Denotes introduced species]

The Adelaide Plains Animal and Plant Control Board (APAPCB) have advised the DC of Mallala (Assessment Report, Appendix C1) that the infestation levels on the site of the proclaimed animals, Rabbit, Fox and Mouse are currently high and the proclaimed plants, Horehound, African Boxthorn and Calomba Daisy are firmly established. The Board further advised that adjacent landholders have been made aware of the problems associated with proclaimed animals and plants and are attempting some form of control on their properties.

4.2.2 Potential Risk of Disease Transmission

The potential increased risk of disease transmission from the proposed landfill to agricultural and residential areas has been raised by the community and local producers, however, no evidence of a causal link has been provided.

DPINR advise that congregations of birds, especially migratory waterbirds (eg. Duck and Ibis species), significantly increase the risk of avian influenza and that rodents can carry Fowl Cholera, both exotic diseases which could affect the poultry industry. It is considered that migratory birds are unlikely to be attracted to the landfill site, however, Silver gulls will be attracted. In fact, the Conservation Council of South Australia (CCSA) have data that show the occurrence of Silver gulls is severely reduced at a balefill landfill compared with traditional deposition of waste. The

risk of contamination to drinking water supplies from birds carrying Salmonella is, however, considered to be very low. There is also only a low risk of Salmonella entering the food chain from the consumption of infected beef or chickens from the locality if appropriate monitoring and control measures are not implemented or effective.

Whilst the greatest risk of rodents spreading disease from the landfill site to neighbouring agricultural enterprises is expected to predominantly affect the feedlot immediately north of the site, during mouse plague conditions all local intensive animal keeping properties are considered to be at some risk. It is worth noting that in most agricultural regions poultry broiler and breeder sheds often provide the greatest opportunity for disease transmission by rodents and that the incidence of disease infestations tends to significantly increase following mouse plague episodes (DPINR pers. comm.).

DPINR further advise that provided the landfill does not accept waste that could provide a source for the transmission of disease, the health risk to humans and livestock in the local area is considered to be low.

The balefill would include domestic and commercial wastes and the potential risk of disease transmission would therefore be increased. However, the risk is considered to be no greater than that associated with existing intensive animal keeping activities. The proposed balefill method (inc. a daily cover layer) and small working face would be expected to attract lower numbers of scavenging birds and rodents compared to traditional landfill sites, therefore, reducing the risk of disease transmission. Relevant government agencies (eg. Australian Quarantine Inspection Service, Primary Industries SA and the SA Health Commission) and industry representatives (eg. Inghams Growers Group, Steggles and Nasser Livestock) have been approached and have not raised any significant concerns regarding this issue.

The cumulative impact of existing industries, the proposed landfill, and the recently approved livestock saleyards are considered to significantly increase the potential for disease transmission in the local area (especially during mouse plague conditions), therefore, suggesting a district approach to management and monitoring.

In addition, a study by Fedorak and Rogers (1991) concluded that there should be very little health risk from airborne micro-organisms for landfill workers or residents living near a sanitary landfill site. Furthermore, the operations of a proposed landfill site near Edmonton (Canada) were considered likely to have very little effect on the microbial air quality at nearby chicken and mushroom farms because these types of agricultural operations typically generate extraordinarily high densities of airborne micro-organisms. It should be noted that this study investigated typical sanitary landfills, where microbial aerosols are generated by the mechanical action of dumping and bulldozing at an active face, therefore, the risks associated with a balefill operation are expected to be significantly lower than those reported.

Sound operating practices at sanitary landfill sites (eg. keeping uncovered refuse to a minimum) and sound agricultural practices (eg. preventing wild birds from contacting poultry or their water supplies, food and new litter) would be expected to minimise the risk of spread of pathogens to chickens.

Thus, the risk of disease transmission is considered to be no greater for the proposed landfill than existing agricultural and animal and poultry keeping activities, provided good monitoring and control programs are implemented by those responsible for both activities.

It is recommended that such a program of monitoring of disease transmission be considered at a district level, both in relation to agricultural and animal keeping and landfill activities.

4.2.3 Eradication, Control and Monitoring of Pest Plants and Animals.

It is generally recognised that earthwork activities and the establishment of stockpiles create disturbed sites which are quickly colonised by weed species and that truck movements and landfill activities pose a potential avenue for the introduction and spread of weed seeds. The proposed wheel wash facility and method of operation should adequately address this issue.

The Response document (Section 9.4) states that the numbers of pests attracted to the site can be minimised and the ingress and breeding of pests in the landfill can be prevented by limiting opportunities at the working face and undertaking vector/vermin eradication programs. The EIS (Section 12.4.4) proposes to implement programs for the eradication of weeds (particularly African Boxthorn) and other pests on site prior to the commencement of landfill operations. Section 10.10 of the EIS further states that if scavenging birds or any pest become a problem then a management program will be established and a professional pest exterminator will be immediately engaged. A vermin proof fence will be erected around the perimeter of the site and inspected regularly for rabbit and fox activity as additional control measures. Rabbit proof fencing, as proposed in the EIS (Section 12.4.4), will not prevent the reinvasion of mice from adjacent cleared land.

These measures may be considered adequate in the day-to-day sense (provided management programs are satisfactorily prepared and implemented), however, during mouse plague conditions such control methods may not be effective. Specific control programs, which address “worst case” scenarios would, therefore, need to be prepared (Assessment Report, Section 4.2.2).

The Adelaide Plains Animal and Plant Control Board (Assessment Report, Appendix C1) advise that no material that has the potential to transport proclaimed species that are listed under the *Animal and Plant (Agricultural Protection and Other Purposes) Act 1986* may be removed from the site without prior written approval of the Board.

Ideally, to reduce the potential for reinfestation from surrounding areas, management programs should adopt a regional approach and be prepared and undertaken and periodically revised in consultation with the Adelaide Plains Animal and Plant Control Board and DPINR and co-ordinated with adjoining landowners and/or the proposed LCCC. Such programs should be prepared for both Proclaimed species and 'nuisance' species, which can be detrimental to the ecological value of existing stands of native vegetation and the success of revegetation programs. Surveying and mapping of the occurrence, distribution and extent of all introduced species on site, and possibly adjoining land, would need to be conducted prior to the preparation of management programs.

The Response document (Section 9.4) states that the pest monitoring program will be established as part of the LEMP in order to determine the effectiveness of the control measures.

In conclusion, the detrimental impacts associated with weeds and vermin can be adequately mitigated provided a detailed Plan is prepared and implemented for the whole site. Ideally such a plan would need to cover the landfill site, adjoining properties and roadside verges but this would require a cooperative regional or district approach.

4.3 REVEGETATION

Screen/buffer plantings are expected to be multi-layered where possible and comprise locally endemic species that are established in substrates and landforms they are most suited to. These aspects have been discussed in the section on Visual Impact.

It is considered the documentation would need to provide additional information on revegetation aspects, particularly given the significance attributed to the establishment of screen plantings for reducing the visual impact of the proposal and the difficulties of establishing vegetation in the region. The Response document (Section 8.4) states a Vegetation Management and Revegetation Plan forms part of the total management package for the site. This approach is supported and, therefore, it is recommended that this undertaking be adopted as a condition of development consent or be included in the LEMP.

It is recommended, therefore, that the Vegetation Management and Revegetation Plan be prepared as part of the LEMP, in consultation with relevant government agencies, such as DEHAA and DPINR, and possibly local community groups and should consider the following aspects:

- aims and objectives (inc. projected targets);
- existing site conditions (ie. soil type, depth and salinity; rainfall and evaporation; watertable depth; and landforms);
- establishment of a photographic and survey record of existing features, as proposed in the Response document (Section 8.4);
- factors affecting growth (eg. wind, inundation, high boron levels, presence of calcrete, alkalinity, soil texture & salinity);
- site preparation and weed control (initial and on-going);
- species selection, potential seed sources, seed collection and tubestock propagation;
- establishment of a seed bank, as proposed in the Response document (Section 8.2);
- methodology (ie. tubestock plantings, direct seeding & natural regeneration);
- planting schedule, layout and timing (ie. detailed plans for both the whole site and each stage);
- watering;
- maintenance and follow-up plantings;
- monitoring (including revegetation works), reporting and review.

A discussion of existing revegetation programs conducted in the local area would provide an indication of any limitations or proven methodologies that should be considered (eg. the revegetation activities of the Australian Army Defence Centre - Pt. Wakefield Proof Range and the revegetation of Port Wakefield Road by the Department of Transport). Reference should also be made to any studies on revegetation of landfills, in particular to the research conducted by the MFP for the landscaping of Garden Island.

4.4 METEOROLOGY

The meteorology of the proposed landfill site has bearing on a number of issues raised in submissions including leachate generation, dust control, litter management and the potential for odour impacts. Climatic conditions at the site have been extrapolated from the closest recording stations with no site specific climatic data collected by the proponent. The EPA (Assessment Report, Appendix A) has stated that monitoring and reporting of meteorological parameters at the site would be required as a condition of environmental authorisation should the development be approved.

A number of submissions on the EIS specifically questioned the adequacy of the meteorological data presented by the proponent in the EIS, in particular the District Council of Mallala considered there was insufficient baseline data regarding high winds and rainfall events. Additional information was provided in the Response document and the OEP has indicated that it is now satisfied with the data presented.

Specific issues related to aspects of the site meteorology are discussed below.

4.4.1 Wind

The extrapolated wind data for the site suggest that wind strengths may exceed 20km/hr (the approximate strength above which dust and litter are raised) approximately 30% of the time. The proposed baled method of waste disposal and stringent implementation of the contingency measures described in the Response document (Section 9.2.2) would nevertheless be expected to minimise the occurrence of litter even in these, at times, windy conditions. Careful attention to dust control particularly during cell excavation and liner construction would be necessary. Wetting down may be required on a regular basis with implications for water use.

The Response document (Section 9.1.1) notes that severe storms occur regularly in the vicinity of the Northern Adelaide Plains, but as indicated by the proponent, due to the proposed small size of the active waste placement area and the compressed nature of the waste bales, such storms are unlikely to adversely impact on this aspect of the operation. As noted by the Dublin and Districts Ratepayers Association in their submission, the storms could also cause considerable dust to be generated from the site. During such extreme events dust is likely be generated from a range of land uses in the vicinity, with the landfill site being one of the few able to control the dust generation by use of additional dust suppression measures.

As rehabilitation is undertaken, measures should be implemented to prevent any wind erosion of capped cells occurring prior to establishment of vegetation, this may include use of spray mulch or similar techniques.

4.4.2 Temperature

Data presented in the Response document (Section 9.1.2), indicate that average annual temperatures at the site are likely to be typical of the Northern Adelaide Plains. No information

relating to extreme temperatures and their frequency is provided. These would not be expected to affect the operation of the landfill although the likelihood of odour production would increase with higher temperatures. The effective operation of the landfill gas collection system, however would be expected to minimise the impact of any increased odour production under these conditions.

4.4.3 Rainfall

In the absence of rainfall data collected at the proposed development site, the extrapolation of data from other rainfall stations in the vicinity is adequate to enable calculation of leachate generation volumes and design of stormwater management systems.

4.5 SURFACE WATER, GEOLOGY AND GROUNDWATER

4.5.1 Surface Water

To protect surface water quality, the Response document (Sections 2.2.4 and 6.1) states that three control systems would be developed on site:

a) External Stormwater Diversion (External Catchments Drainage System)
b) On Site Sediment Contact Water (Internal Surface Water Management System)
c) Waste Contact Water

a) External Stormwater Diversion

It is proposed that stormwater entering the site from adjoining land would be retained in natural flow paths, improved to provide containment of 1:100 year return interval events, and directed around and through the site as presented schematically in Figure 6.1 of the Response document. From a water resource protection viewpoint, it is inappropriate for surface stormwater from outside the site to be directed through the site rather than around it. It is recommended, therefore, that should the development be approved, all off site surface water runoff be directed around the perimeter of the entire site and not directed between the proposed fill areas as indicated in Figure 6.1. This would be determined in detail in the LEMP.

The Response document states that vegetation growth within the drains would be promoted to minimise erosion and facilitate uptake of drainage water. Native plant species tolerant of periodic inundation should be selected for this purpose with details included in the Vegetation Management and Revegetation Plan.

According to the Response document (Figure 6.1) the external stormwater drains would terminate in check dams. The intended capacity of these dams is not stated, although Figure 6.2 of the Response document suggests that they would be quite small and hence have low detention periods and limited ability to detain sediment. Eventually it is intended that the external drainage water would be returned to its natural water course. This final discharge should be managed to prevent adverse impacts on any downstream wetlands.

b) Onsite Sediment Contact Water

It is proposed that run-off from the site itself, that has not contacted waste material, would be collected in a separate series of drains terminating in sedimentation ponds from which water would be drawn for dust suppression and vegetation establishment when available. The drains are proposed to be vegetated and capable of dealing with flows from a 1:100 year return interval event, whereas the sedimentation ponds into which they will flow are proposed to have only a 1:25 year, 24 hour storm event capacity. In larger storm events it is proposed that overflow from the ponds would be directed into the external drainage system.

Concerns regarding the impact of water held in the sedimentation ponds potentially causing groundwater mounding are discounted by the proponent who claims that the ponds will not be for long duration storage as water will be taken for dust suppression and irrigation. In winter when the ponds are likely to be full, however, there will be little requirement for water for either of these purposes. The location of such ponds/basins close to stands of native vegetation (esp. low-lying saltmarsh areas), therefore, has the potential to detrimentally affect the health of existing communities as a result of disturbance during construction and groundwater mounding when ponds are filled. It is thus recommended, that all unlined basins and ponds be suitably located, designed and managed to ensure native vegetation is not adversely affected.

c) Waste Contact Water

Run-off that has been in contact with waste would be collected as leachate and treated with other leachate in a single system. The proposed leachate management system is discussed in Section 4.7 below.

From the preliminary design of the inverts of the various drains and ponds comprising the surface water management systems it appears possible that some of these could intersect the watertable, particularly where deepening is necessary to ensure flow in the desired direction (where existing surface contours indicate uphill flow required). The final design would need to demonstrate that the proposed flow regime is achievable and groundwater inflows would not adversely affect the operations of the surface water management system.

The OEP has recommended (correspondence, June 1996) that all drains and sedimentation ponds associated with the internal and external surface water management systems should be constructed in undisturbed ground (not fill) and their base should not intersect the seasonal watertable. To ensure this, further investigation of the fluctuations of groundwater levels would be required.

With reference to the groundwater and leachate (and surface water) control systems, the EPA (Assessment Report, Appendix A) has expressed concern that the methods proposed will require additional investigation of groundwater levels and behaviour on the site in order that the detailed design and construction of the development will offer adequate protection against environmental harm. These investigations should be undertaken prior to finalisation of the detailed design of the landfill and preparation of management plans and would form part of the LEMP.

Treatment of Runoff from Sealed Areas

The proponent has not indicated how they intend to treat runoff from sealed roadways /stands /carparks. The OEP has advised (correspondence, June 1996) that all stormwater runoff from these areas must first be diverted into a stormwater treatment system/device capable of removing

litter, sediment and oil products. Subsequently the runoff should be directed to grassed swales or other vegetated areas, or stored for reuse elsewhere on site. In the event of a large storm, allowance could be made to direct overflow to the internal surface water management system.

Any contaminated runoff originating from the vehicle workshop or wheel washing facility must be contained and treated separately to the satisfaction of the EPA.

Potential for Soil Erosion as a result of Surface Water Movement

As part of the landfilling operation there would be stockpiles of topsoil, fill, cover and capping material on site, at locations to be determined at the detailed design stage. The proponent advises that perimeter drains, berms to prevent excessive slope runoff, sediment control devices and sedimentation ponds would be used to minimise and control the erosion of these materials by water. These and any other measures (such as seeding or covering longer term stockpiles) should be detailed in a Soil Erosion and Drainage Management Plan (SEDMP) as described in the OEP's "Stormwater Pollution Prevention Codes of Practice", which must be prepared and approved as part of the LEMP before the site becomes operational.

Management and Monitoring

Section 4.7 of the Response document indicates that a management plan would be prepared for surface water protection. This would include performance criteria as a guideline to the expected performance levels and to provide an indication of action levels for corrective measures. Contingency plans for incidents such as extreme weather would be included in an Emergency Response Plan. To address their concerns, the EPA have stated that a Surface Water Management Plan (as well as a Soil Erosion and Drainage Management Plan) must be prepared by the proponent, to the satisfaction of the EPA, prior to receipt of any waste. The plan, which would form part of the LEMP, should address the collection and management of all site runoff and management of all surface water flows entering the site from land external to the site. The plan may provide for staging of any surface water management works which may be required as a consequence of the staging of waste disposal activities.

The EIS (Section 10.5) outlines a monitoring program for surface water comprising visual inspections of ponds and water sampling. The Response document (Section 6.1.2) indicates that all open channels would also be regularly checked for sedimentation and cleared when appropriate. It is proposed that sampling and analysis of surface water would be undertaken following procedures specified by the OEP. A range of possible parameters to be measured for water samples is given, however the analyses that would actually be undertaken are not stated, nor the levels at which remedial action would be triggered. These would need to be agreed with the EPA and included in the LEMP for the proposal.

The effect of increased coastal flooding, in response to sea level rise and increased storm surge activity, has not been addressed. Whilst this does not affect the early stages of landfill operations, there is a risk that Stage 9, which is close to a major drainage line connected to the coast, could become inundated during worst-case situations in the distant future. Being the last to be commissioned there is the opportunity for this Stage to be excluded from future operations if monitoring indicates inundation or groundwater movements to be a problem. It is recommended, therefore, that a monitoring program be established to record levels of coastal flooding in the

western section of the site and, if results indicate a significant risk, a review process be undertaken to determine whether to proceed with Stage 9.

4.5.2 Geology

The geology of the landfill site is described in Section 3.10 of the EIS, with additional information provided in Section 5.1 of the Response document. In summary, it is reported that the site is generally characterised by a 0.5-2m thick layer of nodular to massive Ripon Calcrete overlying a 45-55m thick sequence of Hindmarsh Clay, which in turn overlies limestones of the Port Willunga Formation.

As stated in the Response document, the Ripon Calcrete is a hard layer that would need to be removed before landfill liner construction. The proponent claims that site investigations suggest removal solely by ripping would be possible. Given that some of the investigative boreholes failed to penetrate the layer, however, it is possible that blasting could be needed for isolated outcrops. Should this prove to be the case, it is recommended that explosion vibration characteristics and monitoring requirements be determined in consultation with the EPA and District Council of Mallala prior to commencement of any blasting operations.

Whilst primarily a thick sequence of alluvial clay, the Hindmarsh Clay is not homogeneous and some significant bands of clayey sand and sand were found in the upper levels of the site investigation bores. It is not possible to easily assess the width, orientation or lateral continuity of these sandy zones, therefore, the proponent has conservatively assumed that they occur frequently and are continuous for the purpose of groundwater analysis. More definitive information would become available at the time of landfill construction and it is recommended that the OEP (for the EPA) be provided with all additional data concerning the site geology as it becomes available, as this could necessitate minor changes to landfill design or method of operation and the installation of additional groundwater monitoring bores.

The Response document (Section 5.2) indicates that testing of Hindmarsh Clay samples taken from shallow depths at the site has confirmed the general suitability of this material for use in the basal liner and upper cap, provided that adequate compaction is achieved. The proposed supervision of construction and permeability testing of the clay liner and cap by an organisation NATA registered for these geotechnical activities would provide appropriate reassurance that these critical operations are being adequately monitored.

4.5.3 Groundwater

The Response document (Section 5.1) states that below the site there are two groundwater systems relevant to this proposal:

- a shallow groundwater system with salinities of 10 000 - 40 000 mg/L, in the top of, and above the Hindmarsh Clays, in lenses in the clays and in sand lenses and layers that are braided into the clays;

- a deeper aquifer (Port Willunga Formation) confined by the aquitard of the Hindmarsh Clay, from which water (with salinities of 4 000 - 7 000 mg/L) is used for irrigation and stock watering.

The Response document states that any nett water movement between the aquifer systems would probably be upwards from the deep Tertiary aquifer to the shallow groundwater. There is, however, insufficient water level data available to definitively establish the potential direction of groundwater movement between the aquifer systems. The OEP have indicated that they consider the clay between the aquifers, despite its occasionally fissured nature, to be sufficiently thick to provide adequate separation from the underlying deep Tertiary aquifer system for attenuation of contaminants.

The very high salinity of the shallow groundwater restricts its beneficial use, however, it could provide a conduit to adjacent sites and to the coast if the system is continuous beneath and beyond the site. As a worst case scenario, the proponent has assumed this to be the case in modelling studies undertaken and the landfill designed appropriately.

The additional investigations described in the Response document (Section 5.1) indicate that the watertable (the upper surface of the shallow groundwater system) beneath the site is at shallower depth than suggested in the EIS. As a result, the original landfill design proposal as described in the EIS (comprising reworking of the basal clay to an unspecified depth beneath each cell, with a minimum separation of 0.3m maintained between the reworked clay base and the watertable) has been amended so that the base of the landfill (comprising a 1m thick engineered clay liner with a maximum hydraulic conductivity of 10^{-9} m/s) would lie, at least in part, beneath the watertable.

The proponent's investigations and site observations by the OEP confirm that shallow groundwater is continuous beneath the site and beneath adjoining properties. The recorded groundwater levels indicate that the watertable gradient and the direction of shallow groundwater movement is generally south westerly. At this stage there has been insufficient monitoring to establish any seasonal variations in watertable levels or gradients, however the intended monitoring program would rectify this.

4.6 LANDFILL CELL CONSTRUCTION

The Response document (Section 5.3) states that the base liner and capping layer for cells would be constructed from clay obtained from onsite and compacted to yield a low permeability of 10^9 m/sec or less. To provide full encapsulation, the liner system would be constructed over the whole landfill cell base and extended up the sides.

Thickness details and the proposed method by which the liner and cap would be placed is also described in Section 5.3 of the Response document. As indicated therein, placement and compaction of the clay liner and cap should be done under Level 1 Supervision (as defined in AS 3798), by geotechnical consultants NATA registered for these procedures. The liner would then be covered by a drainage layer prior to commencement of balefill operations. Submissions expressed concern that if placement of waste did not commence soon after inspection, shrinkage cracks (due to drying out) could develop in the clay liner and remain undetected beneath the drainage layer. The proponent has responded that the drainage layer over the liner would be kept suitably moist at all times until covered with waste and the cell closed and capped.

Maintenance of the integrity of the capping layer would be essential for effective landfill gas control and to ensure long term stability of the waste mass and successful revegetation. To reduce the likelihood of shrinkage cracks developing in the capping layer it is proposed that a protective layer of material would be placed on top of the cap to prevent drying out. With regard to enhanced rainfall infiltration into the landfill as a result of higher than anticipated permeability of the capping layer due to the development of cracks, and the consequent increase in leachate production, the proponent has incorporated this possibility into the modelling undertaken and subsequently into the landfill design.

4.7 GROUNDWATER AND LEACHATE MANAGEMENT

Each waste disposal cell would have its own separate leachate collection and groundwater control system. The proponent envisages that the separate systems would permit variable leachate and groundwater management practices commensurate with the nature of stored waste and individual cell performance.

To prevent groundwater contamination once waste cells are capped, it is proposed that leachate levels within landfill cells would be maintained below the level of the external watertable, causing an inward hydraulic gradient through the liner to be established, such that no nett outflow of leachate could occur. The proponent (for ease of reference) has named this a Slow Inward Seepage System (SISS) for groundwater protection. It is a common engineering practice with many uses and applications.

4.7.1 Groundwater Interception

Groundwater pumping would be required to lower the watertable in order to allow excavation of the waste cells, installation of the clay liner and deposition of waste. At the completion of waste deposition within the cell, dewatering would be discontinued and groundwater levels allowed to recover.

The Response document (Section 5.5) states that during the operational stage of each balefill cell (estimated to last approximately one year), the groundwater would be held at a level of 2m below the basal clay liner by means of a groundwater interception system. Whilst not described in the text, Figures 5.2 and 5.3 of the Response document suggest that in general terms this system would comprise 2m deep gravel filled groundwater interception trenches located beneath the clay liner, with a 1% slope to enable groundwater to drain to a sump at one end of the cell from where groundwater would be pumped to evaporation ponds. The proponent has advised that the exact method of dewatering to be used for any cell would be decided after the design-level site investigation in each specific area has been carried out.

The Response does not indicate at what depth below the watertable the basal liner would need to be installed to achieve and enable maintenance of the nett inward hydraulic gradient required for effective leachate containment. To work effectively, however, the basal clay liner would need to be installed at a sufficient depth beneath the level of the lowest seasonal watertable to ensure that an adequate inwards hydraulic gradient could be continuously maintained to prevent the outward movement of contaminants by advection or diffusion through the liner. As the magnitude of seasonal watertable fluctuations has not yet been established for the site, the optimal depth of liner installation cannot be determined, however, the landfill cells should be designed to ensure full hydraulic containment of any leachate generated and to minimise differential settlement within the waste mass.

The proponent has advised that the level of the shallow watertable would be monitored continuously for the life of the landfill using shallow wells and automatic data loggers. This data would be used to design successive cell base levels and profiles and could be used to confirm that full hydraulic containment of any leachate generated was achieved. In the long term, raised sea levels would result in raised watertable levels beneath the site, however, this should not adversely impact on the hydraulic containment strategy.

During the operational phase it is likely that dewatering to a minimum depth of 2m below the watertable would be necessary at the upslope end of each cell, in order to allow for the thickness of the clay liner and an adequate depth to accommodate watertable fluctuations. The proponent advises that dewatering would be profiled to follow the cell base profile and not all taken to the same maximum depth. In the extreme case where the surface topography rises as the cell base declines, dewatering trenches may need to be installed to depths of 6-8m below ground level in order to meet the conceptual design specification. The trenches would however be constructed when the base of the cell had already been excavated and therefore normal engineering practice should be sufficient to enable drainage pipeline installation.

During operation of the balefill, to hold the watertable to a depth of 2m below the bottom of the clay liner as proposed, dewatering to a depth of approximately 5-6m below the level of the present watertable would be required at the location of the deepest part of most cells. To achieve dewatering to this depth it is likely that groundwater pumping from beneath adjoining cells would also be required and hence the pumping rate could be greater than that estimated in Appendix A of the Response document. The proponent has subsequently indicated that higher pumping rates of up to 4L/sec would not be a problem, however, as they could be accommodated by relatively small pumps and pipework, and the size of the evaporation pond would still only need to be equivalent to two cell bases. The exact quantity of water to be pumped from below each cell would, however, vary depending on exact subsoil conditions at each cell's location.

The proponent has advised that the optimum location for groundwater evaporation ponds would be determined during the detailed design phase, however, they could either be permanently located in an area such as the 520m buffer zone to the south east of Stage 1, or temporarily located in an area to be used for a future stage and progressively relocated. The capacity of the evaporation ponds would be the total hydraulic loading (rainfall on the pond plus volume of groundwater) balanced with total evaporation on an annual basis. Protection measures would be incorporated to prevent any overflow into the stormwater management system.

4.7.2 Leachate Management

As indicated in the Response document, there would be no risk of leachate migration through the basal clay liner during the operational stages of balefilling within each cell. After closure of the cell and discontinuation of groundwater pumping, groundwater would permeate through the clay liner causing saturation of the waste at the base of the cell and the formation of additional leachate. (Saturation of the lower part of the landfill may stimulate renewed waste degradation in areas not previously degraded. The possibility of this occurring is relatively high because of the overall dry nature of the materials landfilled and the low water influx due to rain).

The volumetric rate of leachate production and the associated rise in leachate levels within the cell would depend mainly upon the rate of groundwater inflow through the liner system and the rate of leachate extraction via the leachate collection system. The proponent estimates it would take approximately 30 years for groundwater and leachate levels to equilibrate if no leachate was extracted. Groundwater would however penetrate the liner and enter the cells in a much shorter time, as indicated by the OEP, who consider infiltration into the deepest part of the cell could commence as early as 1 to 3 years from capping of the cell, depending on the magnitude of the hydraulic gradient caused by dewatering and the in-situ properties of the engineered clay liner.

It is proposed that quantities of leachate would be extracted from inside each cell, as needed, to hold the leachate level below groundwater level outside until monitoring shows that the leachate is benign enough to discontinue the SISS safeguard. The OEP has indicated that only at this stage, and subject to appropriate verification that leachate and groundwater qualities are compatible, would further consideration be given to the possibility of allowing seepage outwards through the liner.

The Response document (Section 5.6) indicates that leachate extracted from the waste cells could be disposed of by pumping into a treatment system or evaporation ponds or by recirculation through the waste mass. The most basic of these three methods would be pumping into a clay lined evaporation pond. The OEP have indicated that any leachate ponds would need to be lined with a barrier.

The proponent has advised that the optimum location for any leachate evaporation ponds would be determined during the detailed design phase, however, they would likely be located in the area proposed for the cell two cells in advance of that currently active. The OEP consider the ponds should be constructed in undisturbed ground (ie not in fill).

The proponent has further indicated that the capacity of the evaporation ponds would be the total hydraulic loading (rainfall on the pond plus volume of leachate) balanced with total evaporation on an annual basis. According to the proponent, a pond area of approximately 20m x 20m would be

adequate to cope with the maximum production of leachate envisaged (at the open landfill stage), after this a smaller pond would suffice. Protection measures would be incorporated to prevent any overflow into the stormwater management system.

If for some reason the leachate extraction system did not operate as intended, leachate levels within the cells would in time equilibrate with the external watertable and the groundwater protection system (SISS), relying upon the inwards hydraulic gradient, would no longer be effective. The leachate level would subsequently rise above the level of the external watertable due to infiltration of rainwater through the cap, thereby reversing the hydraulic gradient and leading to leachate migration outwards through the liner.

The rate at which leachate levels would increase in height above the watertable and the consequent rate of contaminant migration by advection through the basal clay liner would depend primarily on the rate of water infiltration through the capping layer and on the field capacity of the waste. From modelling studies, the proponent estimates a time of 100 to 150 years for leachate to seep out of the cell, based on the calculated rate of water infiltration through the cap, and a liner permeability of 10^{-9}m/sec, however, if allowance is made for the effective porosity of the clay liner, the rate of increase of leachate head within the cell and chemical diffusion gradients, the time taken for leachate to seep out through the cell liner could be greater or substantially less, although still at least 30 years (the time estimated for groundwater and leachate level equilibration).

Even if an inwards hydraulic gradient is maintained, it may still be possible for contaminants to diffuse out of the cell in response to an outwards chemical potential gradient caused by the higher contaminant concentrations within the cell compared with the surrounding groundwater Whilst the quantity of contaminants lost by diffusion would be considerably less than losses due to advection, and would probably mainly involve the more mobile anions, such as chloride and sulphate, these diffusive losses should be minimised. This could be achieved either by ensuring that the leachate level in each cell is maintained at a sufficient depth beneath the level of the external watertable to promote an inwards groundwater flow velocity through the clay liner, sufficient to overcome the diffusive flux, or by maintaining the concentration of contaminants within the cells at sufficiently low levels compared with the concentrations in the groundwater. The desired outcome is that leachate and groundwater levels not be allowed to equilibrate during the time period that leachate of unacceptable quality is being produced. This could necessitate commencement of pumping of leachate within a shorter timeframe than the proponent's expectation of 20 to 35 years after cell closure and at larger extraction rates than the anticipated daily rate of water infiltration through the cap.

Any leachate seeping from Stages 1, 3, 4 and 8 into the underlying groundwater could reach the nearest downgradient site boundary in approximately 40 to 50 years, based on the rate of contaminant movement of 1.2m/year suggested by the proponent. The timeframe of 250 to 500 years estimated in the Response document would mainly apply to the remaining stages. Groundwater monitoring bores would need to be carefully located to ensure detection of any leachate excursions as soon as possible so that appropriate remedial action could be undertaken if necessary.

The amended landfill design does not incorporate any facilities other than the leachate sump for monitoring leachate levels within each cell. As it may be necessary to extract leachate from the sump for extended periods in order to maintain the inward hydraulic gradient, it would be prudent to install at least one leachate monitoring bore within each cell to assist with management particularly if leachate recirculation is incorporated in the management strategy.

The Response document (Section 5.6) stated cleanout risers may be installed as part of the leachate collection system if necessary due to access problems. Details of how cleanout would be achieved in practice would need to be determined. Maintenance of the functional efficiency of the leachate collection system over a long time frame would be fundamental to the effective operation of the groundwater protection strategy. As the drainage layer and drainage pipes would be susceptible to clogging and/or disruption, the proponent would need to include detailed specifications for the installation, operation and maintenance of the leachate collection system, together with a contingency plan to be implemented upon failure of the system, as part of the LEMP for the development.

In conclusion, the landfill proposal incorporating hydraulic containment of leachate within the cells, as conceptually described in the Response document, has the potential to provide adequate safeguards against pollution of the underlying groundwater and the off-site movement of contaminants via the groundwater system. For the groundwater protection system to be effective, however, it is imperative that the basal clay liner of each cell be installed at a sufficient depth to ensure full hydraulic containment can be achieved by an adequate inwards hydraulic gradient preventing advective and diffusive loss of contaminants.

Monitoring of groundwater and leachate levels and careful management of the leachate collection/extraction system would be required to ensure that an adequate inwards hydraulic gradient is continuously maintained over the time frame that leachate of unacceptable quality is being produced to ensure its full containment.

With reference to the groundwater and leachate (and surface water) control systems, the EPA has commented that the methods proposed will require additional investigation of groundwater levels and behaviour on the site in order that the detailed design and construction of the development will offer adequate protection against environmental harm. These investigations should be undertaken prior to finalisation of the detailed design of the landfill and preparation of management plans and will form part of the LEMP.

It is recommended that if the development is approved, the proponent would need to demonstrate in the LEMP that the methods proposed to be employed to control leachate, surface water and groundwater contamination will meet EPA requirements..

Further hydrogeological investigations should be carried out prior to the commencement of any landfill construction in order to fully define the dewatering and groundwater disposal requirements for cell construction to achieve full hydraulic containment of leachate.

The EPA has stated that should development authorisation be granted for the landfill, a detailed Groundwater and Leachate Management Plan must be prepared by the proponent to the satisfaction of the EPA, prior to receipt of any waste. The plan must demonstrate that the method of hydraulic containment proposed can be practicably achieved. The plan may provide for staging of leachate and groundwater management works which may be required as a result of the staging of waste disposal activities upon the site.

5. EPA AND COUNCIL COMMENTS

Pursuant to Section 46 B (5)(a)(i) of the *Development Act 1993*

> " after the EIS has been prepared, the Minister must, if the EIS relates to a development or project that involves, or is for the purposes of, a prescribed activity of environmental significance as defined by the *Environment Protection Act 1993*, refer the EIS to the Environment Protection Authority; and must refer the EIS to the relevant council (or councils), and to any prescribed authority or body; and may refer the EIS to such other authorities or bodies as the Minister thinks fit,"

EPA Comments and Report

The EIS (and Response document) were referred to the EPA for comment and the Authority carried out a site inspection, met with the proponent and sought additional comment from the local community. The Authority's comment and report is included in Appendix A of the Assessment Report. The EPA highlighted areas of concern being:

- methods proposed to be employed to control leachate, surface water and groundwater contamination requiring additional investigation for preparation of a management plan (refer Assessment Report, Section 4.4 and 4.5);

- preference for a 500m buffer zone within the depot boundary and under the control of the proponent (refer Assessment Report, Section 3.7);

- potential effect on the agricultural pursuits in the area (potential loss of $33 million per annum from livestock industry) as well as the potential impact on poultry sheds and piggeries (refer Assessment Report, Section 3.12);

- a mechanism must be put in place to enable cessation of waste reception at the completion of any stage of the development should management of the site not be undertaken as specified in the response document and in a Landfill Environmental Management Plan which is to be prepared (refer Assessment Report, Section 1.2).

  Note: If a breach of a condition of a development authorisation occurs as a result of an activity then remedies are provided for in the relevant Act. If a circumstance arose, as postulated by the EPA, then it would be expected that this would be dealt with using powers provided under the EP Act rather than ordering the cessation of the land use for waste disposal. This could involve remedial action as ordered by the EPA, and changes to the process so that future waste disposal does not result in further pollution.

These areas of concern have been addressed in this assessment.

Council Comments and Report

The District Council of Mallala (Assessment Report, Appendix C1) provided an extensive 20 page submission, with appendices, outlining its views on the proposal.

Key concerns of the Council were:

- The site is located exceptionally close to the coastline. If leachates and other externalities are generated by the landfill, which then extend beyond the boundaries of the site, serious environmental, social and economic impacts will result;

- The influence of the coastal area and coastal systems on the site, particularly in respect to fluctuating water table levels, have not been seriously considered;

- It is considered that the proximity of the subject land to the coast makes the site unacceptable for the proposed use;

- The high level water table and the suggested methods of site preparation, involving digging down to two (2) metres in depth, will more than likely result in leachate penetration;

- The laying of synthetic liners should be an absolute minimum requirement;

- The impacts generated by the establishment and ongoing operations of the landfill facility on surrounding general farming enterprises have not been addressed. The impacts on the adjoining salt pan harvesting industry, being critical to the local and state economy, also needing further consideration;

- The EIS has not adequately addressed the social impacts on the existing and future communities located adjacent to the site and surrounding areas;

- Their is insufficient soil on site to meet the requirements of the facilities daily operations;

- The establishment of the landfill would be in contravention of Council's Development Plan provisions.

Following the release of the Response document the Council provided further comment (Assessment Report, Appendix C2). The Council considers that the thrust of the Response document is that all of the issues have been addressed or are able to be addressed through the application of appropriate scientific expertise and technology and the Response document has:

- a tendency to overstate the ability to address all of the environmental concerns;

- a tendency to overstate the Expert's knowledge and their ability to know from the data collected and the research undertaken;

- a tendency to promote the proposal as a technological wonder and the answer to South Australia's future waste management needs.

The Council is also critical of the approach, not only by the proponent but by government, to waste management.

6 MANAGEMENT, MAINTENANCE AND POST CLOSURE MONITORING

The proponent was not required to provide a detailed Landfill Environmental Management Plan (LEMP) for the environmental/development assessment phase of the proposal. A detailed LEMP is necessary for EPA licensing if the proposal is granted a development approval. Specific measures to address identified environmental impacts are, however, discussed in the EIS and Response document.

Many of the potential impacts identified and mitigation measures proposed are supported, in particular:

- commitment from the proponent to a financial assurance package in accordance with industry standards to cover the liability for the current operation together with ongoing monitoring and post closure programs as required;

- the Port Wakefield Road and entrance to the balefill junction to be upgraded to the satisfaction of the Department for Transport, Urban Planning and the Arts (Transport SA) formerly DoT with costs to be borne by the proponent;

- adoption of the proposed noise control measures and hours of operation as set out in the EIS and Response document;

- sealing of the site access road for a minimum of 520m from the nearest residence.

Proposed mitigation and operational measures supported but requiring more development and detailing through the licensing process and the preparation of a LEMP are:

- design and establishment of the buffer zone;
- management and storage of surface water;
- washdown facility design and operation;
- erosion and litter control;
- pest plants and animal control;
- monitoring (especially of groundwater) and leachate levels;
- gas and odour control, both during the operational phase and post-closure;
- screening measures, especially from surrounding roads;
- management of native vegetation.

Specific plans referred to in this Report, including the EMS, Vegetation Management and Revegetation Plan, Soil Erosion and Drainage Management Plan (SEDMP), Pest Plant and Animal Management Plan, Surface Water Management Plan, and Groundwater and Leachate Management Plan, should all be incorporated in the LEMP.

The specific plans should include or address the following to the satisfaction of the EPA.

Vegetation Management and Revegetation Plan

Screening/Buffer Aspects

- Due to the potentially slow establishment and growth conditions of the site it is considered that all perimeter plantings should be started as early as possible to achieve maximum amelioration of visual impacts. Plantings along the north-western boundaries should commence immediately.

- The perimeter fence should be screened by suitable plantings where adequate natural screening is not provided and all built structures and internal roads should be adequately screened using suitable species in accordance with the Vegetation Management and Revegetation Plan.

- To provide additional screening and wildlife habitat the following options should be investigated :

    - revegetation of the road reserve along Prime Beach Road, in conjunction with the DC Mallala and the community.
    - revegetation of the road reserve along Port Wakefield, in conjunction with the Department of Road Transport, to further reduce views from the eastern direction.
    - plantings on private property along fence lines adjoining the site, in conjunction with landowners and the community.

- The buffer layout should be redesigned so that all firebreaks and external drainage channels are located on the inner edge of the vegetation screen and existing stands of native vegetation. In the event that drainage channels are required to be located close to the site boundary, they should be redesigned to form low-lying wetland/saltmarsh communities as part of the vegetated screen.

- Stock piles should be located in areas that provide adequate screening (ie. near areas of existing vegetation) and the use of saline water for erosion control (esp. on the buffer mound) should be avoided in preference to alternative measures.

Native Vegetation Management and Revegetation Aspects

- Preparation of a Vegetation Management and Revegetation Plan should be prepared in consultation with relevant government agencies, such as DEHAA and DPINR, and the local community, and include the following:

    - the management of remnant vegetation stands, and threatening processes.
    - the establishment of a seed bank.
    - a scientific description of vegetation communities (ie. structure, cover, abundance, condition etc.) and a community distribution map (ie. baseline monitoring).
    - revegetation aspects (ie. final species selection, screen density and composition and methodology).

  and those further identified in Section 4.3.

- Revegetation should comprise species endemic to the local provenance which are planted/seeded on landform types they are most suited to. The physical and chemical properties of the planting medium should also be taken into account. Direct seeding should be adopted as the preferred method for the long-term establishment of small tree, shrub, groundcover and grass species. Growth of the trees should be monitored and any additional replacement planting be undertaken.

- Greater long-term screening may be achieved progressively by establishing vegetation cover up the final landform rather than relying on an immediate visual barrier at the base of the mount.

- The proposed establishment of a photographic and survey record of existing features (ie. baseline monitoring) should include both vegetation management and revegetation aspects.

- All landfill activities (inc. vehicle movements) should avoid remnant stands of native vegetation and individual trees to a minimum distance of 5m (ideally 10 m) from the dripline of the canopy edge. Such a buffer should be delineated using clearly visible marker pegs and site operators should be made aware of the need to avoid native vegetation.

- All sedimentation basins and evaporation ponds should be suitably located, designed and managed to ensure native vegetation (esp. low-lying saltmarsh communities) is not adversely affected by construction activities or groundwater mounding.

- Low-lying saltmarsh communities should be protected from further degradation and measures be adopted to improve their ecological value, especially if such areas are to be used for the management of surface water.

- An amount of additional water available for plant growth should be maximised by the effective management of site run-off.

- Post closure, the entire landform could be planted with appropriate types of native vegetation cover. This would need to be determined in the licensing process.

Pest Plant and Animal Management Plan

Introduced Plants and Animals

- A comprehensive Pest Plant and Animal Management Plan should be implemented prior to landfill operations commencing to ensure the site is free of as many pest species as possible from the onset and adequate monitoring and follow-up control should occur. Such a plan would need to cover the landfill site, adjoining properties and roadside verges. Specific control programs to address 'worst case' scenarios (eg. mouse plague conditions) should also be prepared. Any changes to control programs should be made in consultation with the Adelaide Plains Animal and Plant Control Board and ideally the proposed Community Consultative Committee.

- Surveying and mapping of the occurrence, distribution and extent of all introduced species on site, and possibly adjoining land, should be conducted prior to the preparation of management programs.

- Measures should be implemented to avoid the dispersal of proclaimed species by any animal, plant, soil, vehicle, farming implement or other produce or goods. Eradication of proclaimed species prior to earthworks commencing, on-going monitoring and follow-up control programs will be required. In addition, the movement of public and vehicles will, therefore, need to be restricted to areas cleared of proclaimed plants.

- Monitoring and control programs to reduce the risk of disease transmission should be prepared by adopting a district approach, in coordination with the Adelaide Plains Animal and Plant Control Board, DPINR and landowners.

Soil Erosion and Drainage Management Plan (SEDMP), Surface Water Management Plan,

Surface Water

- To minimise and control any onsite soil erosion (particularly of stockpiled material) a Soil Erosion and Drainage Management Plan (SEDMP) as described in the OEP's "Stormwater Pollution Prevention Codes of Practice", should be prepared and approved, as part of the LEMP, before the site becomes operational.

Dust Control

- As part of the LEMP, a Surface Water Management Plan should address the collection and management of all site runoff (including any contaminated runoff originating from roadways, carparks and hardstands, the vehicle workshop or wheel washing facility) and management of all surface water flows entering the site from land external to the site in particular to ensure their final discharge does not impact adversely on any downstream wetlands.

- Surface water drainage channels should be designed to support sustainable low-lying vegetation communities, using endemic species where practicable, and be included in the Vegetation Management and Revegetation Plan.

- A monitoring program should be established to record levels of coastal flooding in the western section of the site and, if results indicate a significant risk, a review process be undertaken (ideally through the LCCC) to determine whether to proceed with Stage 9.

- Damping down using borewater should be restricted to the landfill area and alternative measures for controlling erosion (eg. hydro mulch seeding of the earthen buffer mound, establishing native grass cover on stockpiles and areas of bare earth, using rubble for internal roads etc) be investigated and adopted where practicable.

- As rehabilitation is undertaken, measures should be implemented to prevent any wind erosion of capped cells occurring prior to establishment of vegetation, this may include use of spray mulch or similar techniques.

Groundwater and Leachate Management Plan

- To enable detailed design of the proposed groundwater protection system, to determine the minimum depth at which the landfill cells should be based and to enable detailed design of the surface water management system, further investigation of groundwater levels and behaviour on the site should be undertaken prior to finalisation of the detailed design of the landfill and preparation of management plans.

- As part of the LEMP, a detailed Groundwater and Leachate Management Plan should demonstrate that the method of hydraulic containment proposed can be practically achieved. The plan may provide for staging of leachate and groundwater management works which may be required as a result of the staging of waste disposal activities upon the site, and should include contingency measures to be implemented upon failure of the leachate management system.

- A leachate monitoring bore should be installed within each cell to assist with leachate management particularly if leachate recirculation is incorporated into the management strategy.

- Groundwater monitoring bores would need to be carefully located to ensure detection of any leachate excursions as soon as possible so that appropriate remedial action could be undertaken if necessary.

Monitoring

The Response document (Section 10.3) states that post closure monitoring would be carried out for 25 years. Monitoring of the leachate would initially be on a monthly basis with six monthly reporting or as required by the EPA. Groundwater monitoring and reporting would continue on a six monthly basis, or as required by the EPA. The proponent states (Clarification of Issues, Section 2.5),

> "*The amended concepts allow progressive stage closure and implementation of post closure monitoring and landfill stage stabilisation during the operating life of the balefill. Given the last two stages (Stage 8 and 9) are shown with 21 cells (8 and 13 respectively) that last for approximately 21 years, all previous stages 1 to 7 will be fully stabilised by the time Stage 9 is filled. Post closure monitoring of only Stage 8 (for 12 years) and Stage 9 (for 25 years) would therefore be required. If recirculation of leachate is able to be used to improve the rate of degradation of wastes and increase landfill gas production, stabilisation and the requirement for post closure monitoring may be shortened (subject to the approval of the relevant Authorities).*"

Landfill gas monitoring and the management of the gas system will continue until gas production ceases. The proponent anticipates that energy production of approximately 10mw of electricity could be achieved during full gas production (Clarification of Issues, Section 6).

A 16 point post-closure inspection checklist is provided in the Response document (Section 10.4.7). The approach to long term monitoring proposed would ensure that the balefill stabilisation process is monitored and unpredicted occurrences can be controlled.

Conclusion

Should development approval be given for this balefill proposal the proponent would be required to prepare and have approved, by the EPA, a detailed LEMP before an operating licence would be issued. The LEMP should include any additional measures identified in Sections 3 and 4 of this Assessment Report, including:

- appropriate site preparation and management of the SISS system to eliminate risk of contaminating groundwater;
- appropriate site management to prevent contamination of surface waters;
- appropriate preparation of site to manage surface water flows;
- appropriate management of native vegetation;
- appropriate control and management of pest plant and animal species;
- appropriate measures to control erosion on perimeter mounds and landfill cover;
- appropriate handling of wastes of working face of landfill;
- appropriate preparation of perimeter mounds, including screening proposals (especially revegetation);
- appropriate monitoring program;
- commitment to annual reporting of all monitoring data, research findings and actions taken to mitigate adverse impacts;
- undertaking to report to the EPA any significant departures in management from those proposed in the EIS and Response document.

7. CONCLUSIONS

The assessment of the environmental implications of the proposed IWS Northern Balefill has required the consideration of a range of social, economic and environmental issues.

Advice from the Environment Protection Authority has been incorporated into this Report as required by the *Development Act 1993* and also as it will be responsible for the determination of licensing requirements (under the *EP Act 1993*) if development approval is granted. The Office of Environment Protection (OEP) also provided comments earlier in the assessment process and these have also been used, however the statutory powers in these matters rest with the EPA, rather than the OEP.

The District Council of Mallala had input by way of a written submission and provided further comment outside the statutory process (Appendix C1 and C2). As well, the Planning Strategy, the Development Plan and all government and public comments have been considered.

The proposal, as presented in the EIS and Response documents, is a concept and if development approval is granted, preparation of the final detailed design will be required for EPA licensing purposes.

It is concluded that the following issues have been satisfactorily addressed in the EIS and Response document to enable the Governor to give decision on development. There are conditions recommended in relation to these issues:

- visual impact;
- waste transport;
- infrastructure;
- noise;
- litter;
- buffers;
- air quality;
- weed and pest control;
- native vegetation and fauna;
- meteorology;
- geology, groundwater, and surface water;
- leachate handling proposals.

The following conclusions have been grouped into areas of interest in relation to the proposal.

Consistency with Government Policy

- The Development Plan for the District Council of Mallala through development control principles 17, 91, 145 provides guidance to the types of development that may be undertaken in the General Farming Zone.

- The proposal, whilst not conforming with some of the objectives and principles of development control for the zone, is considered to not be at serious variance with the Development Plan current at the time of lodgement of the proposal in 1994.

- The proposal is non complying in the Development Plan authorised on 1 May 1997.

- The Planning Strategy in 1994 made no reference to waste facilities in the district. In 1996 the Strategy envisaged strategically located specialised industries such as waste disposal.

Noise

- The predicted noise levels would comply with the requirements of the Environment Protection (Industrial Noise) Policy between the hours of 7 am to 10 pm for an area described as predominantly rural.

Social Impacts

- The proposed IWS Northern Balefill would change the present land use of the site from that of rural grazing land to a landfill site which would be quite extensive in years to come but which would be progressively rehabilitated.

- The community at Dublin which is approximately 3km distant and at Thompson Beach approximately 3 km from the site have indicated their opposition to the proposal in submissions.

- A buffer area has been proposed around the landfill site but not within the subject land's boundary. The closest dwelling to the site is presently 520m away. If the EPA decide to require a 500m buffer around the site further land division or residential building construction would not be permitted. It is considered that due to the size of the existing adjacent parcels this is unlikely to be a major problem, further, it is unlikely that the adjacent land will be required for denser subdivision.

- Gas and odour generation would be managed and mitigated according to specific requirements defined during licensing.

- Development of a large landfill to the north of the metropolitan area would provide a valuable waste disposal asset when many of the existing and operating sites are reaching capacity in the northern area.

Visual Impact

- The visual impact of the proposed landfill would be expected to change over time. Initially, the creation of the screen mound and the outer slope of each active stage would gradually establish prominent features on the landscape that, whilst screened to a large degree by vegetation, would be highly visible due to their large scale and slightly elevated height (ie.

compared to the relatively flat nature of the local topography). They would also remain obvious because of their green cover of native vegetation, especially during times of the year when the surrounding country has 'browned off'. The completed site is expected to have the appearance of a series of large vegetated mounds within a predominantly cleared flat landscape. Progressive and final revegetation of the landfill and the establishment of screen plantings around the site perimeter, and possibly adjoining roadside reserves, should adequately mitigate the visual impact of the site, especially from Pt. Wakefield Road and Prime Beach Road.

Traffic

- The projected increase in traffic above existing levels (4%) is considered to not be significant. Subject to the upgrading of the service road and the Port Wakefield Road intersection (to DoT specifications) traffic issues would be adequately managed.

Infrastructure

- No adverse impacts from the provision of infrastructure at the site have been identified.

- Detail on the design and operation of the wheel wash facility, can be provided in the LEMP.

Heritage

- The Department of State Aboriginal Affairs has confirmed that there is no entry in the Aboriginal Register of Sites and Objects on the subject land.

- A full survey of the site has been carried out by an archaeological team together with Kaurna Committee and community members. The Kaurna Committee has not objected to the development of this site.

- No sites of non-Aboriginal heritage have been identified on the proposed balefill.

Economic

- Given the existing conditions, the proposed change of land use is not expected to detrimentally affect the existing primary industry based, economic viability of the region.

- Benefits to the local community have not been detailed but it is envisaged that between 2 and 10 people will be employed.

- Long and short term impacts of the proposal on adjoining property values have been difficult to predict given the influences that determine property values. Little or no impact on adjacent rural land values is anticipated.

- The location and method of waste disposal is unlikely to lead to a significant increase in waste management costs.

- The proponent's commitment to a Financial Assurance Strategy is essential to ensure that funding is available to carry out any necessary remediation measures both during the life of the landfill and after closure.

Biological and Physical Issues and Impacts

Biological Issues

- The detrimental impacts of the proposal on existing native flora are expected to be minimal, with any disturbance to native vegetation being far outweighed by proposed revegetation and weed control measures. However, further detailed investigations and the preparation of a Vegetation Management and Revegetation Plan are required to ensure the successful establishment of plantings and the sustainable management of existing communities.

- The potential impacts on existing native fauna are expected to be minimal, with any disturbance to fauna being far outweighed by the proposed expansion and improvement of available habitat in the area, provided existing stands of native vegetation are sustainably managed, suitable revegetation is successfully undertaken and pest plants and animals (including Silver gulls and Ravens) are adequately controlled.

- The risk of disease transmission is considered to be no greater for the proposed landfill than existing agricultural and animal and poultry keeping activities, provided good monitoring and control programs are implemented by those responsible for both activities.

- The detrimental impacts associated with weeds and vermin can be adequately mitigated provided a detailed Plan is prepared and implemented. Ideally such a plan would need to cover the landfill site, adjoining properties and roadside verges but this would require a cooperative regional or district approach.

Meteorology

- In the absence of rainfall data collected at the proposed development site over a number of years, the extrapolation of data from other rainfall stations in the vicinity is considered adequate to enable calculation of leachate generation volumes and design of stormwater management systems.

- The proposed baled method of waste disposal and stringent implementation of contingency measures would be expected to minimise the occurrence of litter even at times of windy conditions. Careful attention to dust control particularly during cell excavation and liner construction would however be necessary. Wetting down might be required on a regular basis with implications for water use.

- Monitoring and reporting of meteorological parameters at the site would be required as a condition of environmental authorisation should the development be approved.

Stormwater Management

- The proponent would need to prepare a Surface Water Management Plan to the satisfaction of the EPA prior to the receipt of any waste. The Plan should address the collection and management of all site runoff as well as management of surface water flows entering the site from land external to the site. Any such Plan may provide for staging of surface water management in conjunction with the staging of waste management.

- The final design of the surface water management system would need to demonstrate the proposed flow regime is achievable and that groundwater inflows would not adversely affect its operations.

- To ensure that all drains and sedimentation/siltation ponds associated with the internal and external surface water management systems are constructed in undisturbed ground (not fill) and that their base does not intersect the seasonal watertable, further investigation of the fluctuations of groundwater levels would be required.

Geology

- Over much of the proposed landfill site, the Ripon Calcrete would need to be removed before landfill liner construction. Whilst this could probably be achieved mainly by ripping, it is possible that blasting could be needed for isolated outcrops.

- Clays of the Hindmarsh Clay are suitable for use in the basal liner and upper cap of the landfill, provided that adequate compaction is achieved. The proposed supervision of construction and permeability testing of the clay liner and cap by an organisation NATA registered for these geotechnical activities will provide reassurance that these critical operations are being adequately monitored.

Groundwater

- The very high salinity of the shallow groundwater precludes its beneficial use, however it could provide a conduit to adjacent sites and to the coast if the system is continuous beneath and beyond the site. As a worst case scenario, the proponent has conservatively assumed this to be the case in modelling studies undertaken and the landfill designed appropriately.

- Although there is insufficient water level data available to definitively establish the potential direction of groundwater movement between the two aquifer systems present beneath the site, the OEP have indicated, however, that they consider the clay between the aquifers to be sufficiently thick to provide adequate separation from the underlying deep Tertiary aquifer system, for attenuation of contaminants.

- The watertable beneath the site is at shallower depth than originally advised, which has necessitated amendment of the landfill design so that the base of the landfill would lie, at least in part, beneath the watertable. At this stage there has been insufficient monitoring to establish any seasonal variations in watertable levels or gradients, however the intended monitoring program would rectify this.

Groundwater Interception and Leachate Management

- The landfill proposal incorporating hydraulic containment of leachate within the cells, as conceptually described in the Response document, has the potential to provide adequate safeguards against pollution of the underlying groundwater and the off-site movement of contaminants via the groundwater system. For the groundwater protection system to be effective, however, it is imperative that the basal clay liner of each cell be installed at a sufficient depth to ensure full hydraulic containment of leachate can be achieved by an adequate inwards hydraulic gradient preventing any advective and diffusive loss of contaminants.

- As the magnitude of seasonal watertable fluctuations has not yet been established for the site, the optimal depth of liner installation cannot be determined, however, the landfill cells should be designed so that full hydraulic containment of leachate can be achieved.

- Monitoring of groundwater and leachate levels and careful management of the leachate collection/extraction system would be required to ensure that an adequate inwards hydraulic gradient is maintained over the time frame that leachate of unacceptable quality is being produced to ensure full hydraulic containment of this leachate.

- In the long term, raised sea levels would result in raised watertable levels beneath the site, however this should not adversely impact on the hydraulic containment strategy.

- As part of the groundwater interception system, drainage trenches are proposed to extend beyond the excavated base of the cell and may need to be installed to depths of 6 to 8m below ground level in order to meet the conceptual design specification. Provided these trenches are installed when the cells have already been excavated, standard engineering practices should be sufficient to overcome any construction difficulties in pipeline installation.

- To achieve dewatering to the required depth below each cell, it is likely that groundwater pumping from beneath adjoining cells would also be required. This may necessitate a higher pumping rate than that suggested by the proponent, however it is likely that this could be accommodated by the proposed infrastructure, and this should be demonstrated at the detailed design stage.

- The optimum location for groundwater evaporation ponds would be determined during the detailed design phase.

- As indicated in the Response document, there would be no risk of leachate migration through the basal clay liner during the operational stages of balefilling within each cell.

- The OEP considers once dewatering operations were discontinued, the time for groundwater infiltration into the deepest part of the cell could commence as early as 1 to 3 years from capping of the cell, depending on the magnitude of the hydraulic gradient caused by dewatering and the in-situ properties of the engineered clay liner.

- It is proposed that quantities of leachate would be extracted from inside each cell as needed to prevent equilibration of leachate and groundwater levels until monitoring showed that the leachate was benign enough to discontinue the SISS safeguard. The OEP have indicated that only when independent monitoring verified the compatibility of the leachate and external groundwater quality, would consideration be given to the possibility of allowing any outwards seepage of leachate.

- If for some reason the leachate extraction system did not operate as intended, leachate levels within the cells would in time equilibrate with the external watertable and the groundwater protection system relying upon the inwards hydraulic gradient would no longer be effective. The rate at which leachate levels would increase in height above the watertable and the consequent rate of contaminant migration by advection through the basal clay liner would depend primarily on the rate of water infiltration through the capping layer and on the field capacity of the waste. If allowance is made for the effective porosity of the clay liner, the rate of increase of leachate head within the cell and chemical diffusion gradients, the time taken for leachate to seep out through the cell liner could be greater or substantially less than the 100 to 150 years estimated by the proponent, although still at least 30 years (the time estimated for groundwater and leachate level equilibration if no leachate pumping were undertaken).

- Any leachate seeping from Stages 1, 3, 4 and 8 into the underlying groundwater could reach the nearest downgradient site boundary in approximately 40 to 50 years, based on the rate of contaminant movement of 1-2m/year suggested by the proponent. Groundwater monitoring bores would need to be carefully located to ensure detection of any leachate excursions as soon as possible so that appropriate remedial action could be undertaken if necessary.

8. RECOMMENDATIONS

If the Governor were to give consent to the proposal the following conditions are recommended, either in relation to any development authorisation or licensing.

Traffic

- Detailed design of the opening and associated left turn deceleration lane from Pt. Wakefield Road, as well as the construction, should be completed to the satisfaction of the Department for Transport, Urban Planning and the Arts with all costs being borne by the developer.

- Entrance to balefill junction to be upgraded to the satisfaction of the Department for Transport, Urban Planning and the Arts (Transport SA) formerly DoT with costs to be borne by the proponent.

- Sealing of site access road for minimum of 520 metres from the nearest residence.

Screening/Buffer Aspects

- Due to the potentially slow establishment and growth conditions of the site it is considered that all perimeter plantings should be started as early as possible to achieve maximum amelioration of visual impacts. Plantings along the north-western boundaries should commence immediately.

- Screening by suitable plantings where adequate natural screening is not provided, should be provided for the perimeter fence, all built structures, stockpiles and internal roads (where practicable) using suitable species in accordance with the Vegetation Management and Revegetation Plan

- To provide additional screening and wildlife habitat the following options could be investigated by the proponent, council, community and local landowners:

    - revegetation of the road reserve along Prime Beach Road, in conjunction with the DC Mallala and the community.
    - revegetation of the road reserve along Port Wakefield, in conjunction with the Department for Transport, Urban Planning and the Arts (Transport SA) to further reduce views from the eastern direction.
    - plantings on private property along fence lines adjoining the site, in conjunction with landowners and the community.

- The buffer layout should be redesigned so that all firebreaks and external drainage channels are located on the inner edge of the vegetation screen and existing stands of native vegetation. In the event that drainage channels are required to be located close to the site boundary, their redesign to form low-lying wetland/saltmarsh communities as part of the vegetated screen should be investigated.

Native Vegetation Management and Revegetation Aspects

- Preparation of a Vegetation Management and Revegetation Plan should be required as a condition of development consent and be included in the LEMP. The Plan should be prepared in consultation with relevant government agencies, such as DEHAA and DPINR, and the local community and have regard to the measures suggested in the Assessment Report particularly in Section 6.

- All sedimentation basins, evaporation ponds, and surface water drainage channels should be suitably located, designed and managed to ensure native vegetation (esp. low-lying saltmarsh communities) is not adversely affected by construction activities or groundwater mounding, and if possible the ecological value enhanced.

Introduced Plants and Animals

- A comprehensive Pest Plant and Animal Management Plan should be implemented prior to landfill operations commencing to ensure the site is free of as many pest species as possible from the onset and adequate monitoring and follow-up control should occur, as discussed in the Assessment Report.

- Whilst not totally within the control of the proponent, monitoring and control programs to reduce the risk of disease transmission should ideally be prepared by adopting a district approach, in coordination with the Adelaide Plains Animal and Plant Control Board, DPINR and landowners.

Surface Water

- To minimise and control any onsite soil erosion (particularly of stockpiled material) a Soil Erosion and Drainage Management Plan (SEDMP) as described in the OEP's "Stormwater Pollution Prevention Codes of Practice", should be prepared and approved, as part of the LEMP, before the site becomes operational.

- As part of the LEMP, a Surface Water Management Plan should be prepared by the proponent to the satisfaction of the EPA prior to receipt of any waste. The plan should address the collection and management of all onsite surface water (including any contaminated runoff originating from roadways, carparks and hardstands, the vehicle workshop or wheel washing facility) and management of all surface water flows entering the site from land external to the site in particular to ensure their final discharge does not impact adversely on any downstream wetlands.

- A monitoring program should be established to record levels of coastal flooding in the western section of the site and, if results indicate a significant risk, a review process be undertaken (ideally through the LCCC) to determine whether to proceed with Stage 9.

Geology

- If blasting is required to remove any of the Ripon Calcrete, explosion vibration characteristics and monitoring requirements should be determined in consultation with the EPA and District Council of Mallala prior to commencement.

- The OEP should be provided with all additional data concerning the site geology as it becomes available as this could necessitate minor changes to landfill design or method of operation and the installation of additional groundwater monitoring bores.

Groundwater

- To enable detailed design of the proposed groundwater protection system, to determine the minimum depth at which the landfill cells should be based and to enable detailed design of the surface water management system, further investigation of groundwater levels and behaviour on the site should be undertaken prior to finalisation of the detailed design of the landfill and preparation of management plans.

Groundwater Interception and Leachate Management

- Further hydrogeological investigations should be carried out prior to the commencement of any landfill construction in order to fully define the dewatering and groundwater disposal requirements and to provide sufficient assurance that the cells can be dewatered and constructed in accordance with the requirements for full hydraulic containment of leachate. In particular, monitoring of watertable levels should commence immediately in order that the magnitude of seasonal fluctuations can be fully established prior to construction of the landfill.

- As part of the LEMP, a detailed Groundwater and Leachate Management Plan should be prepared by the proponent to the satisfaction of the EPA, prior to receipt of any waste. The plan should demonstrate that the method of hydraulic containment proposed can be practically achieved. The plan may provide for staging of leachate and groundwater management works which may be required as a result of the staging of waste disposal activities upon the site, and should include contingency measures to be implemented in the event of any failure of the leachate management system.

- A leachate monitoring bore should be installed within each cell to assist with leachate management particularly if leachate recirculation is incorporated into the management strategy.

Post Closure Aspects

- A more sustainable after-use for the site that will encourage the regeneration and rehabilitation of natural communities should be considered during future post closure planning.

- If appropriate with the desired end use to be determined in more detail at a later stage, the entire landform should be planted with appropriate types of native vegetation cover.

- Determination of interim and post closure land uses of the site, proposed to be undertaken in association with the Local Community Consultation Committee, should be undertaken as required by the EPA as part of the LEMP.

9. SCHEDULE OF ACTS, REGULATIONS AND CODES OF PRACTICE APPLICABLE

Aboriginal Heritage Act 1988
Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986
Development Act 1993
Development Plan - District Council of Wakefield Plains
Environment Protection Act 1993
Native Vegetation Act 1991

10. BIBLIOGRAPHY

Bone & Tonkin Planners Pty Ltd et al. 1996. *Solid Waste Balefill Environmental Impact Study*, prepared for P & M Borrelli and Sons Pty Ltd, Adelaide, February 1996.

Bone & Tonkin Planners Pty Ltd et al. 1997. *EIS Solid Waste Balefill Response to Submissions*, prepared for Integrated Waste Services Pty Ltd, Adelaide, May 1997.

Bone & Tonkin Planners Pty Ltd et al. 1997. *Solid Waste Balefill Clarification of Issues*, prepared for Integrated Waste Services Pty Ltd, Adelaide, August 1997.

Davies, R.J.P. 1982. *The Conservation of Major Plant Associations in South Australia*. Prepared by the Conservation Council of South Australia Inc.

Environment Protection Authority, 1995. *Options for an Integrated Waste Management Strategy for the Adelaide Metropolitan Area : 2015 and Beyond*, Public Discussion Paper, Adelaide, April 1995.

Environment Protection Authority, 1996. *Draft Buffer Guidelines, December 1996.*

Environment Protection Authority, 1996. *Integrated Waste Strategy for Metropolitan Adelaide 1996 - 2015*, Adelaide, June 1996.

Environment Protection Authority, 1997. *Interim Criteria for Major Landfill Depots*, Adelaide, March 1997.

Fedorak, P.M. and Rogers, R.E., 1991. Assessment of the potential health risks associated with the dissemination of micor-organisms from a landfill site. *Waste Management & Research* Vol. 9 No. 6 1997.

Gorden M., Positive Results Are Seen From Aerobic System of Landfill - *Tech Trends* 1997.

Laut P., Heylingers P.C., Keig G., Loffler E., Margules C., Scott R.M. and Sullivan M.E., 1977. *Environments of South Australia - Province 4 Eyre and Yorke Peninsulas.* CSIRO, Australia.

Pedler J.A. and Matheson W.E., 1993. *Remnant Vegetation in the Mallala District Council Area: It's Status and Conservation Strategies*. Prepared for the DC. Mallala.

The Premier of South Australia, 1994. *South Australian Planning Strategy, Volume 1, Metropolitan Adelaide.*

The Premier of South Australia, 1996. *Planning Strategy Country South Australia.*

11. GLOSSARY

AHD	Australian Height Datum (approximate mean sea level)
Anaerobic	The absence of free oxygen
AQIS	Australian Quarantine Inspection Service
AS	Australian Standard
CBD	Central Business District
CCSSA	Conservation Council of South Australia
CFS	Country Fire Services
dB	Decibels
DEHAA	Department of Environment, Heritage and Aboriginal Affairs
DHUD	Department of Housing and Urban Development
DoT	Department of Transport [now DTUPA (Transport SA)]
DPINR	Department of Primary Industries and Natural Resources
DTUPA	Department for Transport, Urban Planning and the Arts
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMS	Environment Management System
EPA	Environment Protection Authority
ETSA	Electricity Trust of South Australia
LCCC	Local Community Consultative Committee
LEMP	Landfill Environmental Management Plan
LFG	Landfill gas
live face	(working face) area of exposed waste at any time
m	metres
MESA	Mines and Energy South Australia

mg/L	Milligrams per litre
MHUDLGR	Minister for Housing, Urban Development and Local Government Relations
MTUP	Minister for Transport and Urban Planning
NATA	National Association of Testing Authorities
OEP	Office of Environment Protection
SEDMP	Soil Erosion and Drainage Management Plan
SISS	Slow Inward Seepage System

APPENDIX B

LIST OF LOCALLY ENDEMIC SPECIES OF NATIVE VEGETATION CONSIDERED SUITABLE FOR USE IN REVEGETATION.

As a general guide the following fast growing species should be considered for revegetation:

- *Eucalyptus socialis*
- *Pittosporum phylliraeoides****
- *Myoporum insulare*
- *Acacia ligulata****
- *A. hakeoides****
- *A. salicina****
- *A. notablis*
- *Senna artemisioides nothossp. coriacea*
- *Dodonaea viscosa ssp. spatulata*
- *Eremophila longifolia****
- *Maireana brevifolia*
- *M. pyramidata*
- *Muehlenbeckia gunnii*
- *Senecio lautus*
- *Dianella revoluta*
- *Clematis microphylla*

As a general guide the following slow growing species should be considered for revegetation:

- *Eucalyptus gracilis*
- *E. dumosa*
- *Alectryon oleifolius ssp canescens****
- *Exocarpus aphyllus*
- *Melaleuca lanceolata*
- *M. acuminata*
- *Geijera linearifolia*
- *Santalum acuminatum****
- *Acacia sclerophylla*
- *Rhagodia candolleana*
- *Westringia rigida*
- *Atriplex paludosa*
- *Scaevola spinescens*
- *Threlkeldia diffusa*
- *Tetragonia implexicoma*
- *Zygophyllum aurantiacum*

** denotes the ability to regenerate by producing suckers.

As a general guide the following grass and groundcover species should be considered for revegetation:

- *Danthonia spp*
- *Stipa spp*
- *Atriplex semibacatta*
- *A. suberecta*
- *Enchylaena tomentosa*
- *Maireana aphylla*
- *Rhagodia candolleana*
- *R. parabolica*

Neldner, Simon (AGD)

From: Hazell, Phil (EPA)
Sent: Wednesday, 4 August 2021 2:51 PM
To: Neldner, Simon (AGD)
Cc: Ahrens, Greg (EPA); Bench, Matthew (EPA)
Subject: RE: Amendment to IWS Northern Balefill, Lower Light - Email #1 [SEC=Government, DLM=Sensitive:Commercial]

Security Classification:
Sensitive: Commercial

Sensitive: Commercial

Hi Simon

The EPA has reviewed the variation proposal to amend the existing major development approval for the IWS Northern Balefill and provides the following comments.

Details of the proposed 'sorting shed' variation were contained in the following documents:

- Correspondence from MasterPlan to ADG-PLUS titled 'Re: Variation of Major Development Authorisation Sorting Shed IWS Northern Balefill, Lower Light' and dated 12 May 2021; and
- Correspondence from MasterPlan to ADG-Plus titled 'Re: Variation of Major Development Authorisation Sorting Shed IWS Northern Facility, Lower Light' dated 22 June 2021.

The EPA notes that the MasterPlan correspondence of 22 June 21 included amended Proposal Plans, titled 'Stage 2 Processing Shed - 99 Lemmy Rd, Dublin' project No.DSK21211 (7 sheets).

The proposed variation is primarily a new building and trommel screen for a secondary processing operation of organic waste (Compost Like Output) that will partially replace the processing that currently takes place in the existing multiple waste treatment facility (MWTF) shed and on the bioremediation pad.

The EPA understands that this variation will not result in any additional waste being received on site as the development is an enhancement to an existing operation within the currently received waste volumes. The development will enclose the secondary processing operations thereby reducing risks of windblown litter, dust, noise and odour from the current operations. The proposed building is sited approximately 800m from the nearest sensitive receiver (east side of Port Wakefield Road). The EPA considers that this an appropriate separation distance for such a proposed development. Stormwater will be collected from the building in rainwater tanks for use on site and, due to the enclosed nature of the process, there will be no mixing of waste with stormwater.

The information provided by the proponent is considered adequate and the EPA has no further comment.

For further information on this matter, please contact Greg Ahrens on 8204 9289 or Greg.Ahrens@sa.gov.au.

Regards

Phil Hazell
Manager Planning and Impact Assessment

Environment Protection Authority
Work Phone (08) 820 42136 Mobile 0427 790916
GPO Box 2607 Adelaide SA 5001
211 Level 1 Victoria Square Adelaide 5000

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www.epa.sa.gov.au

From: Neldner, Simon (AGD) <Simon.Neldner@sa.gov.au>
Sent: Wednesday, 7 July 2021 6:13 PM
To: dstarr <dstarr@apc.sa.gov.au>; Hazell, Phil (EPA) <Phil.Hazell@sa.gov.au>
Subject: Amendment to IWS Northern Balefill, Lower Light - Email #1

OFFICIAL

Hi Darren and Phil
We've received a variation request to amend the existing MD authorisation for the IWS Northern Balefill at Lower Light.
We're just working through the amendment process for previously declared and determined majors with the CSO under the PDI Act, however in the interim, I'd like to determine whether you have any comments or requirements as to the proposed sorting shed and its intended operation.
I've asked for and received some additional information from the proponent which I'll attach in Email #2.
If any comments could be received not later than **6 August 2021**, that would be appreciated.
Kind Regards,

Simon Neldner | Team Leader – Crown and Major Developments
Planning and Land Use Services | Attorney-General's Department
E simon.neldner@sa.gov.au | www.agd.sa.gov.au P 7109 7058
L5, 50 Flinders Street, Adelaide SA 5000 • PO Box 1815 Adelaide SA 5001

Neldner, Simon (AGD)

From: Darren Starr <DStarr@apc.sa.gov.au>
Sent: Wednesday, 11 August 2021 9:09 AM
To: Neldner, Simon (AGD)
Cc: DRoberts; Josh Banks
Subject: RE: Amendment to IWS Northern Balefill, Lower Light - Email #1

Hi Simon yes we put the proposal to our CAP for comment and effectively they have indicated no planning objection to the variation.

David/Josh please forward the CAP resolution and CAP report to Simon, thanks Darren

Darren Starr | **General Manager Development & Community**
P: (08) 8527 0200 | **E:** dstarr@apc.sa.gov.au
PO Box 18, Mallala SA 5502 | www.apc.sa.gov.au

From: Neldner, Simon (AGD) [mailto:Simon.Neldner@sa.gov.au]
Sent: Tuesday, 10 August 2021 6:02 PM
To: Darren Starr <DStarr@apc.sa.gov.au>
Subject: RE: Amendment to IWS Northern Balefill, Lower Light - Email #1

OFFICIAL

Hi Darren
Were there any comments from Council in respect to the proposed amendment?
Regards - Simon

Simon Neldner | Team Leader – Crown and Major Developments
Planning and Land Use Services | Attorney-General's Department
E simon.neldner@sa.gov.au | www.agd.sa.gov.au P 7109 7058
L5, 50 Flinders Street, Adelaide SA 5000 • PO Box 1815 Adelaide SA 5001

MINUTES

of the

Council Assessment Panel Meeting

of the

Pursuant to the provisions of section 83 of the
Planning, Development and Infrastructure Act 2016

HELD Via

Electronic Means

In light of the ongoing COVID-19 public health emergency, and social distancing requirements, participation by representors and applicant was facilitated by electronic means (Zoom) and public access to the meeting was be facilitated via live stream on Council's YouTube channel

https://youtu.be/c7lZGle8mH8

on

Wednesday 4 August 2021 at 5.30pm

The Presiding Member formally declared the meeting open at 5.30pm and acknowledged the Kaurna People as the Traditional Custodians of the Land.

1. ATTENDANCE RECORD

1.1 **Present**

Mr Nathan Cunningham	Presiding Member
Mr Paul Mickan	Independent Member
Ms Susan Giles	Deputy Independent Member
Mr Aaron Curtis	Independent Member
Ms Margherita Panella	Council Member Deputy

Also in Attendance

Assessment Manager	Mr David Roberts
General Manager – Development and Community	Mr Darren Starr
Senior Planning Officer	Mr Josh Banks
Administration Support Officer/Minute Taker	Miss Abbey Cook
IT Officer	Mr Sean Murphy

1.2 **Apologies:**

Mr Ian O'Loan

2. CONFIRMATION OF MINUTES

2.1 Confirmation of Minutes – Meeting held 5 May 2021

Moved Paul Mickan Seconded Aaron Curtis

"that the minutes of the Council Assessment Panel meeting held on Wednesday 5 May 2021, be accepted as read and confirmed."

AGREED

3. DECLARATION OF MEMBERS' INTERESTS

Nil

4. REPORTS FOR DECISION

4.1 312/322/2002 – Integrated Waste Services Pty Ltd - Variation of Major Development Authorisation – Addition of Sorting Shed – Lot 76, 99 Lemmey Road Lower Light – CT 5312/333

Independent Member Paul Mickan queried Page 22 of the document, site plan appears as though access and turning circle protrudes into a landscape screen. Queries raised if it was an anomaly of the overlay or actually result in removal of vegetation

Assessment Officer Josh Banks addressed the Panel and answered the questions of the Panel. 30 m setback from the main section of the proposed shed and the turning circles goes in 25 of those meters between the shed and the setback. Would appear some of the landscaping may have to be removed

Moved Aaron Curtis Seconded Paul Mickan

1. That the Council Assessment Panel resolves to provide the attached CAP Report (Item 4.1) to the Attorney General's Department, along with confirmation that it raises no planning objection to the proposed Major Development Authorisation variation however CAP note a conflict between turning movements and landscaping screens that needs to be addressed to preserve the integrity of the landscaping.

AGREED

5. REPORTS FOR INFORMATION

5.1 Council Assessment Panel – Members Continuing Professional Development Requirements

Moved Susan Giles Seconded Paul Mickan

1. "that the Adelaide Plains Assessment Panel (Panel) receive and note this report'

AGREED

5.2 Planning and Design Code Implementation 19 March – July 2021

Moved Paul Mickan Seconded Susan Giles

1. That the Panel, having considered item 5.1 – Planning and Design Code Implementation 19 March – July 2021, dates 04 August 2021 receives and notes the report

AGREED

6. OTHER BUSINESS

Nil

7. CONFIDENTIAL ITEMS

Nil

8. NEXT MEETING

Wednesday 1 September 2021 at 5:30pm

9. CLOSURE

There being no further business, the Presiding Member declared the meeting closed at 6:02pm.

Confirmed as a true record.

Presiding Member:.....

Date: ____/____/____

4.1

PM: Page 22 of the document, site plan appears as though the access of turning, will this be a removal of vegetation?

JB: Appears as though landscape may need to be removed