MASTERPLAN
TOWN + COUNTRY PLANNERS SINCE 1977

9 June 2023

Planning and Land Use Services
Attorney-General's Department
PO Box 1815
ADELAIDE SA 5001

Attention: Mr Simon Neldner

Dear Mr Neldner

Re: IWS Dublin Eco-Hub
Variation of Development Approval
Response to Submissions

On behalf of Integrated Waste Services ('IWS' or 'our client') we refer to the application to vary the Environmental Impact Statement by addendum, for the IWS Northern Facility at Dublin. It is noted that the facility recently changed the name by which it is publicly known to the 'IWS Dublin Eco-Hub'.

Following the agency and public exhibition of the EIS addendum, we have been provided with the two (2) agency submissions received from the Environment Protection Agency ('EPA') and Adelaide Plains Council ('APC'). During the development of the proposal, IWS has engaged extensively with both the EPA and APC, and it is believed that this is reflected in the confined nature of the submissions that they have provided.

No public submissions were received during the exhibition process.. The facility was originally developed in the late 1990s following assessment as a major project under the *Development Act, 1993*. Following the commencement of operations, and during the more than 20 years since, the facility has become an accepted land use in the locality and wider area, which is managed in accordance with industry best practice. In recent times the facility has embraced significant technological innovation to divert large volumes of waste from landfill, recover organics from Municipal Solid Waste and collaborate with local first-nations groups. The mitigations of the potential impacts from the facility set out in the original Environmental Impact Statement ('EIS') and subsequent variations, have, in practice, functioned effectively to limit adverse environmental and amenity impacts of the facility on the locality and wider region.

Effective management of waste and resource recovery represents essential infrastructure in the same manner as the provision of energy, safe potable water and wastewater treatment disposal. The proposal currently under assessment provides for the operational flexibility required to enable the facility to continue to effectively receive, treat, recover and dispose of waste in a manner that exceeds regulatory requirements and best practice.

In responding to the issues raised by the EPA and APC in their submissions, we have categorised the issues against the proposals as set out in the EIS Addendum. The issues have been categorised as to those which have been resolved and those which remain to be resolved.

Where updates have been required to the EIS Addendum, these have been made in an updated version of the document which is **enclosed** with this correspondence. As the changes required to the EIS Addendum post the exhibition are limited, the updated version has the changes tracked to assist with readability.

The issues raised and the submissions from the EPA and APC, together with the responses are set out in the following table.

AGENCY	DATE OF REQUEST	CATEGORY	MATTER	FURTHER INFORMATION RESPONSE/REQUEST	ISSUE RESOLVED	ACTION REQUIRED	COMMENTS
EPA	26/04/2023	Accepted Components	Internal Configuration	"a. The EPA accepts that: i. Once completed, modules (within which cells will be constructed, filled, closed and capped) would not be linked. Rather, each module would be a separate landform with sloped sides and a lower sloped top, with air space between each module. ii. Clarified wording describes the proposal more consistently in relation to modules, which each contain multiple cells. iii. Appendix J presents a theoretical maximum module/cell space and maximum permitted height, to allow for flexibility in the design and layout of future modules, containing multiple cells. However, the final landform would not be linked to form a single land mass. iv. No additional landscaping mounds are proposed."	Yes	No	
EPA	26/04/2023	Conditions/ Actions	Internal Configuration	"b. The EPA advises that: i. Future proposals for new modules/cells must be consistent with relevant guidelines and standards, and be submitted to the satisfaction of the EPA. ii. A condition of any approval is recommended to include a reference to Appendix J of the EIS Addendum"	Yes	No	Future action will be required
EPA	26/04/2023	Accepted Components	Height Increase	"2. Height increase a. The EPA accepts that: i. The amount of material disposed to the facility is not expected to change as a result of the proposal. ii. The applicant has provided a clearer rationale for the proposed increase in height, which includes: 1. providing for the most efficient and lowest carbon footprint operation possible, 2. providing for reduced excavation where appropriate to increase distance to groundwater, 3. allowing for optimal cell and module configurations to be adopted whilst retaining airspace, 4. allowing for balance of excavated material to be optimised, 5. allowing for greater flexibility in liner design, and 6. allowing for greater flexibility in cap design."	Yes	No	

AGENCY	DATE OF REQUEST	CATEGORY	MATTER	FURTHER INFORMATION RESPONSE/REQUEST	ISSUE RESOLVED	ACTION REQUIRED	COMMENTS
EPA	26/04/2023	Conditions/ Actions	Height Increase	"b. The EPA advises that: i. The applicant should more clearly define 'finished landfill cells' to ensure consistency with references elsewhere to 'closed and capped cells' and incorporate a reference to modules. This is essential to ensure that the requested increase to the 'maximum permitted height of the finished landfill cells' is well defined and unambiguous, prior to any approval. The EPA's expectation is that the height of finished modules (which includes interim cover and capping of modules, which contain multiple cells) must not exceed the three-dimensional space defined in Appendix J, and the maximum permissible height of 28 m AHD. ii. A condition of any approval is recommended to clearly define and require compliance with a maximum permitted height (see items 5 and 6 below). iii. Whilst the applicant has confirmed that operations occurring above 28 m AHD would be limited to construction, filling and capping of a module/cell, these operations must comply with the site's EPA licence. iv. Future proposals for new cells and modules must be consistent with relevant guidelines and standards, and be submitted to the satisfaction of the EPA. In its assessment, the EPA would consider whether the rationale for the proposed amendments has been fulfilled in a manner that is reasonable and practicable. v. The EPA would not support re-opening of already closed and capped cells/modules as this would pose additional environmental risks. vi. Any proposed changes to the existing operational cells would be subject to EPA assessment and approval."	No	EIS Addendum updated to clearly define 'finished landfill cells' to ensure consistency with references elsewhere to 'closed and capped cells' and incorporate a reference to modules	Future action will be required
EPA	26/04/2023	Accepted Components	areas shown as cells for processing pads	"3. Confirmation of use of areas shown as cells for processing pads a. The EPA accepts that: i. The applicant has clarified that 'processing pads are not proposed to be constructed on areas which have been previously filled as cells'. Processing pads are only proposed on cells other than those that are finished (i.e. prior to use as cells or during use). ii. Operations occurring above 28 m AHD would be limited to construction, filling and capping of a cell (i.e. would not include the construction or operation of processing pads)."	Yes	No	

AGENCY	DATE OF REQUEST	CATEGORY	MATTER	FURTHER INFORMATION RESPONSE/REQUEST	ISSUE RESOLVED	ACTION REQUIRED	COMMENTS
EPA	26/04/2023	Conditions/ Actions	areas shown as cells for processing pads	"b. The EPA advises that: i. The application should more clearly define 'finished landfill cells' to ensure consistency with references elsewhere to 'closed and capped cells' and incorporate a reference to modules (as suggested in 2(b)(i) above). This refined wording should also replace the current reference to 'areas which have been previously filled as cells' in the section relating to processing pads. ii. All references to processing pads being constructed on areas of the site shown as cells (e.g. sections 1.1 and 1.3) should clearly state that processing pads may not be constructed on finished landfill cells. iii. Future proposals for new processing pads must be consistent with relevant guidelines and standards, and be submitted to the satisfaction of the EPA. In its assessment, the EPA would ensure that environmental impacts (such as to air quality, noise, dust and odour) would be appropriately prevented and minimised."	No	EIS Addendum updated to clearly define 'finished landfill cells' to ensure consistency with references elsewhere to 'closed and capped cells' and incorporate a reference to modules. processing pads may not be constructed on finished landfill cells.	Future action will be required
EPA	26/04/2023	Accepted Components	Volumetric Calculations/24 Hour Operation	The EPA accepts the proposals for the removal of volume calculations, the potential development of a central processing pad and the requirement for leachate extraction pumps to remove leachate at a capacity of 40 litres per second (noting that this would require amendment/s to EPA licence 51568). The EPA also accepts the removal of the initial proposal for 24 hour operation of the site.	Yes	No	
EPA	26/04/2023	Conditions/ Actions	Adequacy of Design and Configuration	"The EPA notes the recommendations by the applicant for conditions that confirm: a. That the design and configuration of all future modules, containing multiple cells (and individual cells) are to be endorsed by the EPA on an ongoing basis. b. That the extent of the ultimate development is defined by the three-dimensional plan of the site showing the ultimate cell extent and not by any volumetric details contained within any of the application documents or previous approvals. c. That the sizing of leachate pumps is adequate to maintain leachate levels effectively and efficiently, as may be required by the EPA."	Yes	No	

AGENCY	DATE OF REQUEST	CATEGORY	MATTER	FURTHER INFORMATION RESPONSE/REQUEST	ISSUE RESOLVED	ACTION REQUIRED	COMMENTS
EPA	26/04/2023	Conditions/ Actions	Wording and Formatting	"The EPA recommends alternative wording for: a. Item 5(a) above, such as 'the design and configuration of all future modules, containing multiple cells (and individual cells) must be submitted to the EPA for assessment, subsequent to an approval of the EIS Addendum'. b. Item 5(b) above, to include that 'the height of finished modules (which includes interim cover and capped modules, which contain multiple cells) must not exceed the three-dimensional space defined in Appendix J, and the maximum permissible height of 28 m AHD.'"	No	Suggested that the wording of the condition be amended to read 'The final height of finished modules (which includes interim cover and capped modules, which contain multiple cells) must not exceed the three-dimensional space defined in Appendix J, and the maximum permissible height of 28 m AHD.'	
Adelaide Plains Council	4/05/2023	Conditions/ Actions	Landscaping	The Adelaide Plains Council Panel wish to reinforce the importance of landscaping to provide screening.	No	EIS Addendum updated to confirm that where further landscaping is indicated to be established to screen areas of the site, including cells and modules, to be developed in future, a landscaping plan will be prepared prior to works commencing.	Future action will be required

Suggested Conditions

The EPA has suggested amendments to several proposed conditions which could be placed on any approval. The wording suggested by the EPA would have to the proposed conditions read as follows:

> *(a) The design and configuration of all future modules, containing multiple cells (and individual cells) must be submitted to the EPA for assessment, subsequent to an approval of the EIS Addendum'.*
>
> *(b) The height of finished modules (which includes interim cover and capped modules, which contain multiple cells) must not exceed the three-dimensional space defined in Appendix J, and the maximum permissible height of 28 m AHD.*

We would respectfully suggest some minor amendments to this suggested wording.

In respect of the first proposed condition, we note that the condition would only apply in the event of an approval, such that the wording following the comma is unnecessary and can be removed.

Our suggested wording is as follows:

(a) The design and configuration of all future modules, containing multiple cells (and individual cells) must be submitted to the EPA for assessment and approval.

In respect of the second proposed condition, we propose to insert to word 'final' to clarify, as set out in the EIS Addendum, that the maximum height is following the closure and capping, the cessation of all operations and includes an allowance for the settling of the cell that will occur post closure and capping. This means that initially once closed and capped, the cell may exceed the maximum height, however this is only an interim situation, as once the settling has occurred, it will be below the height limit.

Our suggested wording is as follows:

(b) The height of finished modules (which includes interim cover and capped modules, which contain multiple cells) must not exceed the three-dimensional space defined in Appendix J, and the maximum permissible height of 28 m AHD.

Closure

The proposed variation to the existing approval of the IWS Northern Facility, now known as the IWS Dublin Eco-Hub, will provide significant operational flexibility to allow operations to continue to proceed in a manner that embraces innovation and technological improvements.

The proposal is considered to represent orderly of efficient development on the basis that it will:

- Support the improved operations of an essential infrastructure facility which provides services to a significant portion of the Adelaide metropolitan area;
- Provide for greater flexibility in operations by allowing for more efficient design of future cells and modules;

- Reduce greenhouse gas emissions by allowing for improved cut-to-fill balance in the construction and operation of cells (which represents a major component of the greenhouse gas emissions from the facility);

- Reduce the administrative overhead of the facility to both the operator and the South Australian Government, by allowing the EPA to assume responsibility for operational approvals of future cells and modules, avoiding a need for variations to the Development Approval where there are no planning implications; and

- Providing for a range of consequential improvements to the facility including the ongoing establishment and operation of resource pads, removing unnecessary volumetric calculations and removing unnecessary requirements for leachate pumps.

The proposed variations represent an appropriate update of the existing approval for the IWS Northern Facility and will support its continued operations over the coming decades. We consider the proposal demonstrates significant merit and warrants approval being granted.

Appearance at State Planning Commission

Should the Commission desire, our client has indicated that they would welcome the opportunity to attend a meeting of the Commission when the matter is considered to provide information and answer questions on the proposal. Our client would seek to be represented by two staff members of IWS, a representative of DBD Environmental and a representative of MasterPlan.

Should the Commission wish us to appear, please advise the timing and location of the relevant meeting.

Yours sincerely

Michael Richardson
MasterPlan SA Pty Ltd

enc: Updated EIS Addendum.
cc: IWS, Att: Mr Colin Mayberry (by email).

ADDENDUM TO EIS

IWS NORTHERN FACILITY

(as amended post-exhibition)

Lemmey Road, Lower Light
For Integrated Waste Services

Prepared by
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March 2023

CONTENTS

APPENDICES

1.0 BACKGROUND

IWS have developed and operated the facility since its approval in 1998. The approval was subject to the 'Major Project' provisions in Section 49 of the then *Development Act, 1993* with an Environmental Impact Statement ('EIS') being the level of assessment.

Since 1998, the facility has been the subject of a variety of variations, which have increased the range of waste streams accepted, altered the configuration of the facility and provided for the construction of buildings and other infrastructure.

In the last three years, IWS has made a number of small variations to the approval which have changed the configuration of cells, expanded the bioremediation pad and enabled the construction of a large shed to internalise the processing of material from the bioremediation pad. None of these approvals have been deemed as requiring a variation to the EIS.

Due to recent changes of ownership structure, the operator and holder of the Licence for the facility is now Pelican Asset Co Pty Ltd. Notwithstanding this change in ownership structure, the company still trades as and is commonly known as Integrated Waste Services, IWS or IWS Group. For clarity, in this document, the operator of the facility is referred to as IWS.

1.1 Outline of Proposed Variation

It is therefore proposed to vary the proposal in seven ways:

1. To define the facility in a manner that provides for flexibility in future internal configuration. Future cells would still be subject to approval by the EPA as they are now.
2. It is proposed to increase the permissible maximum height of the landfill by 5.0 metres.
3. It is proposed as a consequential amendment to remove obsolete volumetric calculations.
4. It is proposed to clarify a location for a processing pad more centrally on the site.
5. It is proposed, for the avoidance of doubt, that processing pads may be constructed on the areas of the site shown as cells.
6. It is proposed, for the avoidance of doubt, to remove the prescriptive requirements for the capacity of leachate extraction pumps.

1.2 Rationale for Proposed Variation

Whilst IWS is grateful for the approval of the recent variations to the existing approval, they have shown that the process for the approval of variations to existing major projects, where the declaration remains in place, is not well suited to amendments at the more minor end of the scale. The changes to the *Planning, Development and Infrastructure (General) Regulations, 2017* which have recently been Gazetted, should go some way to resolving this.

Further, it has been noted that there is significant crossover between the approval function exercised by the Environment Protection Authority ('EPA') under the Licence issued pursuant to the *Environment Protection Act (1993)* and the Development Approvals sought in some the recent variations.

The Development Approval provides for landfill cells to be opened, filled, closed and capped in a progressive manner. However, the approval is for a very large facility that will operate over the course of many decades. Whilst the facility has been operating for more than two decades already, only a small proportion (in the order of 10-15 percent of the cell airspace approved has so far been constructed and operated. As the operation of the facility proceeds, the location and design of each cell is subject to detailed technical assessment and approval by the EPA under the Licence.

Variations to the Development Approval are clearly appropriate where the change proposed would result in planning implications, such as a material change in the externalities of the development, or where significant built form is proposed.

In cases where the change to the proposal would not result in a material change in impacts beyond the boundaries of the subject site, there would appear to be little benefit in proceeding through a variation process under the *Planning, Development and Infrastructure Act, 2016*, then followed by a further exhaustive assessment process by the EPA pursuant to the Licence. The key circumstance identified to which this applies is to changes, even minor ones, to the configuration of the site and the location of landfill cells.

Plans which formed part of the original approval in the 1990s have 'flowed through' to the current time, and modifications, even minor changes, to these plans, some of which date from 1997, require a variation to the development approval. The recent cell reconfiguration variation application is an example of this. This does not represent an efficient process and has the potential to result over time in a significant number of variation applications for changes which have little to no impact beyond the boundaries of the subject site.

1.3 Consequences of Not Proceeding with Proposed Variation

The proposed variation seeks to confirm a number of matters to avoid a level of doubt and improve the efficiency of the operations on the subject site. Without formalisation of the matters proposed to be varied, a significant level of inefficiency will remain and potentially increase further over time. Additionally, in respect of several of the issues proposed to be varied, a level of doubt will remain, in particular, on the following:

- Confirming that processing pads can be constructed on the areas of the site shown as cells.
- Removal of the prescriptive requirements (now seen as excessive and obsolete) for the capacity of leachate pumps.

The proposed variation also seeks an increase in air space in which the cells can be constructed in future which allows approval of the maximum theoretical area for cells allows for a single planning assessment to consider the ultimate outcome in terms of extent and height. Whilst in theory this would result in an increase to the total overall air space available on the site, in actual operation the air space of both individual cells and cell modules is constrained by design limitations such as the minimum and maximum slopes for side batters and the tops of the finished cells. These design limitations impose practical limitations which will mean that the size of individual cells and modules should not materially change from those previously developed and operated on the site. The overall configuration of the site will remain as a series of cells, which when closed and capped appear externally as a series of rolling mounds over the site.

Given the process of establishing and closing these cells will continue to be assessed and approved under the EPA licencing arrangement without this overall assessment and approval of the proposed variation there is a duplication of effort, which will continue over the life of the project. Without proceeding with this variation this duplication of process would remain and significant additional resources both of the operator and government agencies will continue to occur as cells are opened, operated and closed and capped in future.

A reduction in the efficiency of the facility is predicted should the variation not proceed. It is proposed to allow for the construction of an additional processing pad centrally to ensure that when the westerly cells are activated (as opposed to the eastern cells currently in operation) such that access to those cells is as efficient as possible. This variation would formalise this efficiency. Additionally, the variation will also confirm that processing pads can be constructed in the locations of the site designated and landfill cells to allow for operational processing to move around the site during the extended timeframe for which it will operate. Without the capacity to locate processing pads in appropriate locations throughout the operational life of the site, additional impacts, resources, cost and time would result in transporting material from one side of the site to the other. In the alternative, additional resources from both the operator and government agencies will continue to be required to assess multiple future variations to seek processing pads as they are required in different locations throughout the life of the site.

The proposal should result in efficient outcomes through:

- Safety resulting in better site access and improved site distances;
- More efficient utilisation of the available site area; and
- Operational efficiency resulting in the reduced fuel and energy consumption by the operations, resulting in a reduced carbon footprint for the operation.

We would note that the variation now proposed will not completely obviate the need for variations in future. Significant variations, including significant built form and those which would result in material changes in site impacts, would still require variations to the Development Approval. The proposal seeks to ensure that foreseeable variations with no material planning impact are avoided.

1.4 Statutory Framework

To date, a proposed variation has been lodged with Planning and Land Use Services ('PLUS'), who have undertaken an adequacy check, including engagement with the EPA and Department for Infrastructure and Transport ('DIT').

As a result of the adequacy check process and feedback received from agencies, amendments have been made to the proposal, specifically:

- Removal of the proposed changes to operating hours to allow for 24 hour operation of the facility.

Amendments have been made to this report to address the comments made by agencies during the adequacy check process.

Pursuant to engagement with relevant agencies, this repot is now submitted to allow PLUS to formally proceed with the proposed variation.

Following this, consideration will be given to the level of assessment required, the nature of any technical information, and the timing on any notification.

As we understand the process from this point, PLUS will now formally consult with the EPA, the Department of Infrastructure and Transport ('DIT') and Adelaide Plains Council.

Concurrently, a fifteen-business day public notification process will be undertaken, with the responses from SA Government agencies and public notification returned to the applicant for a response. A further adequacy check would then be undertaken upon return of the response document to PLUS.

An amendment to the assessment report would then be prepared for the State Planning Commission, and ultimately, a decision by the Minister for Planning.

2.0 EXISTING APPROVAL HIERARCHY

The following provides a history of the notices within the SA Government Gazette.

- Originally approved on 29 January 1998. Development authorisation was granted for the development of the waste management facility in the form of a solid waste landfill in the District Council of Mallala as described in an application dated 2 December 1997. This decision was based on the assessment report of 28 November 1997.
- On 8 September 2005, the facility received approval for a variation to receive low-level contaminated soil on the site.
- On 27 August 2009 a variation to the development authorisation was approved proposing the establishment of a Multiple Waste Treatment Facility for the treatment and disposal of high-level contaminated waste at the existing landfill.
- On 2 September 2010 approval was granted for a number of the matters reserved for further assessment and for a variation of the development authorisation relating to the Multiple Waste Treatment Facility ('the MWTF'). The proposed further changes to the MWTF primarily relate to construction being undertaken in one stage (rather than two) and consequent minor modifications to the design of the facility.
- On 24 January 2013 approval was granted for a variation of the development authorisation 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.
- 14 May 2020 a variation to the authorisation was approved to permit a modification to the design of the landfill Module 3.
- 3 December 2020 a variation was approved to the authorisation to permit the establishment of a Bioremediation Pad (identified as Cell B—eastern extension).
- On 3 December 2021, a variation for the construction of a sorting and processing shed, with associated site and civil works was approved by the for Planning and Local Government.

Table 1: Existing Site Approvals

GAZETTE DATE	REASON FOR GAZETTE	SCHEDULE 1 – PART B OF EP ACT 1993 – LISTED WASTE RECEIVABLE?	DETAIL
29 January 1998	Grant Development Authorisation	NO	Condition 6 – outlines no listed waste will be permitted to be disposed of without further development authorisation (except treated) asbestos.
8 September 2005	Approval to receive low level contaminated soil	NO	Condition 10 – outlines no listed waste will be permitted to be disposed of without further development authorisation (except treated) asbestos.

GAZETTE DATE	REASON FOR GAZETTE	SCHEDULE 1 – PART B OF EP ACT 1993 – LISTED WASTE RECEIVABLE?	DETAIL
27 August 2009	Approval of a Multiple Waste Treatment Facility for the treatment and disposal of high-level contaminated waste (Listed Waste).	YES	All conditions from the 8 September 2005 approval notice were revoked, including condition 10. No such condition was re-inserted in the new conditions as the application was an approval to accept high-level waste. Condition 12 – outlines the unloading and storage of high-level contaminated waste shall be undertaken in accordance with an Environment Protection Authority approved Environmental Management Plan for Stage 1.
2 September 2010	Approval of Reserve Matters and variation of the authorisation relation to the MWTF. Primarily variation related to 1 stage of construction and minor modifications of design.	YES	An Environmental Management Plan (EMP) covering the operation requirements for the MTWF shall be prepared in consultation with the Environment Protection Authority.
24 January 2013	Approval for a variation the implementation of a '10 Year Masterplan' and the establishment of a Resource Pad, Bioremediation Pad and a Litter Net System.	YES	N/A
14 May 2020	Variation of the design of the landfill Module 3.	YES	N/A
3 December 2020	Vary the Solid Waste Landfill (Northern Balefill) near Dublin development authorisation dated 14 May 2020.	YES	N/A
3 December 2021	Variation for the construction of a sorting and processing shed, with associated site and civil works	YES	N/A

The associated Gazette Notices and Decision Notification Forms are contained in **Appendix A**.

3.0 REVIEW OF EXISTING EIS AND ADDENDUM TO EIS

A review of the suitability of existing EIS and Addendum is required to justify that a full update is not required, and this addendum is sufficient.

MasterPlan has undertaken a review of the EIS and its subsequent amendments to provide whether a formal update to the EIS is required prior to the proposal being assessed or approved. The following provides an assessment on the currently proposed variations consistency with existing operations on the land, and to determine whether an update is necessary to reflect more recent changes to the operation.

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 following documents are considered of primary relevance to the review:

- Environmental Impact Statement, Solid Waste Balefill (February 1997);
- IWS Northern Balefill – Planning Report prepared by MasterPlan & Golder Associates (June 2008); and
- IWS Northern Balefill, Dublin – Multiple Waste Treatment Facility, EIS Amendment (November 2008).

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 disposal and treatment practices in a commercially sound manner. It is noted in this regard, that the EPA Guidelines (2005) refer to soil bioremediation as "*an environmentally sound and cost-effective method of treating soils containing organic chemicals*".

The EIS document outlines a 100-year lifespan for the facility. Over the lifespan, it is intended that the site will progressively be rehabilitated as various cells and modules are completed and upon the closure of the facility will be returned to its original site condition. The proposed bioremediation practices conducted on the land assist to achieve this allowing for the recovery of a suitable organic material capable of being used for site rehabilitation.

The original EIS also confirmed the boundaries for the facility within which the operation would progressively expand. It is noted that the boundaries of the licensed facility remain unaltered, and all activities associated with the site, including the proposed additional bioremediation pad, are able to be accommodated within this defined site area.

In 2008, an application was lodged to amend the Development Authorisation to allow for the treatment of contaminated materials at the site.

The application was separated into two (2) stages, as follows:

- 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 facility outlined for stage 2 proposed the establishment of a pad for the bioremediation of the contaminated material as one of the potential treatment practices. As part of this variation process, an EIS Amendment was undertaken, prepared as an addendum to support the Development Application and update the 1997 EIS to incorporate the proposed contaminated soil treatment and disposal.

The proposed operations were considered to be consistent with the activities documented in the original 1997 EIS and subsequent amendments. The remediation process outlined was to utilise a range of remediation technologies (not just bioremediation) dependant on the waste type (e.g. soil, sediment, fly ash, sludges).

It is noted in the EIS Amendment that:

> *'the potential environmental impacts associated with the operation … are consistent with those assessed and detailed in the previous site Environmental Impact Statement (EIS) … environmental site conditions will be similar to those assessed in the EIS.'*

From our review of the EIS (1997) and subsequent EIS Amendment (2008), we have formed the opinion that an update of the EIS via a variation is not necessary as the EIS already adequately covers the development and operation of a broad range of receival, treatment and disposal activities on the land. The proposed amendments at this time do not seek to change the essential nature of the use of the site which has been previously granted Development Approval or the scale of the operation.

This addendum includes a number of components which seek to further clarify the development and create a more efficient operation which would increase productivity and reduce the need for ongoing interaction with the planning system for minor operational changes. It is in this context that the proposal is only an addendum and not a formal update of the EIS. Moreover, the proposed addendum does not introduce new uses nor change the land use or the effects in a manner that would be considered significant.

4.0 SUBJECT SITE

The subject site is located on the western side of the Port Wakefield Highway, approximately 3.0 kilometres south of Dublin and 50 kilometres north of the Adelaide CBD.

4.1 Site Identification

The site is identified on the Site Plan shown in **Figure 4.1** and contained in **Appendix B**.

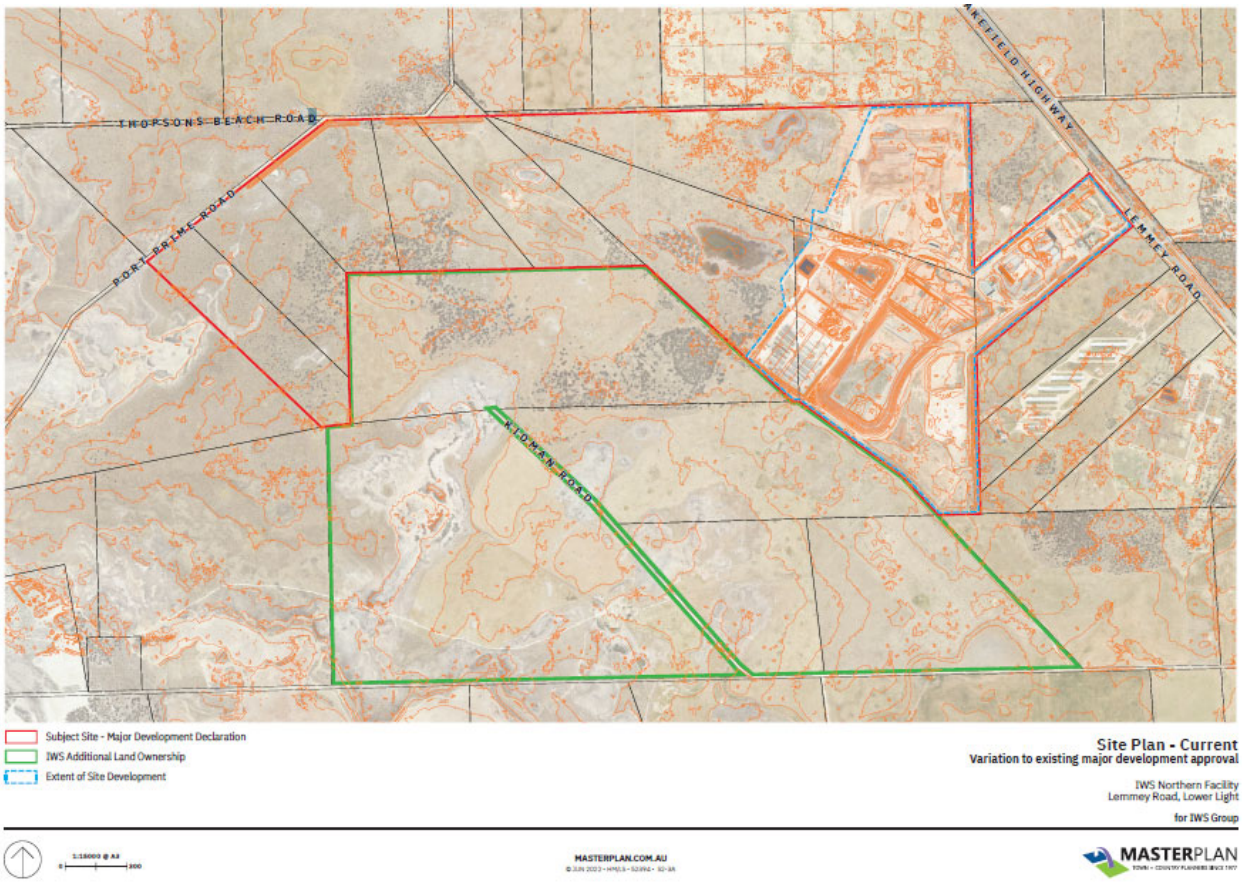

Figure 4.1: Site Plan – Current.

The site being the subject of the approval is outlined in red on **Figure 4.1**.

The site remains the same as that which was the subject of the original proposal and approvals and the major project declaration, being comprised of nine allotments.

The site has a total area of approximately 5.75 square kilometres, and a perimeter of 12.45 kilometres. The site measures approximately 4.5 kilometres from its eastern to western extents. The distance from north to south varies markedly across the site, ranging from 335 metres adjacent the Port Wakefield Highway to a maximum of approximately 2.0 kilometres where the previous and current cells are located.

The subject site Is more formally described as being comprised of the following allotments (contained in the following Certificates of Title):

- Allotment 76 in Deposited Plan 26412, Hundred of Dublin (CT Volume 5312 Folio 333);
- Section 311 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5348 Folio 396);
- Section 310 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5348 Folio 390);
- Section 312 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5348 Folio 343);
- Allotment 95 in Filed Plan 173119, Hundred of Dublin (CT Volume 5348 Folio 391);
- Allotment 94 in Filed Plan 173118, Hundred of Dublin (CT Volume 5348 Folio 395);
- Allotment 96 in Filed Plan 173120, Hundred of Dublin (CT Volume 5348 Folio 394);
- Allotment 93 in Filed Plan 173117, Hundred of Dublin (CT Volume 5348 Folio 392); and
- Allotment 92 in Filed Plan 173117, Hundred of Dublin (CT Volume 5348 Folio 393).

Copies of Certificate of Title Register Searches for each of these allotments comprising the subject site are contained in **Appendix C**.

Since the original approval was granted and the operation of the site commenced, IWS have purchased additional land to the north-east and to the south of the land being the subject of the original approval. IWS has, at this time, not sought any approvals (other than demolition of an existing dwelling on the north-eastern allotment) over this additional land, or sought to extend the major project declaration onto this additional land. This additional land, therefore, now represents a further owned buffer between the operations and surrounding locality, and land banked for potential expansion in future, subject to any and all approval requirements at the time such an expansion may be proposed.

For the avoidance of doubt, it is confirmed that the proposed variation now submitted does not seek approval for any activity on the additional land purchased by IWS.

The additional land purchased by IWS, is outlined in green on **Figure 4.1**.

Whilst not the subject of this proposed variation, for reference, the additional land acquired by IWS is more formally described as the following allotments (contained in the following Certificates of Title):

- Allotment 78 in Deposited Plan 26468, Hundred of Dublin (CT Volume 5237 Folio 462);
- Section 306 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5367 Folio 41);
- Section 446 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5367 Folio 39);
- Section 307 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5332 Folio 188);

- Section 42 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5367 Folio 33); and
- Section 43 in Hundred Plan 140400, Hundred of Dublin (CT Volume 5367 Folio 40).

Copies of Certificate of Title Register Searches for each of these allotments, comprising the additional land purchased by IWS, but not forming part of the subject site, are contained in **Appendix D**.

It is noted that Kidman Road extends from Crabb Road in a north-west direction within the area of additional land purchased by IWS.

A Site Plan – Allotment Identification, which identifies both the allotments comprising the subject site and the additional land purchased by IWS is shown in **Figure 4.2** and contained in **Appendix E**.

For the purposes of this document references to the 'subject land' or 'subject site' refer to the land which is the subject of the existing approvals and major project declaration, and not to the additional land which has been purchased by IWS.

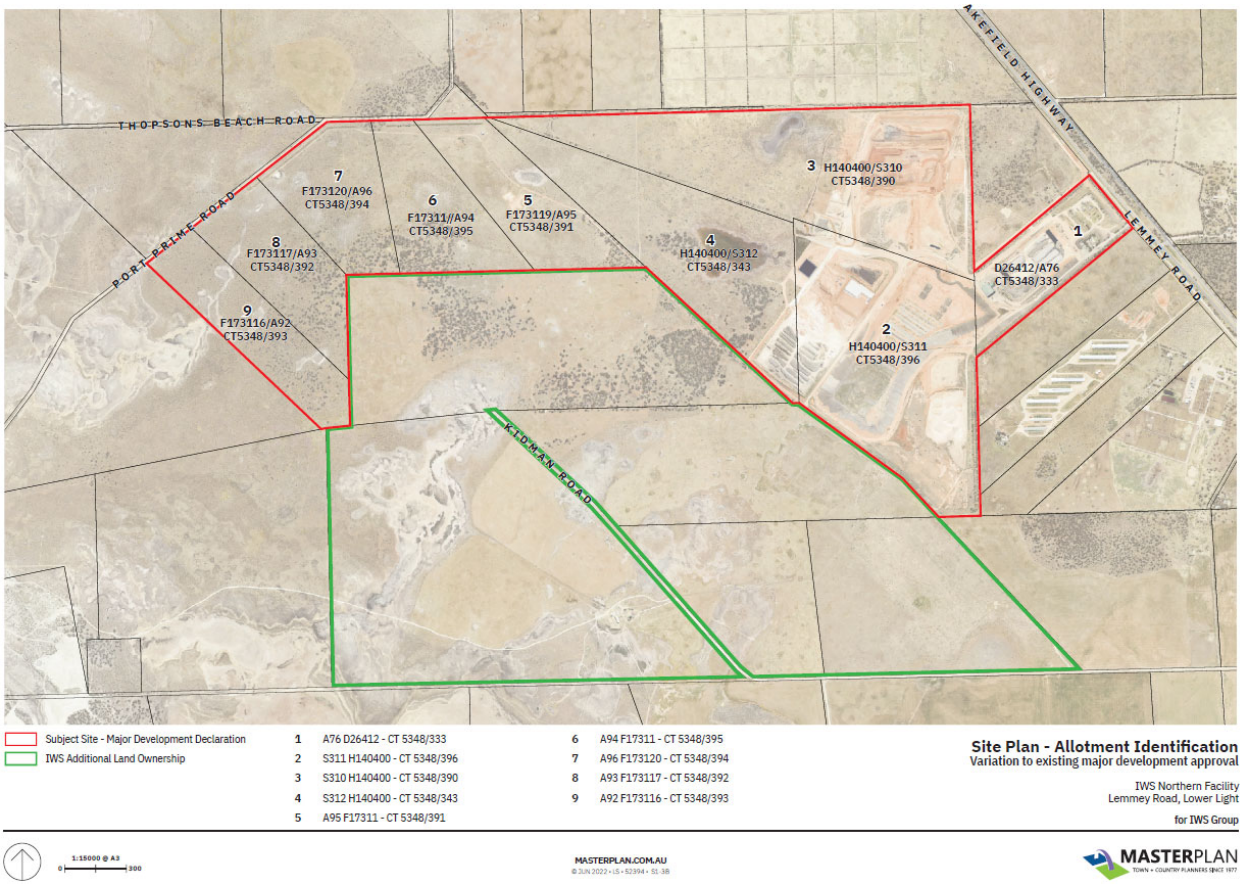

Figure 4.2: Site Plan – Allotment Identification.

For the purposes of this document, references to the 'subject land' or 'subject site' refer to the land which is the subject of the existing approvals and major project declaration, and not to the additional land which has been purchased by IWS.

4.2 Site Description

The subject land is irregularly shaped with a frontage to Lemmey Road, which performs a service road function to the western side of the Port Wakefield Highway in the vicinity of the subject land. The frontage of the site to Lemmey Road is approximately 335 metres.

Although the subject land also has frontage to Thompsons Beach Road and Port Prime Road, no operational access or egress exists to these roads, with all access and egress occurring via the main entrance to Lemmey Road.

The site slopes gently from east to west, and over its entire distance of the approximately 4.5 kilometres, there is a fall of approximately 10 metres or 0.22 per cent. Prior to development, the land was generally open, rocky, extensive grazing land which was largely denuded of native vegetation and had significant infestation of pest plants and animals. There are areas, predominantly in the western end of the site, where vegetation is in better condition and exhibits a more natural form.

The eastern end of the subject site has now been developed and functions as a very large facility for the reception, treatment, storage and disposal of waste. Adjacent the site entrance on Lemmey Road, is a weighbridge and gatehouse facility. Further west is the bioremediation facility including a large pad on which the waste undergoing remediation through pasteurisation is stockpiled. A large shed for the secondary sorting of remediated waste is shortly to be constructed adjacent the pad.

Further to the west is a large shed which forms the Multi-waste Treatment Facility ('MWTF').

To the west of the MWTF are located the landfill cells. The cells are being established, filled, closed and capped in a progressive manner throughout the life of the project. The cells represent large areas, which are excavated and then filled in a progressive fashion, meaning that activity, operations and material in the cells can range from being located well below ground to well above ground level.

4.3 Local Government

The subject site is located entirely within the area of the Adelaide Plains Council.

4.4 Zoning and Land Use Policy

As the planning policy which covers the whole of South Australia, the Planning and Design Code covers the subject site.

The following policy is applicable to the subject site:

- Rural Zone;
- Environment and Food Production Area Overlay;
- Hazards (Acid Sulphate Soils) Overlay;
- Hazards (Bushfire – General) Overlay;

- Hazards (Bushfire – Medium Risk) Overlay;
- Hazards (Flooding – Evidence Required) Overlay;
- Interface Management Overlay;
- Major Urban Transport Routes Overlay;
- Native Vegetation Overlay;
- State Significant Major Vegetation Overlay;
- Traffic Generation Development Overlay;
- Water Resources Overlay; and
- TNV – Minimum Site Area – 40ha.

Whilst the Planning and Design Code covers the subject site, the key policy for the assessment of the proposed variation is the Assessment Guidelines.

Notwithstanding, the proposed variation has been considered in the context of the Planning and Design Code in **Section 10** of this report.

4.5 Site History and Other Uses

The site is located in an area historically associated with, and characterised by, extensive agricultural and farming activities.

Prior to approval for and establishment of the operations on the site for the receival, treatment, storage and disposal of waste, the site had been subjected to heavy grazing and limited cropping over an extended period. These activities had impacted upon the soils of the subject site, which were generally of poor quality, allowing a variety of pest plants and animals to become established on the site.

A number of the allotments comprising the subject site were the subject of mineral extraction by the then Department of Transport between 1990 and 1994 to provide limestone and other mineral resources for the duplication of the Port Wakefield Highway. This typically involved the removal of between 0.5 and 1.0 metre of rock for use in road construction.

The site, prior to development for the current facility, also indicated use for recreational activities such as motocross and off-road vehicle use, evidenced by a wide network of tracks.

Since the establishment of the current operations on the site, the eastern portion of the site has been substantially transformed by the use. The western portion of the site has remained generally similar to its previous form, however, the exclusion of activities such as the use of off-road vehicles and better management of pest plants and animals sees the western portion of the site, including those areas which are vegetated, in generally better condition than when the operation was originally proposed.

5.0 LOCALITY

The locality extends in all directions from the subject site. Given the scale of the subject site and facility, the nature of the operations, and having regard to the topographic, landform and vegetation conditions in the vicinity of the subject site, it is reasonable to infer the locality as extending between 2.0 and 3.0 kilometres from the boundaries of the subject site.

The locality is detailed on the Locality Plan in **Figure 5.1** and contained in **Appendix F**.

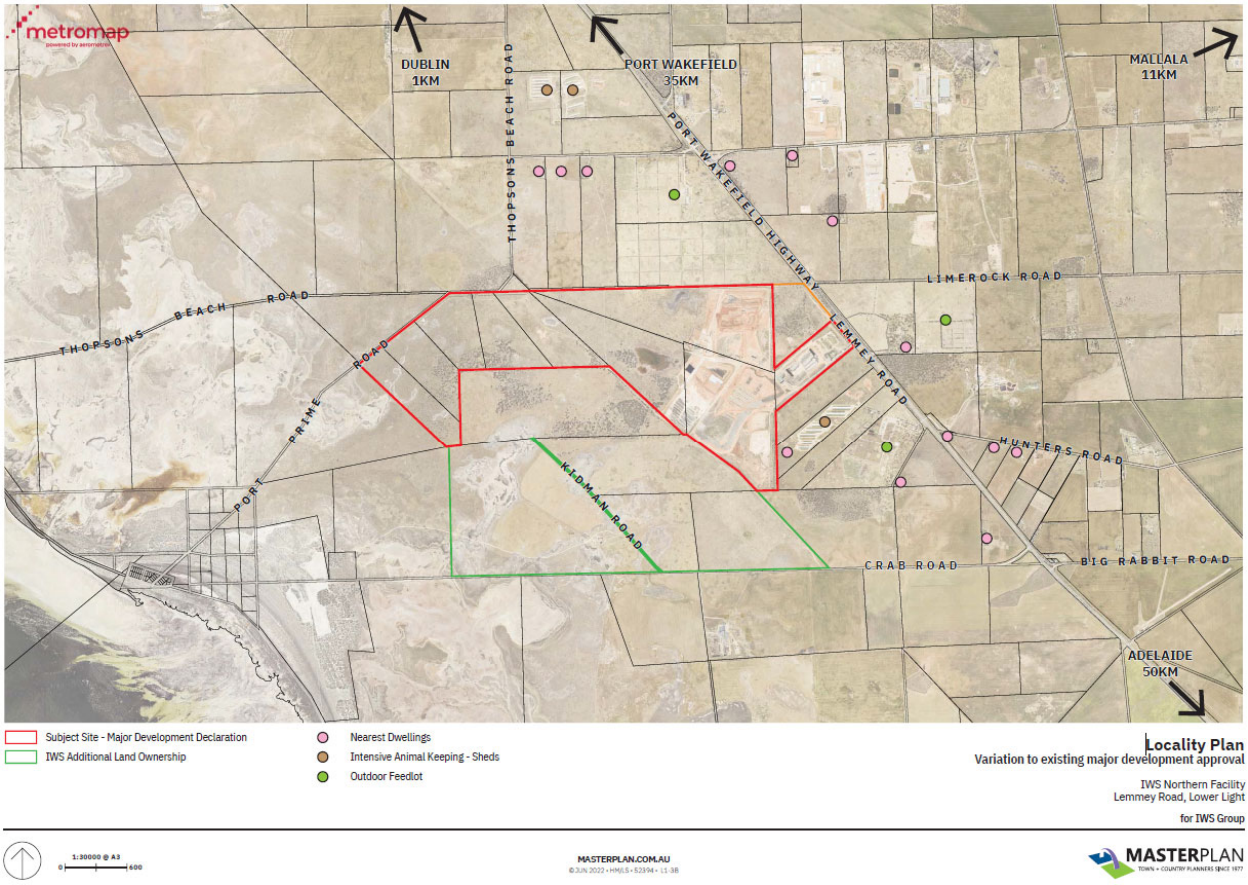

Figure 5.1: Locality Plan.

The locality is defined by the Port Wakefield Highway which is a divided highway featuring two (2) traffic lanes in each direction. The Port Wakefield Highway in this location forms part of the National Highway network and is the primary road connection between Adelaide and the northern and western parts of the State, and between South Australia and Western Australia and the Northern Territory.

Other local roads traverse the locality, with the majority running in a generally east-west orientation and intersecting with the Port Wakefield Highway.

In general terms, the topography of the locality is typical of the Northern Adelaide Plains, being generally very flat with low surface grades sloping towards the west.

The locality is generally open, with various stands of vegetation. Originally, much of the area was vegetated with mallee scrub, however, the majority of this was cleared when the land was historically converted for primary production uses. It is notable that since the use of the subject site was originally proposed and assessed in the 1990s, the extent and quality of native vegetation in the locally has improved. In particular, vegetation planted in a linear fashion along the Port Wakefield Highway contemporaneously with its duplication has matured considerably, and now forms a notable character element of the locality.

As was the case when the original proposal was assessed, the locality contains a mix of agricultural land uses, but with a predominance of intensive animal husbandry activities. This includes feedlots to the north, feedlots to the east (on the eastern side of the Port Wakefield Highway), feedlots to the south-east and poultry sheds abutting the subject site to the south-east.

Of the remainder of the land in the locality, the majority of the land is utilised for broadacre primary production, predominantly in the form of grazing but also with some cereal cropping.

The locality, including Zoning and relevant Overlays is detailed on the Locality Plan–- Policy in **Figure 5.2** and contained in **Appendix G**.

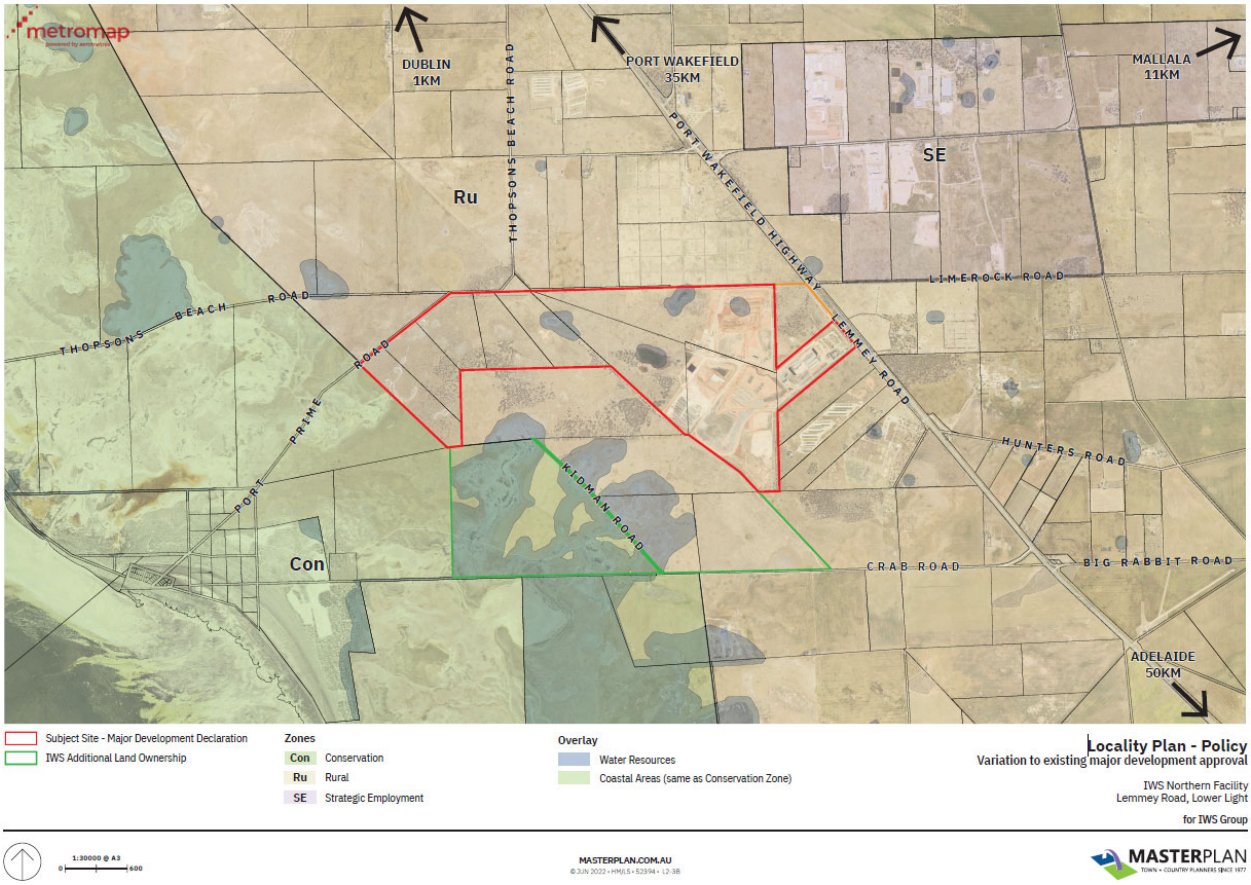

Figure 5.2: Locality Plan – Policy.

The majority of the locality is located in the Rural Zone.

On the eastern side of the Port Wakefield Highway, to the north-east of the subject site, there is an area within the Strategic Employment Zone, where a number of uses have established, including other waste and recycling operations, agricultural value adding, industrial and commercial uses allied with primary production activities.

Soils in the region are typically well drained, highly calcareous and generally low in nitrogen and phosphorus content. Red-brown earths are widespread over the eastern part of the region and generally exhibit poorly structured surface layers which tend to harden significantly on drying, reducing water entry and movement.

To the west of the subject site, closer to the coast, the lower relief increasingly influences the character of the locality as samphire basins and lower shrubby coastal vegetation becomes more prevalent. The coastal areas comprise supratidal flats and coastal dunes, with areas as described above being subject to tidal inundation.

On the coast adjacent to the west of the subject site is the settlement of Port Prime, which is largely a paper town, and is prevented by policy from accommodating material future development. The area does appear to gain significant use for recreational uses including camping and access to the beach. Also located in the vicinity of Port Prime, mineral resources activities in the form of quarrying for sand and shell grit have taken place historically and appear to be continuing at the present time, albeit at a reduced scale.

Dwellings in the locality are sparsely scattered, and on the western side of Port Wakefield Highway are typically on large allotments associated with active primary production uses. On the eastern side of Port Wakefield Highway there are several examples where dwellings have been excised from primary production uses onto smaller allotments. To the south-east of the locality, between Hunters Road and Big Rabbit Road, there is an area which has been historically divided into smaller allotments, more akin to large rural living allotments, on which there is a total of approximately fifteen dwellings. It is noted that this area is separated from the closest extent of the subject site by a feedlot and poultry sheds.

The closest dwelling to the subject site is located to the south-east, at a distance of 110 metres from the subject site boundary. This dwelling is located on land developed with poultry sheds and is located in the immediate vicinity of those sheds. The next nearest dwelling is located to the east of the subject site, on the opposite side of Port Wakefield Highway, approximately 450 metres from the nearest point of the boundary of the subject site.

The town of Dublin is located approximately 3.0 kilometres to the north of the subject site. Dublin has a population of approximately 250 people and contains a grid arrangement of residential allotments, surrounded by parkland and then a belt of rural residential development.

The subject site, and its existing operations, are a significant and notable character element in the locality. The subject site has visibility from the Port Wakefield Highway, most particularly from the north, but to a lesser extent to the south. The site also has visibility from public roads to the north, south and west of the subject site, however, the majority of these views are quite distant, particularly in respect of the current areas of operations.

From the Port Wakefield Highway, the existing roadside vegetation, together with vegetation on the subject site and other adjacent allotments plays a noticeable role in reducing, but not removing the views of the site and its operations. While the site is clearly visible from both Port Wakefield Highway and other positions in the locality, the operations are not visually oppressive, nor do they dominate vistas or views throughout the locality.

Whilst the site is a significant and notable character element in the locality, other activities are also visible, and in many cases prominent, including the poultry sheds and feedlots to the north and south-east of the subject site, and the various activities in the Strategic Employment Zone to the north-east of Port Wakefield Highway.

The level of amenity in the locality would be best characterised as low to moderate. From a visual perspective, the locality is influenced by a four-lane national highway, the subject site, large scale buildings for intensive animal keeping, outdoor feedlots and other industrial buildings, structures and activities. In this way the appearance is typical and expected of a rural area providing for intensive animal husbandry, waste management and allied industrial activities, together with scattered residential dwellings.

The visual appearance is aided by the vegetation, which has improved considerably in condition, scale, maturity and extent since the development of the subject site was originally approved and operations commenced.

The locality will potentially be subject to some environmental and amenity impacts, including noise, dust and odour. It is noteworthy, however, that whilst the nature of operations on the site has the potential to contribute to these adverse environmental and amenity impacts which affect amenity, other uses, particularly the intensive animal keeping, also have significant adverse amenity potential, particularly in respect of odour. Impacts which lower the level of amenity in the locality come from a range of sources other than the subject site. The complaint history of the subject site is low, with any complaints typically being infrequent, transient and appropriately managed by the operator.

6.0 EXISTING OPERATIONS

The subject site currently operates as a facility for the receipt, treatment, storage and disposal of waste by landfill.

The subject site operates pursuant to the existing approvals granted pursuant to Section 46 and Section 48 of the *Development Act, 1993*, the most recent variation granted pursuant to Section 126 of the *Planning, Development and Infrastructure Act, 2016*.

In addition to the Development Approval and subsequent approved variations, the site operates pursuant to an authorisation (commonly referred to as a 'Licence') under the *Environment Protection Act, 1993*.

The current Site Master Plan, prepared by IWS, is shown in **Figure 6.1** and contained in **Appendix H**.

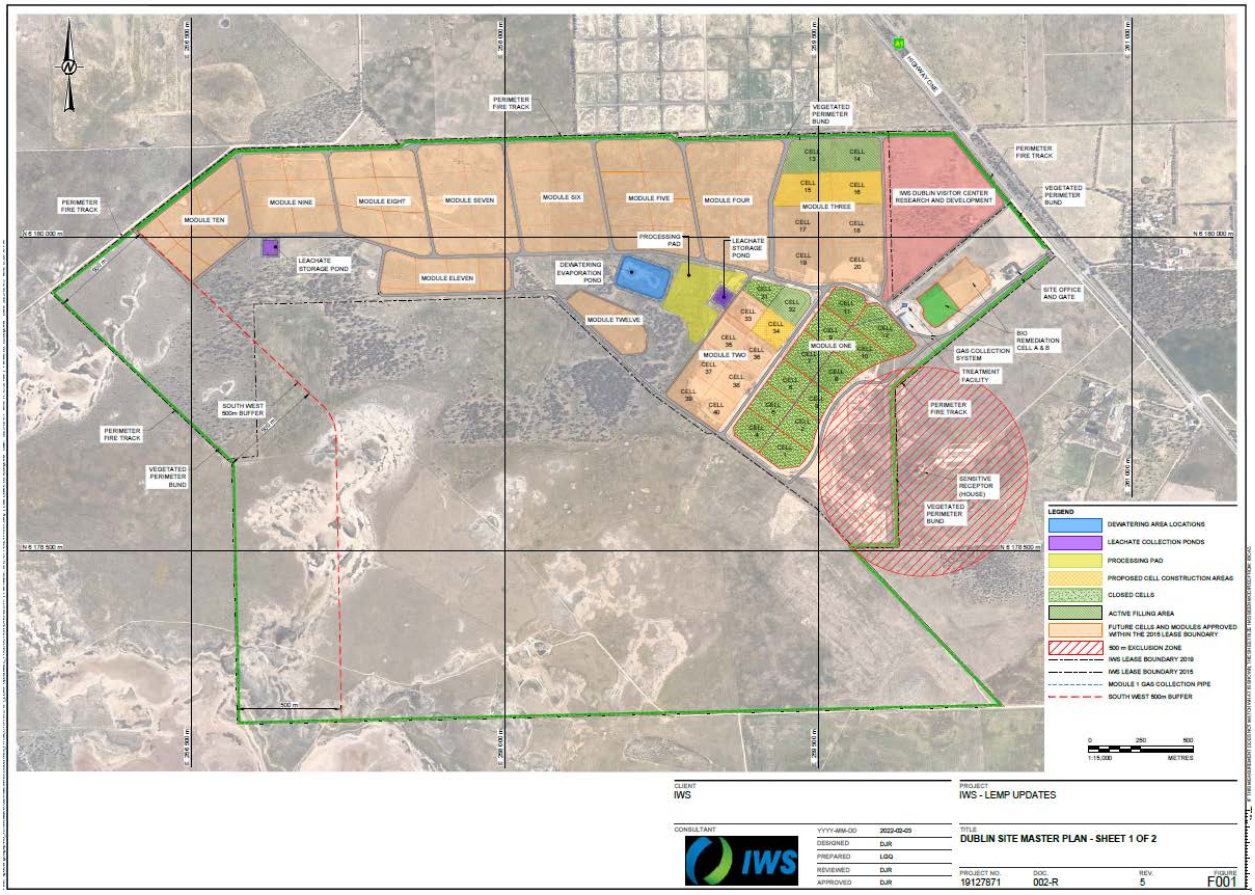

Figure 6.1: Site Master Plan (Source: IWS).

A copy of the Licence for the site, reference 51568 is contained in **Appendix I**.

The Licence requires by Condition 3.11, that IWS prepare a Landfill Environmental Management Plan ('LEMP') which deals with the ongoing operational management of the facility. The LEMP forms a detailed ongoing operation management tool, agreed between the owner and the EPA, which details the manner in which the site will operate, and the steps that will be taken to mitigate potential environmental and amenity impacts.

The existing development at the subject site receives baled and unbaled non-recyclable wastes, unbaleable construction & demolition wastes and contaminated wastes are transported to the subject site for disposal. The subject site has been developed to the highest standards with the following features:

- Dual weighbridge system.
- Landfill cells with full environmental controls including groundwater control, base liner system, leachate collection system, daily/ intermediate/ final cover system, landfill gas control system, netting system.
- The landfill cells have been developed so separate materials can be baled at Wingfield, stored in cells and position recorded. 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.
- Low Level Contaminated Waste and Liquid Treatment Plant Residue disposal facility with double liner system and dedicated wheel wash.
- Enclosed Multi-purpose Waste Treatment Facility and Outdoor Bioremediation Facility.
- Biopad for processing of organic materials (referred in the Licence as Municipal Solid Waste Trommel Fines) in order to production of Compost Like Output (CLO) for use in the landfill capping.
- Secondary processing shed for bioremediated waste (currently under construction).
- Revegetated perimeter buffer zones and vegetation mounds.
- Fully sealed and landscaped entrance roadway and main site access road.
- Stormwater management system.
- Vehicle wheel wash.
- Environmental monitoring and post closure planning to be undertaken in accordance with the Development Approval, LEMP and statutory requirements.

The existing Development Approval and Licence permit the following waste streams to be received at the site:

- Asbestos (Friable).
- Asbestos (Non-Friable).
- Commercial and Industrial Waste (General).
- Commercial and Industrial Waste (Listed).
- Compostable Organic Waste.
- Construction and Demolition Waste (Mixed).
- Construction and Demolition Waste (Inert).
- Domestic Waste.

- Green Waste.
- Inert waste.
- Municipal Solid Waste – Domestic Sources.
- Municipal Solid Waste – Hard Waste.
- Municipal Solid Waste – Kerbside Bin Collection.
- Putrescible Waste.
- Quarantine Waste.
- Used Tyres.
- Waste Fill.
- Intermediate Waste Soil.
- Low Level Contaminated Waste Soil.
- Low Level Contaminated Waste.
- Organochlorine Pesticide (OCP) Waste.
- Used Foundry Sand.
- Grease Trap Waste
- Treatment Plant Residues.
- Listed Waste.
- Controlled Waste.
- Unclassified Waste Soil.
- Waste Soil.

The existing Development Approval and Licence permit the following waste streams to be disposed at the subject site:

- Asbestos (Friable).
- Asbestos (Non-Friable).
- Commercial and Industrial Waste (General).
- Commercial and Industrial waste (Listed).
- Compostable Organic Waste.
- Construction and Demolition Waste (Mixed).
- Construction and Demolition Waste (Inert).

- Domestic Waste.
- Green Waste.
- Inert Waste.
- Municipal Solid Waste – Domestic Sources.
- Municipal Solid Waste – Hard Waste.
- Municipal Solid Waste – Kerbside Bin Collection.
- Putrescible Waste.
- Quarantine Waste.
- Shredded Tyres.
- Waste Fill.
- Intermediate Waste Soil.
- Intermediate Waste.
- Used Foundry Sand.
- Low Level Contaminated Waste Soil.
- Low Level Contaminated Waste.

The proposed variation does not seek to modify the waste streams able to be received or disposed of at the site.

Much of the waste being received at the subject site will have gone through preliminary sorting and blending at the IWS facility at Wingfield. Other waste will be transported directly to the subject site from various locations.

Material being transported to the site will enter the site at the main entrance on Lemmey Road. The truck will pass over the weighbridge, and have details recorded. Material will then be directed within the site based on its nature and requirement for further sorting and treatment prior to beneficial reuse or disposal.

Material received at the site may undergo various forms of treatment, which may occur:

- within the MWTF shed;
- on the bioremediation pad and within the adjacent secondary sorting area (shed);
- on resource pads around the site; and
- within landfill cells.

Material received that the site which cannot be treated or has no beneficial reuse following treatment will be disposed of to the landfill cells.

Disposal cell categories at the Northern Balefill are defined as either General Waste Cells or Low Level Contaminated Waste Cells.

Wastes permitted to be disposed of in the general cell are as follows:

- baled waste;
- unbaled waste;
- asbestos;
- CCA treated timber;
- waste soil (Classified as WF or ILC); and
- miscellaneous wastes approved by the EPA.

Wastes permitted to be disposed of in the Low Level Contaminated Waste Cells are as follows:

- contaminated soil (Classified as LLCW, ILC or WF);
- liquid treatment plant residue (LTPR);
- paint residues;
- incinerator waste; and
- miscellaneous wastes approved by the EPA.

The site features extensive design elements to manage the potential environmental and amenity impacts of the facility including:

- engineered landfill cell design;
- groundwater and leachate management systems;
- engineered liner design;
- engineered cap design;
- litter management fencing in operational areas;
- vegetation mounding; and
- site revegetation.

In addition to the site design elements, detailed operational management practices as set out in the LEMP and nominated sub-plans are implemented on an ongoing basis to ensure appropriate environmental performance and limit the potential for adverse amenity impacts.

7.0 PROPOSED VARIATION

It is proposed to vary the proposal in six (6) ways:

1. To define the facility in a manner that provides for flexibility in future internal configuration. Future cells would still be subject to approval by the EPA as they are now.
2. It is proposed to increase the maximum permitted height of the landfill by 5.0 metres.
3. It is proposed as a consequential amendment to remove obsolete volumetric calculations.
4. It is proposed to clarify a location for a processing pad more centrally on the site.
5. It is proposed, for the avoidance of doubt, that processing pads may be constructed on the areas of the site shown as cells.
6. It is proposed, for the avoidance of doubt, to remove and prescriptive requirements for the capacity of leachate extraction pumps.

Plans prepared by Golder detail the theoretical cell module extent sought in Amendments 1 and 2 and the central processing pad sought in Amendment 4 are contained in **Appendix J**.

Each of these elements is described separately as follows:

7.1 Flexibility in Internal Configuration

The original plans for the project detailed a series of modules, each containing multiple cells in defined spatial locations within the subject site. Between the cells was sited various site infrastructure including access roadways, swales, services, ponds and dams, buildings and suchlike.

As the site has been developed, experience has refined the manner in which both the individual cells, multiple cells making up modules, and the supporting site infrastructure is developed. As detailed design for site elements is undertaken, refinements result is optimisation of the design and operation. Over such a large site, such optimisations lead to significant gains both in safety and efficiency of site operations.

The experience gained from over two (2) decades of operation means that future cells and modules, each containing multiple cells will not be developed in accordance with the existing approved plan. IWS has developed site master plan options based on the current knowledge and best practice. However, given the long lead time between the opening of each subsequent module, which can be in the order of 10-15 years, it is highly probable that the current concept will be outdated and need to be further updated by the time the next module is ready to be opened.

It is noted that in comparing the current Site Master Plan, prepared by IWS, which is shown in **Figure 6.1** and contained in **Appendix H** with the original approved concept for the site, the concept layout of the cells and the modules has changed based on the operational experience gained. This includes reconfiguring the modules to be more rectangular in shape and optimising the width-to-length ratios to make the most efficient use of the available airspace during the construction, operation and closure of the cells and the modules comprised of multiple cells.

The current Site Master Plan represents best practice thinking at the current point in time. However, it is recognised that with ongoing learning and operational experience, the Site Master Plan will remain a 'living' document which is subject to regular review in the future.

IWS has given careful thought, together with their advisors, on an approach which would enable suitable flexibility going forward, whilst ensuring that relevant planning issues have been appropriately addressed.

The approach selected involves removing the existing approved plans showing the location of individual cells and modules, each containing multiple cells. Rather than substituting the current Site Master Plan, in their place will be a plan which shows an above ground three-dimensional space within which cells and modules, each containing multiple cells will be constructed. Modules will continue to be developed in a manner which leads to them being, post completion, individual land forms with sloped sides and a lower sloped top, with air space in between them. The overarching three-dimensional space approved will defined a surface within which all modules, containing multiple cells are contained.

Plans prepared by Golder which detail the theoretical maximum three-dimensional space in which modules and cells are contained in **Appendix J**.

The approach selected recognises that:

- the EPA will continue to approve the design of each module and cell before it is opened;
- the size of each module, containing multiple cells is ultimately limited by the slope of the sides and top, meaning that enlarging a module beyond a certain footprint the slope of the top of the cell results in a dramatic reduction of airspace compared to using multiple cells;
- The final landform will remain as separated closed and capped cells, and the modules, containing multiple cells will not be linked to form a single land mass, meaning that the theoretical maximum three-dimensional space shown on the plan prepared by Golder represents only the maximum space in which modules and cells can be located, not the maximum volume which can be occupied by modules and cells;
- roads and other supporting infrastructure will continue to be located proximate to the modules, containing multiple cells; and
- differing configuration of modules, containing multiple cells within the defined space is considered unlikely to have material planning impacts, if any, outside of the site.

The approval of the maximum theoretical area for modules, containing multiple cells allows for a single planning assessment to consider the maximum outcome in terms of extent and height. Technical design issues embodied in the concept can also be considered, providing a clear understanding of the evolution of the broad technical parameters of the design, such as slope and cross sections, since the original approval. Cross sections of the site boundaries, including landscaping mounds and access roads, are also included.

Should the planning assessment of the proposed amendment result in an approval, the location and configuration of future individual modules, containing multiple cells, individual cells and supporting infrastructure would not require further development approval and would, instead, just be subject to approval by the EPA under the licence. Only in the event that there was a penetration of the maximum approved surface or another element which was not consistent with the approval, would a further variation to the development approval be required.

7.2 Height Increase

It is proposed to increase the maximum permitted height of the ~~finished landfill cells~~closed and capped landfill cells from 23.00 metres AHD to 28.00 metres AHD. This increase in height will be subject to the sections developed by Golder and will not be achievable over the entire extent of the area in which modules, containing multiple cells are located. The increase in height does not mean that future cells will all achieve such a height over any or all of their area, but rather provides a maximum three-dimensional space within which the future modules, containing multiple cells could be developed. ~~Typically~~Typically, modules, containing multiple cells will reach ~~there~~their greatest height in the centre, with low slope downwards to the 'shoulder' where a steeper batter will extend down to adjacent finished ground level.

In summarising the basis for the proposed increase in height, the flexibility and efficiency provided for future operation will be as follows:

- providing for the most efficient and lowest carbon footprint operation possible;
- providing for reduced excavation where appropriate to increase distance to groundwater;
- allowing for option cell and module configurations to be adopted whilst retaining airspace;
- allowing for balance of excavated material to be optimised;
- allowing for greater flexibility in liner design; and
- allowing for greater flexibility in cap design.

The basis for the maximum permissible height is the final ~~finished landfill cells~~closed and capped, ~~following closure and capping~~height, ~~and~~ allowing for any settlement to reach the maximum permitted height. This approach has been adopted, as it is consistent with the approach of the existing approval. It is acknowledged that whilst a cell is being constructed, filled or capped, there will be periods where the cell or associated infrastructure protrudes above the maximum permitted height of the cell. This is the case with the 23 metres AHD restriction which is currently in place, and reflects that in comparison to the height of the ~~finished landfill cells~~closed and capped, which is a permanent modification of the landform, the operations associated with the construction, filling and capping occupies a relatively short period of time in conjunction to the operational lifespan of the entire facility or the permanent modification of the landform by ~~finished landfill cells~~closed and capped.

The approach adopted to referencing the permitted height is consistent with the current approach, and allows for appropriate assessment and consideration of visual amenity impacts and operational impacts which result from the height increase.

The height increase will allow for flexibility in several ways. It will potentially allow for additional airspace for landfilling, however, the amount of available airspace does not represent a barrier to operations of the facility in implementing the current approval, so that amount of material disposed to the facility is not expected to change as a result of the proposal. In practical terms, given the lifespan of the facility, the additional height will provide for greater design flexibility such as not excavating cells as deep (potentially increasing the distance to groundwater) and changing the configuration or thickness of both the liner and the cap, all subject to EPA approval.

The construction of landfill cells is a component of the overall cost base of the operation. The ability to optimise cells through additionally available height has the potential to optimise the cost of each cell, and, therefore, the unit cost of disposal of waste to landfill at the facility. The construction of the existing cells have required a large over-excavation of clay material. The additional flexibility gained through the height increase will enable a better balance of the volume of clay excavated and subsequently available for use in cell construction and capping throughout the life of the project.

Increased focus on mass balance and overall operational efficiency will reduce the long-term fuel and energy consumption of the operation, which should also serve to reduce the carbon footprint. By having flexibility to increase the height of the cells and modules, containing multiple cells, the opportunity exists to optimise the construction through excavating the cells less deep, or by increasing the volume of individual cells where the excavated material has a specifically identified site based reuse in close proximity to the excavation. This flexibility will provide for more precise short, medium and long-term planning of site excavation, landfilling, capping and mass balance, having the potential to significantly reduce the machinery operation (being a major source of modifiable carbon emissions from the operation) associated with the operation of the facility.

It is noted that visual amenity was a significant consideration in the original assessment of the proposal. Considerable work was undertaken by IWS in the original application in mapping the visual impact on the locality and developing design outcomes which mitigated the visual impact. Significant landscaping and screening work has also been undertaken over the life of the project to date, and further work in the construction of screens and the establishment of additional landscaping which is already approved but not yet constructed will occur progressively throughout the life of the facility. Where additional mounds and landscaping is established in future, it will occur in accordance with a landscape plan for the area of the site where the mounds and landscaping are to be established.

It is confirmed that the proposed height increase will not result in changes to the operation of cells which have already been completed without further EPA approval being sought and obtained. All cells at the facility require approval by the EPA pursuant to the Licence, and thus irrespective of the approval of this application, it would not alter the approved designs of cells, including the maximum height, already approved by the EPA pursuant to the licence.

IWS has engaged DBD Environmental to conduct a preliminary assessment of the visual impacts of the proposed facility, with the height variation included.

A copy of the work undertaken by DBD Environmental is contained in **Appendix K**.

The work by DBD Environmental includes a photographic analysis which matches, as closely as can be achieved, the visual amenity assessment of the original application. The work represents a worse-than-worst-case scenario as it assumes that the whole of the landfill area will be developed to the proposed maximum theoretical size, when in reality the development will be of discrete modules, containing multiple cells which are angled on all sides with air space in between them.

When the original proposal was assessed, it was a new intrusion in the locality. Over time, as the facility has been established, it has become an existing character element of the locality. It is noteworthy that the assumptions contained in the original assessment document in respect of the development of screening vegetation have been largely borne out. The locality now features a significant amount of mature vegetation which contributes significantly to character and assists in the screening of the facility. This bodes well for the establishment and maturation of further screening landscaping in future.

The work by DBD shows that the increased height will be perceptible from a number of locations outside the site, however, in each of the locations analysed the additional height is likely to result in minimal change to the visual impact on the locality.

From many locations outside of the site, and the additional land purchased by IWS since the facility became operational, the change in height will be at the lower extent of that perceivable.

Our preliminary assessment is that whilst the proposed height increase will have visual impacts on the locality, having regard to the existing use of the site, the extent of the proposed height increase and the context of the locality, those impacts should be reasonable and within that anticipated.

The proposed amendment does not include additional landscape mounds beyond those previously approved on the subject land as a component of the approval. Whilst the visual analysis undertaken by DBD Environmental does include an analysis of the impact of additional landscaping moundsts located on the additional land owned by IWS, this is for the purpose of illustrating that such mounds will not make a significant impact on the reduction of visual impacts, and are therefore not required to support the proposed variation.

7.3 Remove Volumetric Calculations

The historic plans detail volumetric calculations for each of the modules, containing multiple cells. Having regard to the extremely long lifespan of the development, currently estimated to be well in excess of 100 years, the volumetric calculations are largely meaningless in consideration of the impacts of the proposal. Only a tiny fraction of the total airspace of the facility will be constructed and operational for landfilling at any particular time given the modular cell design and cell-by-cell approval and construction process.

The ultimate volumetric capacity of the facility is represented by the volumetric calculation of each cell as actually approved by the EPA pursuant to the Licence and subsequently constructed. Given the lifespan of the development and anticipated continuing evolution of landfill cell design and technology, the total final volume of landfill cannot be accurately calculated.

Maximising the amount of airspace available should result in operational improvements, as detailed in the previous sections, with should also serve to reduce fuel and energy inputs associated with the operation of the facility, and a resultant reduction in the carbon footprint of the operation.

Whilst consideration has been given to a maximum volume of any individual cell, as raised by the EPA, it is not considered that this is required for the purposes of a varied Development Approval for the site. The EPA will retain complete control over the maximum size of individual cells and of modules, containing multiple cells. Such parameters change over time based on cell technology and increased knowledge. The purpose of not having these requirements as part of the development approval allows the EPA to make a performance based assessment at the time that new cells are proposed. This assessment would be based on the cell technology and methods of the day at the time a cell is proposed.

7.4 Central Processing Pad

As the development of the site proceeds, the progressive opening of modules, containing multiple cells will progress in a westerly direction. Over time, this will result in the focus of operations on the site being located further to the west than is currently the case. At the present time, processing and operations occurring on the site are focussed on the eastern end of the site between the entrance and Modules 1 and 2. As the focus of operations on the site moves further to the west, it will become progressively less efficient to have all operations concentrated at the eastern end of the site.

Additionally, since the facility was originally approved, there has been an increasing focus on the treatment and management of waste to recover a greater proportion of waste and reduce the amount of waste going to landfill. It is expected that the focus on recovery will continue in future as technology further improves and the emphasis on circularity in the economy continues to grow. Additional processing and resource recovery require additional space, as material, particularly organic material frequency needs to be held for a specific period of time during treatment.

Accordingly, it is proposed to nominate an area as a processing pad more centrally on the site. This area would, subject to any required approvals be used for various processing and staging operations.

The location of the processing pad is detailed on the Plans prepared by Golder which are contained in **Appendix J**.

It should be noted that the location of the processing pad shown on the plans represents the maximum extent of the area in which the future processing pad can be located. It does not represent an actual processing pad or implies that the processing pad would take up the entirety of the identified area.

The use and size of areas for future use as processing pads would be subject to approval by the EPA pursuant to the licence. If any activities or building works on the processing pads were proposed that were outside of the ambit of existing approvals, development approval would also be required.

7.5 Confirm Use of Areas Shown as Cells for Processing Pads

At many landfills, areas that are to be developed as cells in future are developed and used as processing pads prior to being developed as cells.

For the avoidance of any doubt, it is proposed to specify that areas shown as cells on the plans may be utilised as processing pads, prior to being opened as cells.

The use of areas as processing pads would be subject to approval by the EPA pursuant to the licence. If any activities or building works on the processing pads were proposed that were outside of the ambit of existing approvals, development approval would also be required. Processing pads are not proposed to be constructed on areas which have been previously filled as cells.

During the adequacy check process, the EPA identified that the establishment of processing pads upon any identified cell location may lead to changes to the environmental impacts profile of the site's activities through externalities including visual amenity, noise, dust and odour.

Whilst it is acknowledged that this is a potential outcome, having regard to the existing approvals of the site, the setbacks from the nearest sensitive receivers and the nature of surrounding uses, it is considered unlikely that such impacts would be materially different from the situation (or potential situation as the development of the site proceeds) from that enabled by the existing Development Approval.

It is noted that ongoing requirements in respect of acoustic performance and air quality will continue to apply to the site operation, and approval for processing pads to be established will continue to be required to be assessed under the licence.

The EPA also suggested that IWS may seek to exclude some areas of the site (cells) that would be excluded from the potential development of processing pads. Having regard to the long-term nature of the operations of the site, it is considered that such an approach is not appropriate, other than in respect of confirming that areas which have been previously filled as cells, as the nature of any impacts from a processing pad proposed in future will depend on the nature of surrounding development at the time the processing pad is proposed. Given the potential length of time involved, the development in the locality of the subject site, including sensitive receivers may change significantly between the present time, and when processing pads are actually required to be established.

7.6 Leachate Extraction Pumps

The various approval documents contain some prescriptive requirements in respect of leachate extraction pumps, imposing a minimum requirement for performance of 40 litres per second. To date, the technology employed in the construction of the cells has not resulted in the generation of large amounts

of leachate. Data gained through operations indicates that the quantitative level of performance specified is greater than required based on current and future cell construction. Over-specifying pumps result in excessive capital cost and potential operational failure through pumps not appropriately handling flows lower than that for which they are designed.

For the avoidance of doubt, it is proposed to remove any prescriptive requirements for the capacity of leachate pumps from the Development Approval, and allow this capacity to be assessed by IWS and subsequently approved by the EPA as part of the day-to-day operations of the facility.

8.0 IMPACT ASSESSMENT METHODOLOGY

In assessing the impacts of the proposed amendments, IWS have followed the approach recommended by PLUS following an initial request by IWS for the variation to their existing approval.

On this basis, the impact assessment herein is undertaken in three parts:

1. Impact Assessment having regard to the Assessment Guidelines.

2. Impact Assessment having regard to relevant Provisions of the Planning and Design Code.

3. Assessment of the Social, Economic and Environmental Impacts of the proposed variation.

Applications for development covered by the major project declaration on the subject site have been assessed against a set of Assessment Guidelines prepared prior to the preparation of the initial EIS. These guidelines remain the relevant guidelines for the assessment of variations to the proposal.

A copy of the Assessment Guidelines is contained in **Appendix L**.

The Assessment Guidelines, whilst relatively brief in length, set out a comprehensive basis for the assessment of the proposal under the following headings:

- Introduction.
- The EIS Process.
- The EIS Document.
- Public Participation.
- Legislation and Codes of Practice / Environmental Safeguards and Standards.
- Monitoring and Review.
- Sources of Information.
- Appendices.

The Guidelines stated, in respect of the 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 satisfactorily manage and control and potentially adverse effects of the development or project on the Environment. Further it should consider any other particulars required by the Minister or the Regulations.'*

As outlined in previous sections, the existing EIS and 2008 EIS Amendment is still considered, on a wholistic basis to provide an appropriate basis for the assessment and consideration of variations to the project. This is evidenced by recent variations (including for the cell and module reconfiguration, biopad extension and secondary processing shed) being considered without a requirement for any amendment or addendum to the EIS.

Given the nature of amendments now proposed being more significant than the three (3) recent variations, it has been determined following review of the amendments proposed that an addendum to the EIS is required to assess and consider the extent to which the proposal varies from the existing approval, and existing operational practices.

To assist in structuring the impact assessment, a review of the structure sought by the Assessment Guidelines was undertaken, together with consideration of the manner in which the impacts were assessed in the EIS, the Response Document and the 2008 EIS Amendment.

It has been determined that the most appropriate approach is to adopt a similar structure to the assessment of issues adopted in the original Response Document. This is considered more useful than following the approach adopted by the 2008 EIS Amendment on the basis of the amendment being confined to a specific set of changes which were sought that that time.

The impact assessment is undertaken in the following three (3) sections of this report, firstly against the Assessment Guidelines, secondly against the Planning and Design Code and finally in respect of broader Social, Economic and Environmental impacts.

9.0 ASSESSMENT AGAINST ASSESSMENT GUIDELINES

The following assessment against the Assessment Guidelines is undertaken for each variation proposed, and within each variation is separately considered for each issue.

A consolidation of the issues, as extracted from the guidelines is as follows:

- Site Operation.
- Groundwater.
- Surface Water.
- Landfill Gas Management.
- Environment/Amenity.
- Visual Amenity.
- Air Quality.
- Acoustic Impacts.
- Traffic Impacts.
- Pest Plant and Animal Management.
- Community Engagement.
- Post Closure Management

For a number of the amendments, only a limited number of the issues are relevant, as set out in the matrix in **Table 9.1** below.

Table 9.1: Assessment Matrix

	Internal Configuration Flexibility	Height Increase	Removal of Volumetric Calculations	Central Processing Pad	Cell Processing Pads	24 Hour Operation (deleted from proposal)	Leachate Pumps
Site Operation	X	X	X	X	X		X
Groundwater	X	X	X	X	X		X
Surface Water	X	X	X	X	X		X
Landfill Gas Management		X	X				

	Internal Configuration Flexibility	Height Increase	Removal of Volumetric Calculations	Central Processing Pad	Cell Processing Pads	24 Hour Operation (deleted from proposal)	Leachate Pumps
Visual Amenity	X	X	X		X		
Air Quality					X		
Acoustic Impacts					X		
Traffic Impacts							
Pest Plant and Animal Management	X	X	X	X	X		
Community Engagement	X	X	X	X	X		X
Post Closure Management	X	X	X	X	X		X

9.1 Internal Configuration Flexibility

Relevant Assessment Issues: Site Operations, Groundwater, Surface Water, Visual Amenity, Pest Plant and Animal Management, Community Engagement, Post Closure Management.

Removing the existing module and cell positions from their current status of being enshrined in the development approval will provide the proponent with significant additional operational flexibility in being able to adjust the configuration of the site as the development progresses over an extended period.

Unlike many developments, the proposal will continue to operate for a very long period of time. The operation of the proposal will involve a continuous, incremental development process as modules, containing multiple cells (and individual cells) are constructed, operated and then completed. The operational complexity of the proposal is reflected in the requirement for a Licence under the *Environment Protection Act, 1993* and the ongoing monitoring by and liaison with the EPA.

In considering the additional internal configuration flexibility, which is proposed, it is necessary to having regard to the following:

- How will the proposed change affect the appearance and impact of the facility beyond the site?
- How will the proposed change affect the environmental impacts of the proposal from a 'static' perspective?
- How will the proposed changes result in operational changes which may affect the environmental impacts of the proposal?

In essence, the internal configuration flexibility which is sought will allow the configuration of modules, containing multiple cells (and individual cells) to be altered, within a redefined extent, without a requirement for further amendment to the development approval.

In considering the scope of the proposed amendment, it is noted that the ultimate development of the site will still result in modules, containing multiple cells (and individual cells) being developed within an outer boundary that remains largely unchanged from that which has previously been approved.

The scale and configuration of individual modules, containing multiple cells (and individual cells) is governed by a range of factors; however, principal constraints including the slope requirements for the top and sides of the cell. There is an optimum size and shape for modules, containing multiple cells (and individual cells) which provides the largest volume of air space for the disposal of waste, with modules, containing multiple cells becoming less efficient as they deviate from the optimum configuration in both larger and smaller directions. This means that the size of individual modules, containing multiple cells is limited in practical terms, as larger modules, containing multiple cells do not continue to provide optimal air space in a linear fashion.

The ultimate development of the site will therefore remain as a series of individual modules, containing multiple cells with low-sloping tops and steeper battered sides, separated by access roadways and infrastructure services. From external to the site, the configuration changes which will be enabled by the proposed variation are likely to vary between being imperceptible and minor from a visual perspective.

Individual cell configuration and design will still need to be approved by the EPA in respect of each cell, pursuant to the licence.

It is considered appropriate that a condition be applied, which highlights that the design and configuration of all future modules, containing multiple cells (and individual cells) are to be endorsed by the EPA on an ongoing basis.

9.2 Height Increase

Relevant Assessment Issues: Site Operation, Groundwater, Surface Water, Landfill Gas Management, Visual Amenity, Pest Plant and Animal Management, Community Engagement, Post Closure Management.

9.2.1 Site Operation

It is proposed to increase the permitted height of the landfill cells from a currently approved maximum of 23.00 metres AHD to a revised maximum of 28.00 metres AHD.

The increase in the maximum finished height proposed reflects a better understanding of the operational and geotechnical conditions, changes in cell design and liner technology, changes in capping design and technology and the need to optimise operations on the site.

The revised maximum finished height will, when combined with no change in the depth to which cells can be constructed, result in an increase in the air space available over the life of the facility. In practical terms, however, the additional height will permit a number of operational and design changes which result in any increase in the available airspace being considerably less than the theoretical increase proposed.

These are as follows:

- the increase in total available height from the bottom of the excavation to the top of the cell may allow for the depth of total excavation to be reduced;
- the increase in total available height from the bottom of the excavation to the top of the cell may allow for alternative liner designs which have a greater thickness;
- the increase in total available height from the bottom of the excavation to the top of the cell may allow for alternative cap designs which have a greater thickness; and
- the additional height above ground does not permit a linear increase in volume due to the requirements for batter slopes on the sides and top of the finished cell.

The increase in available cell height will not result in a fundamental change to site use. The cells will still be constructed in similar locations, operated in a similar fashion and operated once closed and capped in a similar fashion. It does, however, have the potential to result in significant improvement in operational efficiency through better balancing of the material excavated from the landfill cells prior to their construction.

From locations external to the site, it is not considered that the additional cell height will result in a material and perceptible change to the nature and intensity of operations occurring on the site.

9.2.2 Groundwater

The proposed increase in cell height is not anticipated to result in material changes to groundwater impacts from the facility, from a development assessment perspective.

Landfill cells have the potential to impact groundwater, and the design, construction and operation of the cells have specific and extensive regard to the management and mitigation of potential groundwater impacts.

The proposed cell height increase has the potential to provide additional flexibility in the management and mitigation of potential groundwater impacts in the following manner:

- Providing greater flexibility to reduce the extent of excavation, increasing the potential distance between the cell and groundwater.
- Providing greater flexibility in the design of the liner and leachate extraction systems to increase efficiency and reduce risk.
- Providing greater flexibility in the design of the capping, allowing for better management of surface water and reducing the risk of surface water/groundwater interaction.

Each landfill cell will continue to be designed in a comprehensive manner and will require approval from the EPA prior to construction pursuant to the licence. For cells constructed on the site to date, groundwater impacts have primarily been assessed during the consideration of the detailed design of the cell by the EPA pursuant to the licence.

9.2.3 Surface Water

The proposed increase in cell height is not anticipated to result in material changes to surface water impacts from the facility, from a development perspective.

The total area that will be occupied by landfill cells will not materially change as a result of the proposal. The amount of surface water generated is therefore likely to remain largely the same as would be the case pursuant to the existing approval.

The proposed maximum finished height increase has the potential to provide additional flexibility in the design of and capping of cells to provide for better management of surface water on the site. Additional flexibility in capping design has the potential to provide for capping systems which reduce the rate of surface water generation during rainfall events.

Each landfill module, containing multiple cells (and individual cells) will continue to be designed in a comprehensive manner, and the management of surface water is a key consideration in the design of each cell. Approval from the EPA pursuant to the licence, which will extend to the assessment of the proposed management of surface water prior to the construction of each cell.

9.2.4 Landfill Gas Management

The proposed increase in cell height is not anticipated to have a material impact on landfill gas generation or management. The nature of the waste being disposed into the cells will not change as a result of the configuration change.

The theoretical increase in the volume of the cell has the potential to increase the volume of gas generated, however, in the context of the overall site, this increase is not identified as being significant.

Landfill gas is managed by the proponent on an ongoing basis pursuant to the licence, with the EPA playing a key role in the assessment of this issue, pursuant to the licence.

9.2.5 Visual Amenity

Potential visual amenity impacts are identified as being the most significant impact of the proposed increase in maximum finished height.

Visual amenity impact was a significant issue during the original assessment of the facility, and a detailed assessment was undertaken, post public exhibition of the EIS and included in the response document. At the time of the original proposal, the facility was being assessed as a new land use in the locality. That land use is now established and substantially progressed and represents a significant character element in the locality. The assessment at this point is therefore of the impact of the proposed change from the currently approved maximum height to the new permitted maximum height.

Additionally, given the time that has elapsed since the facility was established, many of the mitigations employed to lessen the originally forecast visual amenity impacts have been implemented and are able to be considered in the context of their performance to date.

The Assessment Report concluded the following in respect of visual amenity impacts:

> *'In conclusion, the visual impact of the proposed landfill would be expected to change over time. Initially, the erection of the screen mound and 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 (i.e. compared to the relatively flat nature of the topography). They would remain obvious because of their green cover of native vegetation, especially during times of 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.'*

This summation in the Assessment Report provides a clear basis for the expected visual outcomes of the facility. It acknowledged that there would be a change in visual impact over time, with periods where the visual impact is greater and periods where it is less. It acknowledged the change in landform through the excavation, filling of the cells and final form post-closure of cells. It further acknowledged that the final form would retain the significantly altered topography but would also change character by virtue of its revegetation which would be a significant visual element in the locality, particularly during the summer months when its appearance was in contrast to surrounding cleared areas.

Thus, the approval clearly acknowledged that there would be a material change in visual amenity through landform and appearance, that the change would progress in an evolutional manner and that the level of impact would continue to alter over time.

The extensive assessment of visual amenity undertaken during the original assessment of the proposal provides a clear reference for consideration of the extent to which:

- the visual amenity impacts predicated in the original proposal and assessment thereof have been borne out; and
- the extent to which the mitigations implemented have been successful in ameliorating the visual amenity impacts.

Since the original approval, IWS has acquired a significant amount of additional land contiguous to their site. This includes land to the north-east adjacent the Port Wakefield Highway and a very significant amount of land to the south. The acquisition of this additional land, whilst it is not included within the subject site for assessment purposes has provided for additional mitigation of visual amenity impacts through:

- reducing the number of adjacent properties from which visual amenity impacts from the facility can be experienced; and
- allowing for the future construction of additional mounding and screening, located further from the facility and closer to locations from which views can be obtained (although it is noted that approval for such future construction is not sought by the amendment now submitted).

The Visual Amenity Assessment Update, prepared by DBD Environmental, hereinafter referred to as the 'VAAU' provides a reference from which the impact of the proposed variation can be assessed.

Having regard to the scale of the subject site, and the staged nature of its operation, the visual amenity impacts vary significantly in diffident locations within the locality. The specific impacts, therefore, need to be assessed in different locations, and then a cumulative assessment undertaken of the overall impact.

The VAAU undertakes the assessment in a number of ways. Firstly, it specifically includes the photographic assessment undertaken for the original application. Wherever access was available, it has sought to replicate photos from the same locations from where the original photos were taken. Subsequently, it introduces a number of additional photo points, which reference the actual impacts of the current disposition of the facility. Finally, it includes some photomontages which superimpose the proposed height increase and the final nature of the landform and planting over the photography.

The VAAU review the impacts in a logical fashion, moving relative to the subject site in an anti-clockwise direction, starting from the Port Wakefield Highway to the southwest of the subject site.

It is noted that the original 1997 photos were taken in summer, while the photos in the VAAU were taken when the open areas of the locality were green, and this should be accounted for in the assessment of the photos from the different dates.

VAAU Figure 8.1 – Lemmey Road

From Lemmey Road looking west, the VAAU Figure 8.1 compares the 1997 view with a view in 2021. This figure is instructive as it has direct views, similar to those obtained by drivers heading northwards on the Port Wakefield Highway, but not being occluded by roadside vegetation.

The 1997 photo shows the open area, with the vegetation evident on the southern boundary of the subject site adjacent Port Wakefield Highway in the distance. The 1997 photo shows a broad, open landscape, with the stand of vegetation mentioned above, other scattered vegetation visible in the distance, stock fencing and roadways.

In the 2021 photo, Module 1, the highest and most complete existing cell module on the site and the MWTF shed are visible. The cell module is visible in respect of its height, when reference is made to the 1997 photo, however, in its form, the cell module itself still references as a very wide civil structure, with a very low ratio of height to width. With a height above ground of some 14 metres at a maximum, compared to a width, which is quite apparent in its expression in this photo over 800 metres, the cell has a height above ground of less than 2.0 per cent of its width. The cell does not dominate the landscape, particularly in a vertical perspective, which is partly a function of being located over 1.0 kilometre from the points from which the photo was taken.

In a similar nature, the MWFT is clearly visible in the photo, but is not a dominant element in the landscape, either in respect of width or height. Being located some 950 metres from the point from which the photo was taken, the WMFT sits in similar reference to the intensive animal keeping sheds, which have a lower apparent height but greater apparent width in the photos.

It is noted that with the 2021 photo having been taken when the open areas are green, the contrast of the cell module, which is not yet revegetated, would be expected to be highest at this time of year.

VAAU Figure 8.1a – Lemmey Road

From Lemmey Road, this figure duplicates the 1997 view from Figure 8.1, but includes a closer view of the vegetation at the entrance of the subject site.

The photo shows that the vegetation is considerably greater in maturity and density than in 1997, and viewed from a position similar to that drivers would experience heading north on Port Wakefield Highway, provides substantial screening of the gatehouse and site office in the foreground and the biopad, equipment storage and MWTF shed in the background.

VAAU Figure 8.2 – Lemmey Road

From Lemmey Road looking south-west, the VAAU Figure 8.2compares the 1997 view with a view in 2021. This figure is instructive as it has direct views, similar to those obtained by drivers heading northwards on the Port Wakefield Highway.

In the 1997 photo, there is no vegetation present along the boundary when viewed from the road. The vegetation is that surrounding the, then, dwelling. The view shows a broad flat landscape, with the perimeter vegetation surrounding the dwelling and its curtilage.

In the 2021 photo, the perimeter screening vegetation is visible in the foreground behind the site fencing, with the screening mound visible behind, it is noted that the screening mound, which has been quite recently constructed, is currently a quite bright red/orange colour, reflecting the nature of excavated soil. From other examples surrounding the site, the contrast of this soil colour is expected to diminish over time as the soil weathers and surface vegetation establishes.

In the 2021 photo there is some limited visibility of equipment parked on the storage pad behind the vegetation and screening mound. The former dwelling and the gatehouse also have some limited visibility. It is noted, however, that notwithstanding the photo being oriented directly towards the MWTF and Cell Module 1, neither of these elements are visible.

VAAU Figure 8.3 – Lemmey Road

From Lemmey Road looking west, this figure is taken from the northern extent of Lemmey Road, which is also the northern extent of the subject site. To the north is the additional land which has been purchased by IWS. The photo looks towards Cell Module 3, which is currently being progressively filled.

The 1997 photo shows a broadly open landscape, with vegetation surrounding the former dwelling on the land to the north of the subject site (which has now been demolished). The vegetation surrounding the former dwelling on the subject site is visible to the left of the image.

The 2021 photo shows the screening mound which has been constructed on the additional land purchased by IWS. At the time the photo was taken the screening mound had only recently been constructed, and the colour contrast outlined in respect of the image above is clearly evident. The screening bund occludes all ground-level features with the tops of the mature trees on the land remaining visible. From the photo, no views of the landfill cell or operations are visible.

The VAAU includes a photomontage, which is representative of the 2021 view with the establishment of groundcovers and landscaping superimposed on the screening mound.

VAAU Figure 8.3a – Port Wakefield Highway

From the Port Wakefield Highway, this photo looks south-west towards the facility, over the allotment recently purchased by IWS to the north-west. This photo looks towards the closest location of cells to the Port Wakefield Highway.

There was no photo taken in 1997 from this position.

The 2021 photo shows the screening mound currently under construction on the allotment recently purchased by IWS to the north-west. The photo also shows the current operations of Cell Module 2, which are occurring in the closest position of the subject site (where landfill cells are located) to Port Wakefield Highway.

The landfill operations are visible, however, are significantly occluded by roadside vegetation in this view. In this location, the closest point of the cell module is located just over 300 metres from Port Wakefield Highway. This contributes to the apparent vertical element of the cell being more significant in the landscape.

The VAAU includes a photomontage, which is representative of the 2021 view, with the screening mounds having been established along the entirety of the Port Wakefield Highway boundary and returning around the northern boundary. The photomontage is also representative of the screening mound having established groundcovers and landscaping.

VAAU Figure 8.3b – Subject Site North

From the allotment adjacent Port Wakefield Highway directly to the north of the subject site, this photo views the operational Cell Module 2 from a distance of approximately 100 metres. This photo is representative of something close to the worst-case visual impact from the facility, given the broad nature of existing cell operations in this location, the presence of litter netting structures adding additional verticality and there being no screening vegetation established on the batter slope. The batter slope in this location in points reaches or potentially exceeds the maximum finished height of the cell (noting the finished height may be exceeded whilst a cell is being developed and operated).

There is no photo taken in 1997 from this position.

In the 2021 photo the height of the cell module is clearly apparent, accentuated by the contrasting colour with the green open area in the foreground. Whilst the height evident in the photo is impactful from a visual perspective, it is the breadth of the cell module that is the most dominant visual feature. Viewed as a whole, the cell module and associated litter netting structures present as a low-scale but very broad and large civil structure within the landscape. The photo shows the screening bund which has been established adjacent the current cell module, albeit without significant landscaping yet having been established on it.

The photo illustrates that the screening bunds are at their most effective when they are established immediately adjacent the position from where views are obtained. In this case, where the screening mound is adjacent the cell module, but well removed from the viewing point, the additional height of the module is clearly apparent behind the screening mound.

The VAAU includes a photomontage, which is representative of the 2021 view, with the cell module having been completed, and Cell Module 5 having been established, operated and completed further to the west. The overall height in the photomontage has been increased to the 28 metre AHD maximum height proposed in the amendment. The litter netting posts are still visible, and provide a reference to the additional height proposed, however in reality would have been removed once operations have been completed. The photomontage shows groundcover and screening vegetation established on the existing screening bund. The establishment of vegetation will provide some degree of screening of the cell module behind, but is unlikely to substantially occlude it from this viewpoint.

VAAU Figure 8.3c – Subject Site North

This photo is taken from the eastern side of Port Wakefield Highway, approximately 1.0 kilometre north of the northern boundary of the subject site. The photo is representative of what a driver travelling south on the Port Wakefield Highway would see. Looking south-south-west towards the cell modules, this photo is representative of the worst-case view of the subject site heading south on Port Wakefield Highway.

There is no photo taken in 1997 from this position.

The 2021 photo illustrates that the vegetation in the centre of Port Wakefield Highway is significantly mature and moderately to substantially occludes views of the subject site, depending on the density of the vegetation in any particular location. Electricity infrastructure is visible along the western edge of the Port Wakefield Highway, introducing a vertical element into the landscape. The existing cell module is visible through the vegetation in the median, being a readily apparent, but not dominant feature in the landscape.

The VAAU includes a photomontage, which is representative of the 2021 view, with the cell module having been completed and Cell Modules 5 and 6 having been established, operated and completed further to the west. The overall height in the photomontage has been increased to the 28 metres AHD maximum height proposed in the amendment. The very broad nature of the cell modules in the photomontage serves to limit the impact of their apparent height from views obtained from this position.

VAAU Figure 8.3d – Thompson Road

This photo is taken from Thompson Road, approximately 50 metres west of the intersection with the Port Wakefield Highway. The photo is looking south towards the northern boundary of the subject site, with the entrance to the allotment on the southern side of Thompson Road in the foreground.

There is no photo taken in 1997 from this position.

The 2021 photo shows the current operating cell module in the background to the left of the site entrance in the foreground. The site operations are a relatively recessive element in the photo, which is dominated by the site entrance fencing and gate and the vegetation in the foreground. The visibility of the existing site operations emanates, to a large degree from the contrast in colour of the operations against the green vegetation which dominates the photo.

The VAAU includes a photomontage in this location which includes the proposed increase in height of the fished cell modules, together with the establishment of screening and landscaping. The distance between the photo point and the northern boundary of the subject site is approximately 1.3 kilometres. From this distance, the cell module is apparent as a broad civil structure, which is evident, but not dominant in the landscape, particularly in respect of its vertical element.

VAAU Figure 8.3e – Thompson Road

This photo is taken from Thompson Road, approximately 500 metres west of the intersection with Port Wakefield Highway. The photo is looking south towards the northern boundary of the subject site.

There is no photo taken from 1997 in this position.

The 2021 photo shows that dense screening vegetation has been established in the verge of Thompson Road and adjacent within the allotment immediately adjacent to the south of Thompson Road. The vegetation is mature and varies in height between approximately 2.0 metres and 6.0 metres.

From the photo position, the vegetation almost completely occludes any view of the subject site to the south. The position from which the photo has been taken is located to the west of the current Cell Module 3 on the subject site. Notwithstanding this, if the vegetation was not present, it would be expected from this position to obtain clear views of Cell Module 3 to the south-east at a distance of approximately 1.4 kilometres.

The photo illustrates the effectiveness of screening immediately adjacent the point from which views are obtained.

VAAU Figure 8.4 – Thompson Road

This photo is taken from Thompson Road, approximately 900 metres to the west of the intersection with Port Wakefield Highway. The photo is looking south towards the northern boundary of the subject site.

The 1997 photo shows a broad open landscape, with a dwelling to the right hand side. Distant vegetation is evident to the background of the majority of the landscape.

The VAAU includes a photomontage of the 2021 photo which was taken slightly to the east of the 1997 photo.

The dwelling still exists the same position, however, is now substantially surrounded by mature vegetation. The vegetation evident in the 1997 photo has matured substantially in the 2021 photo. That vegetation almost completely screens the existing operations of Cell Module 3, which would be expected to be visible in the left portion of the photo if the vegetation was not present.

The photomontage shows cell modules having been completed across the entire background of the photo. At a distance of approximately 1.25 kilometres, the cell modules, at their proposed height of 28 metres AHD, form an apparent but highly recessive element of the view.

VAAU Figure 8.4a – Thompson Road

This photo is taken from Thompson Road, approximately 1.1 kilometres to the west of the intersection with Port Wakefield Highway. The photo is looking south-southeast towards the northern boundary of the subject site.

There is no photo taken from 1997 in this position.

The photo shows the existing dwelling which was showing in the 1997 photo in VAAU Figure 8.4. Whilst in 1997 this dwelling was in a totally open position, it was by 2021 completely surrounded by dense vegetation, which largely occludes views of the dwelling from Thompson Road. The vegetation is a dominant element in the photo. From the photo point, the vegetation surrounding this dwelling almost completely occludes visibility of the operations of Cell Module 3.

The VAAU includes a photomontage of the 2021 photo. This shows Cell Module 7 having been established, operated and closed and capped at the proposed maximum height of 28 metres AHD. At a distance of approximately 1.25 kilometres, the cell module forms an apparent but highly recessive element of the view.

The presence of vegetation in the view shows the extent to which vegetation close to the viewpoint can obscure the operations and structures on the subject site. It is possible to infer that the vegetation as it is currently would materially obscure views of the existing and future operations on the subject site from the dwelling, both now and into the future.

VAAU Figure 8.4b – Thompson Road

This photo is taken from Thompson Road, approximately 1.55 kilometres to the west of the intersection with Port Wakefield Highway. The photo is looking south towards the northern boundary of the subject site.

There is no photo taken from 1997 in this position.

The photo illustrates the existing dwelling and ancillary structures, which are located approximately 120 metres from Thompsons Road. As contrasted to the dwelling further to the east, this dwelling is not surrounded by as significant an amount of vegetation. The existing operations on the subject site are not visible in this photo, being located a significant distance to the east, and to the extent that they would be visible, are completely occluded by the dwelling, ancillary structures and vegetation.

Visible in the background is the existing vegetation located within the subject site, which is mature and variable in its density. Future cell modules will be located behind this vegetation and a further vegetated screening mound.

The VAAU includes a photomontage of the 2021 photo. This shows Cell Module 8 and Cell Module 9 having been constructed, operated and closed and capped at the proposed maximum height of 28 meters AHD. The photomontage indicates that the position and height of the existing vegetation will align closely with the finished height of the cell modules at a maximum of 28 metres AHD. The vegetation will partially, but not completely screen the cell modules, both during operation and following their closure.

VAAU Figure 8.4c – Thompson Beach Road

This photo is taken from Thompson Beach Road, looking south-east, approximately 400 metres south of the intersection from Thompson Road. The photo is looking south-east towards the northern boundary of the subject site at an oblique angle.

There is no photo taken from 1997 in this position.

The photo looks across an area between the photo point and the subject site, which is in at a lower relief and features scattered native vegetation, including groundcovers, low shrubs and moderately sized scattered trees. The western side of Cell Module 3 is visible in the photo, however, will eventually be occluded by future cell modules located between Cell Module 3 and the viewpoint.

The photo features roadside screening vegetation which varies in density along the road. This vegetation is relatively mature and varies in height between approximately 600 millimetres and 3.0 metres. The overall landscape is quite significantly influenced by the vegetation, which is located in the foreground, mid-ground and background, including the screening vegetation along the northern boundary of the subject site.

The western side of existing Cell Module 3 is visible, but not a dominant element in the overall photo.

THE VAAU includes a photomontage of the 2021 photo. This shows the future cells, completed to a height of 28 metres AHD, extending across the majority of the background of the photo. Because of the oblique nature of the viewpoint, relative to the northern boundary of the subject site, the cell modules will be least apparent to the left side of the photo (where they are at their most distant), increasing in relative appearance to the right-hand side of the photo, where the distance reduced from over 2.0 kilometres to approximately 875 metres.

VAAU Figure 8.5 – Thompson Beach Road

This photo is taken from Thompson Beach Road, looking south, approximately 150 metres from the northern boundary of the subject site.

The 1997 photo shows a moderately open landscape, with mature vegetation to the western side of the road (right in the photo), and scattered vegetation on the eastern side of the road (left in the photo). Further vegetation, located on the subject site and the sites to the south of the subject site, is visible in the background.

The VAAU includes a photomontage of the 2021 photo. This shows the future cell modules, completed to a height of 28 metres AHD. Given the close proximity of the cell modules to the photo point, the apparent height of the cell modules is significantly greater in this location. A screening bund was installed within the boundaries of the subject site in this location and is evident in the 2021 photo.

The figure also includes a cross-section showing the arrangement of the existing screening bund, a secondary screening bund and the landfill cell modules in this portion of the site.

Having regard to the arrangement of the cell modules relative to the road, the facility will be a dominant character element in this location. Where Thompson Beach Road runs immediately adjacent the subject site boundary, the screening bund will offer a degree of screening, particularly as the vegetation matures over time, however, the cell modules will remain visible in both their operating and completed phases.

In comparing the impact of the existing approval with the proposed height increase, it is noted that the natural ground level in this area of the site varies between 5.0 and 8.0 metres AHD. The existing approval allows for a maximum height of 23 metres AHD, meaning that the height above ground level will vary between 15 and 18 metres above natural ground level. At these levels, and taking into account the mitigations installed and proposed, the existing approval will result in the cell modules being a dominant element in the landscape.

The proposed increase in height will result in the height above ground level increasing to between 20 and 23 metres above ground level. The increase is likely to be noticeable, resulting in a large dominant element becoming a somewhat larger dominant element.

It is noted that the views from this location will only be obtained by the small number of vehicles on Thompsons Beach Road. The nearest dwelling is located over 1.0 kilometre to the north, from where the impact, particularly that of the proposed height increase will be far more recessive.

VAAU Figure 8.5a – Port Prime Road

This photo is taken from Port Prime Road looking south-south-east approximately 50 metres from the boundary of the subject site.

There is no photo taken from 1997 in this position.

The 2021 photo looks directly towards the screening mound constructed adjacent Port Prime Road in this location. In the photo, the mound illustrates scattered shrubs and trees with a low to moderate level of density. Owing to the time of the year that the photo was taken, the groundcover of the mound is green, matching the groundcover in the foreground.

None of the existing activities on the site are visible in the 2021 photo.

The VAAU includes a photomontage of the 2021 photo. This shows the future cell modules, compared to a completed to a height of 28 metres AHD. Similarly to the previous figure, given the close proximity of the cell modules to the photo point, the apparent height of the cell modules is significantly greater in this location.

The figure also includes a cross-section showing the arrangement of the existing screening bund, a secondary screening bund and the landfill cell modules in this portion of the site.

Having regard to the arrangement of the cell modules relative to the road, the facility will be a dominant character element in this location. Where Thompson Beach Road runs immediately adjacent the subject site boundary, the screening bund will offer a degree of screening, particularly as the vegetation matures over time, however, the cell modules will remain visible in both their operating and completed phases.

In comparing the impact of the existing approval with the proposed height increase, it is noted that the natural ground level in this area of the site varies between 5.0 and 8.0 metres AHD. The existing approval allows for a maximum height of 23 metres AHD, meaning that the height above ground level will vary between 15 and 18 metres above natural ground level. At these levels, and taking into account the mitigations proposed, the existing approval will result in the cell modules being a dominant element in the landscape.

The proposed increase in height will result in the height above ground level increasing to between 20 and 23 metres above ground level. The increase is likely to be noticeable, resulting in a large dominant element becoming a somewhat larger dominant element.

It is noted that, similarly to the figure above, the views from this location will only be obtained by the small number of vehicles on Thompsons Beach Road. The nearest dwelling is located over 1.5 kilometres to the north-east, from where the impact, particularly that of the proposed height increase will be far more recessive.

VAAU Figure 8.6 – Port Prime Road

This photo is taken from Port Prime Road approximately 450 metres west from the westernmost point of the subject site. The photo looks east back across the subject site. It is noted that the original approval includes a 500-metre buffer between the western extent of the site and the westernmost extent of landfill cells.

The 1997 photo shows a largely open landscape, with low coastal shrubland in the foreground, and more significant vegetation in the far background. Port Prime Road is evidently leading in an easterly direction.

The VAAU includes two (2) photomontages of the 2021 photo.

The first photomontage shows the future cell modules, compared to a completed to a height of 28 metres AHD. The closest point of the cell modules is located approximately 950 metres from the photo point (being approximately 450 metres to the property boundary and the 500-metre setback within the property boundary). The photomontage shows the cell modules completed but without any screening having been established. Cell Module 10, located at a distance of approximately 950 metres is a notable character element, with a broad, low topographic profile. Cell Module 11 is located at a distance of approximately 1.9 kilometres is visible to the right of cell Module 10, and forms a visible, but more recessive element, owing to the increased distance.

The second photomontage shows the future cell modules, but also includes a screening mound on the western property boundary. The screening mound would be established at approximately half the distance between the viewpoint and Cell Module 10. The screening mound appears as a low landscaped element running across the majority of the photo, together with screening vegetation. It obscures the view of the lower part of the cell modules, whilst the upper part of the cell modules remains visible.

Having regard to the nature of the vegetation between the viewpoint and the screening mound being lower coastal vegetation, the screening mound provides a greater level of contrast to the landscape to those further north. Whilst the screening mound is projected to be effective at partially occluding the view of the cell modules, having regard to the existing landscape and the distance from which the cell modules are viewed, the limited visual impact of the cell modules in this location and the effect of the screening mound makes the screening mount potentially less valuable in this location that those described in the previous images.

VAAU Figure 8.6a – Crabb Road

This photo is taken from Crabb Road, approximately 2.7 kilometres west of Port Wakefield Road. The photo looks north towards the subject site.

There is no photo taken from 1997 in this location.

The 2021 photo looks north towards Cell Module 1 and Cell Module 2, which have limited visibility. The MWTF shed is also visible in the facility, forming a small, but a clearly visible element in the view, sky lining above the topography.

The nature of the topography results in the existing Cell Module 1 and Cell Module 2 having limited visibility, with the closest point of Cell Module 1 being at a distance of approximately 1.1 kilometres.

The site features, whilst visible, have a limited impact on the view obtained from this location.

The VAAU includes two (2) photomontages of the 2021 photo.

The first photomontage shows the future cell modules, compared to a completed to a height of 28 metres AHD. There is predicted to be some additional visibility of Cell Module 1, 2 and 11, which will extend to a slightly higher level above the existing topography.

The second photomontage shows the future cell modules, but also includes a screening mound on the southern property boundary. The screening mound is located immediately adjacent the road, which having regard to the distance to the cell modules and infrastructure on the subject site, is projected to completely obscure these elements.

Having regard to the limited visual impact of the facility, including the height increase in this location, the screening mound is not considered to be required to ameliorate visual impacts.

It is noted that this screening mound is not currently approved, nor is approval sought in this variation.

VAAU Figure 8.6b – Crabb Road

This photo is taken from Crabb Road, approximately 1.5 kilometres west of Port Wakefield Road. The photo looks north-west towards the subject site, at an angle which is largely perpendicular to Cell Module 1.

There is no photo taken from 1997 in this location.

The 2021 photo looks north-west toward Cell Module 1, which is located behind dense vegetation located on the allotment located Crabb Road (not owned by IWS) and screening vegetation on the eastern boundary of the subject site. Module 1 is glimpsing visible through the vegetation but is a low, broad and recessive element in the overall landscape, which is dominated by the paddock in the foreground.

The VAAU includes a photomontage of the 2021 photo. This shows the future cell modules, compared to a completed height of 28 metres AHD. The distance from which the cell modules are viewed and the significant vegetation between the viewpoint and the cell modules screens the predicted form, resulting in a limited change to the view.

VAAU Figure 8.6c – Lemmey Road

This photo is taken from Lemmey Road, adjacent the entrance to the feedlot operation. The photo looks west towards the subject site at an oblique angle to Cell Module 1. Both the feedlot operation and the poultry sheds are located between the viewpoint and the subject site.

There is no photo taken from 1997 in this location.

The 2021 photo shows the MWTF shed being visible in the background in the middle of the picture. Roadside vegetation is visible in the foreground, with vegetation on the allotment of the feedlot operation visible in the mid-distance. Screening vegetation along the southern side of the allotment of the subject site adjacent Lemmey Road is also visible. Electricity infrastructure is also visible, adding an additional vertical element to the foreground of the view.

The MWFT is visible, but not dominant as a character element. Cell Module 1 is difficult to discern in the photo, but potentially has some glimpsing visibility between the vegetation in the mid-ground. It is notable that infrastructure, civil formations and sheds associated with the feedlot and poultry operations also have visibility.

The photo illustrates the effectiveness of mature screening vegetation, particularly when it is located at the roadside, or close to the viewpoint.

VAAU Figure 8.6d – Lemmey Road

This photo is taken from the same location on Lemmey Road as Figure 8.6c, above, however, is directed to the north-west, parallel to Port Wakefield Highway. The photo looks directly towards the southern side of the allotment of the subject site adjacent Lemmey Road which contains the gatehouse, equipment storage area and biopad facilities.

There is no photo taken from 1997 in this location.

The photo clearly illustrates the mature vegetation in the Port Wakefield Highway verge, together with the screening vegetation along the southern side of the allotment of the subject site adjacent Lemmey Road is also being visible.

Infrastructure on the subject site is difficult to discern in the photo, but potentially has some glimpsing visibility between the vegetation in the background.

Overall Visual Impact

The VAAU provides a more granular assessment of the proposed height increase around the subject site. Having regard to the nature of the facility, the nature and level of visual impact varies significantly in these different locations.

In considering the visual impact of the proposal in a holistic manner, it is necessary to have clear regard to what is currently approved, what is proposed and the extent to which the difference will change the impact.

The existing facility is a very large facility, which has a clear impact on the visual amenity over a wide area of a large locality. This is an existing situation and is an entrenched component of the existing approval. Whilst it is notable that the visual impact of the proposal was a significant assessment issue during the original EIS process since the facility has been established and commenced operation, it is noted that it is operational issues such as odour, dust and litter management that have been the primary focus of community interest in the facility.

The operation of the facility over two decades has shown that the visual mitigations proposed in the original assessment have performed as forecast and proved materially effective in reducing the visual amenity impacts of the proposal. In particular, the dense and mature vegetation established along the Port Wakefield Highway has significantly ameliorated visual amenity impacts from the proposal.

Notwithstanding the mitigations, elements of the facility, including the operations, structures and topographic changes do have visibility. This is expected, and again, was a forecast outcome in the original assessment.

In considering the receivers of views from the site, they fit broadly into three groups:

- vehicles on Port Wakefield Highway;
- vehicles on Council roads; and
- occupiers of land in the locality.

Vehicles on Port Wakefield Highway will form the largest number of receivers of views of the site. These people will typically be in vehicles, travelling at up to the 110 kilometres per hour speed limit, gaining some views for a period extending up to several minutes. The views of the facility are more significant travelling southbound than northbound.

Considering the journey along Port Wakefield Highway between the northern extent of the Adelaide metropolitan area and Port Wakefield township, a broad range of industrial, commercial, residential, infrastructure and primary production uses are visible along the journey. The visual impact of these is highly variable. It is not considered that the facility, either in its approved form, or as proposed to be varied, is a facility which is particularly impactful in the context of such a journey.

The impact upon Council roads in the locality is variable around the site. It is considered to be greatest along Thompson Beach Road and Port Prime Road adjacent the north-western extent of the subject site where the cell modules are closest to the road. In these locations, the cell modules will be highly visible and dominant character elements. Notwithstanding this, the visual effect of the current approval will result in the same outcomes in these locations. The views would largely be experienced by a small number of drivers for a short period of time, who would be unlikely to stop and leave their cars whilst transiting the areas where such views are obtained.

Having regard to the views obtained from dwellings in the locality, the existing dwellings on the western side of Port Wakefield Road will be the most affected by the proposal. The proposed cell height increase does not change the proximity of the cells relative to the location of the existing dwellings.

The closest dwelling to the site is located to the east of the subject site, approximately 500 metres from Cell Module 1. The proposal will have some visual impact on this dwelling; however, it is noted that the dwelling is located on the same site as poultry sheds, is screened by vegetation immediately adjacent to the dwelling and is also screened by vegetation on the eastern and southern boundaries of the subject site. Having regard to the existing approval and form of development, and the proposed height increase, the visual impact on this dwelling is considered reasonable.

The next most affected dwellings are the three dwellings located on the southern side of Thompson Road. These three dwellings are located approximately 1.0 kilometres from the closest extent of the cell modules.

The three (3) dwellings are currently screened by variable amounts of the vegetation immediately adjacent to the dwellings and vegetation along the northern boundary of the subject site. Having regard to the existing approval and form of development, the distance between the subject site and the dwellings, the proposed height increase and the additional mitigation measures available, the visual impact on these dwellings is considered reasonable.

Other dwellings in proximity to the subject site, including those located to the south, and those located to the east are considered to be less impacted, to the point that the proposed increase in height from that currently approved will not result in a material visual impact.

Overall, it is considered that whilst the proposed height increase will increase the scale and visual impact of an already large facility, the extent of the increase in visual impact, balanced against the number and location of receivers of views of the facility results in the impact of the height increase being limited and acceptable.

9.2.6 Pest Plant and Animal Management

The additional maximum finished height is not anticipated to significantly impact the requirement for pest plant and animal management of the facility. IWS undertakes both preventative and reactive management of pest plants and vermin, and this process will not alter as a consequence of the cell height increase.

9.2.7 Community Engagement

Pursuant to its Licence, IWS has formed a community consultative committee which meets on a regular basis and includes representatives from Council, key stakeholders and the community. This provides for continuous and ongoing feedback on the performance of the facility and an opportunity to receive feedback and track improvement on an ongoing basis.

In addition to this, IWS meets regularly with representatives of the Council to receive feedback and provide information in respect of operations.

IWS also conducts targeted community engagement when changes are proposed to operations.

Lastly, IWS receives and responds directly to any feedback, comments or complaints received from stakeholders, Council, agencies or the community. IWS has a complaint-handling process pursuant to its licence and takes seriously its responsibility to respond to any community interest in its operations.

IWS have presented the proposed height increase element of the variation to the community consultative committee and have received unanimous support for this element of the variation from this group.

It is noted that the proposed variation, including the cell height increase proposal, will be subject to public consultation.

9.3 Post Closure Management

The increase in maximum finished height is not anticipated to significantly impact the post closure management of the facility. As outlined above, the additional total cell height available has the opportunity to provide more flexibility in capping design, which potentially allows for improved management of the facility post closure.

9.4 Removal of Volumetric Limitations

Relevant Assessment Issues: Site Operation, Groundwater, Surface Water, Landfill Gas Management, Visual Amenity, Pest Plant and Animal Management, Community Engagement, Post Closure Management.

The existing approval refers to plans which outline specific individual cell positions, and in doing so nominate volumetric calculations for each cell. The volumetric calculations were defined based on a series of assumptions that were made when the proposal was originally proposed and assessed. Changes in cell design and configuration since that time have resulted in changes to the volumetric results, even where the cells are similar in location and extent to those originally proposed.

Notwithstanding the volumetric calculations shown on the originally approved plans, there does not appear to be any ultimate volumetric limit on the proposal set out in the EIS, Response Document or the conditions of the Development Approval.

It is important to consider the purpose of volumetric calculations in respect of the facility in terms of what they are seeking to achieve. In typical planning processes, a quantitative limit sets a clear boundary as to the scale or extent of a proposal or an element of a proposal. It provides a degree of certainty over the maximum extent of a building, structure or operation.

In the case of the facility, the imposition of a total volumetric limitation for the site has limited relevance to the environmental and amenity impacts resulting from the proposal. Since the proposal was originally approved, there has been a substantial increase in the amount of material which is diverted from landfill. This occurs throughout the logistic chain from reduced waste generation, improved source separation and improved processing, including by IWS, both at the subject site and at their other facilities. The result in the increase in diversion from landfill is that even allowing for population growth, the volume of material ultimately ending up in landfill cells is expected to reduce over time.

Considering policies for increased circularity in the economy and expected continuing technological progress, it is highly likely that waste volumes will continue to decline on a per capital basis, offset to a degree by population growth.

IWS has calculated, based on existing approved air space at the subject site as shown on the plans, at current landfilling volumes, the site has a lifespan of significantly more than 100 years from the present time. Whilst, as stated above, the amount of waste to landfill is expected to reduce, there will always be a residual waste fraction, including hazardous waste, for which landfilling in a properly designed and managed landfill cell is an essential service for the protection of the community from amenity, environmental and health impacts.

Given the facility has existing capacity to accept and dispose of waste to landfill for over 100 years, the total volume received at the site is of limited relevance, as the waste being received, managed and disposed at any particular time is more representative of the impacts emanating from the facility, particularly in respect of amenity impacts.

Whilst it is always possible to calculate volume based on the design of a specific cell, the actual volume of waste will vary over time based on factors such as the design of the cell, liner and cap. Having regard to advances in cap design, the ratio of cap-to-waste within a cell can vary very substantially, making gross volumetric calculations significantly less relevant.

It is acknowledged that the total volume of material ultimately disposed of on the site may result in cumulative environmental impacts. These are managed and mitigated through the extensive design, monitoring and management of the site, pursuant to the licence and closely supervised by the EPA on an ongoing basis throughout the life of the development. Further, in having a small number of large facilities for the disposal of waste serving metropolitan Adelaide, it ensures that the impacts are confined to a limited number of locations, which have an adequate scale to provide the level of operational skill and ongoing management required to mitigate potential impacts. The subject site is an existing facility, approved for such a purpose, meaning that its efficient operation over its lifespan will ensure that demand for the disposal of waste, without creating pressure for a proliferation of facilities, can be appropriately met.

It cannot be excluded that the removal of reference to quantitative volumetric caps may result in an increase in the total amount of waste which is ultimately disposed of at the site over its lifespan. However, as proposed by the variation, the extent of material able to be disposed of will still be limited by a defined three-dimensional physical extent of cell space. Any such increase resulting from the removal of reference to volumetric caps is unlikely to represent a significant increase in the overall scale of the facility.

The approach proposed provides a greater level of certainty in respect of the physical and visual manifestation of the ultimate development of the site, rather than considering total volumetric calculations which have less relevance to either the point-in-time environmental impacts or accommodating changes in cell design which have already occurred during the life of the facility to date and are anticipated to continue to occur over time.

For the avoidance of future doubt, it is recommended that an appropriate condition be applied, which highlights that the extent of the ultimate development is defined by the three-dimensional plan of the site showing the ultimate cell extent and not by any volumetric details contained within any of the application documents or previous approvals.

Where appropriate, the EPA will retain the ability to impose volumetric limitations on individual cells where design dictates that to be appropriate.

9.5 Central Processing Pad

Relevant Assessment Issues: Site Operation, Groundwater, Surface Water, Pest Plant and Animal Management, Community Engagement, Post Closure Management.

As the development of the site proceeds, the progressive opening of cells will progress in a westerly direction. Over time, this will result in the focus of operations on the site being located further to the west than is currently the case. At the present time, processing and operations occurring on the site are focussed on the eastern end of the site between the entrance to the facility from Port Wakefield Highway and Modules 1 and 2. As the focus of operations on the site moves further to the west, it will become progressively less efficient to have all operations concentrated at the eastern end of the site.

Accordingly, it is proposed to nominate an area as a processing made more centrally on the site. This area would, subject to any required approvals be used for various processing and staging operations.

The realignment of this pad more centrally provides significant operational benefits. As outlined above more westerly operations will, over time, require the material is transported further into the site. To have the material prepared adjacent new cells will be advantageous and remove the need for additional traffic movements from one side of the site to the other.

The proposal would be subject to appropriate groundwater separation in the form of barrier separation, which would mirror current processing pad outcomes and be in accordance with EPA licensing requirements.

The proposed central processing pad would also be constructed to ensure all surface water is captured and disposed of in accordance with the existing approved or updated Stormwater Management Plan as required by the licence.

The use of areas as processing pads would be subject to approval by the EPA pursuant to the licence. If any activities or building works on the processing pads were proposed that were outside of the ambit of existing approvals, development approval would also be required.

9.6 Cell Processing Pads

Relevant Assessment Issues: Site Operation, Groundwater, Surface Water, Visual Amenity, Air Quality, Acoustic Impacts, Pest Plant and Animal Management, Community Engagement, Post Closure Management.

It is proposed to specify that areas shown as cells on the plans may be utilised as processing pads prior to, their use as a landfill cell. By utilising cell areas as processing pads, this allows for a significantly increased efficiency in the movement of material through the site. Being a transitional only process means the material would only be processed on the site and moved into a cell as soon as practicable. Given the processing would be undertaken on the site in any case it is not expected that there would be any significant additional impacts to this alteration.

Potential additional impacts in respect of Visual Amenity, Air Quality and Acoustic Impacts were identified by the EPA as a result of processing pads being constructed on top of closed and capped cells, due to the height at which the activity was occurring. There is some potential that having a processing pad at an elevated position results in impacts over a greater area due to a greater line-of-sight and/or localised meteorological effects. However, such impacts would vary widely based on where the processing pad was constructed, the nature of activities undertaken on the processing pad and the nature of mitigations employed.

Where processing pads were located on areas of future cells located well beyond the inside the boundary of the site or where the location is screened by already closed and capped cells from external receivers, any potential increase in impact arising from the height is likely to be substantively mitigated. Even where processing pads were located closer to the boundary of the site, the likely impacts would be akin to those arising from the operation of the cells in those locations.

Additionally, the acceptability of impacts would also vary widely based on factors such as the length and intensity of activities.

The use of areas as processing pads would be subject to approval by the EPA pursuant to the licence due to potential micro-siting matters. Additional analysis would be undertaken to ensure the processing pad is developed in accordance with industry best practice. This would include ensuring the processing pad is separated from groundwater and that all surface water is captured and disposed of in accordance with the existing approved Stormwater Management Plan.

If any activities or building works on the processing pads were proposed that were outside of the ambit of existing approvals, development approval would also be required.

By their nature, processing pads on cell areas would tend towards being short terms operations to enable processing efficiencies in the vicinity of the active landfill cells over the life of the project.

9.7 Leachate Pumps

Relevant Assessment Issues: Site Operation, Groundwater, Surface Water, Community Engagement, Post Closure Management.

Leachate collection and monitoring systems allow for the recording of the volumes of leachate produced. It is important that the pumps specified for leachate collection systems are sufficiently sized to enable them to manage the volume of leachate produced within their specified duty.

Data collected by IWS has indicated that some leachate collection pumps are over-specified based on the amount of leachate being produced, however, uncertainty in approval requirements results in minimum specifications being enshrined in the development approval.

All leachate collection systems on the site are required to be designed in consultation with the EPA, pursuant to the licence for the site.

It is considered that removing requirements for sizing of pumps currently in the development approval will still result in adequate leachate collection systems to mitigate the risk of environmental harm through comprehensive assessment and approval by the EPA pursuant to the licence. This is a detailed scientific and technical assessment that should occur on a case-by-case basis. It is considered that the proposed approach will enable the operational flexibility of not over-specifying pumps and therefore resulting in expenditure which is unnecessary.

It is considered appropriate that a condition be applied, which highlights that the sizing of leachate pumps is adequate to maintain leachate levels effectively and efficiently, as may be required by the EPA.

10.0 ASSESSMENT AGAINST PLANNING AND DESIGN CODE

10.1 Rural Zone

Whilst the operation has existing use rights, it is appropriate to completeness to review the relevant zone in which the existing development and subsequent variation proposal is located.

The entirety of the site of the waste transfer station is within the Rural Zone. The Rural Zone is a zone supporting the economic prosperity of South Australia primarily through the production, processing, storage and distribution of primary produce, forestry and the generation of energy from renewable sources.

The zone also supports diversification of existing businesses that promote value-adding such as industry, storage and warehousing activities, the sale and consumption of primary produce, tourist development and accommodation.

Acceptable land uses the productive value of rural land for a range of primary production activities and associated value adding, processing, warehousing and distribution is supported, protected and maintained.

As an existing industrial development, the land use rights are already established. The addendum seeks some clarification and efficiencies in the operation of this existing use. It is therefore appropriate that this addendum be considered an acceptable land use in this Zone and locality.

In terms of siting and design, the development is provided with suitable vehicle access and is located on land which is suitable for this use in terms of a minimal slope.

The built form and character have already been established it is generally in accordance with the Rural Zone and in terms of Built Form and Character as PO 10.1 outlines:

PO 10.1 Large buildings are designed and sited to reduce impacts on scenic and rural vistas by:

a) having substantial setbacks from boundaries and adjacent public roads

b) using low-reflective materials and finishes that blend with the surrounding landscape

c) being located below ridgelines.

The site of the development is set well back and suitably screened from Port Wakefield Highway, with the existing structures constructed using low-reflective materials and finishes. Whilst the setback is significant, the use itself would have an impact on rural vistas. However, considering the existing approved use, it has already been assessed as suitable that the impact can be managed on the site from a visual perspective. The increase in height would not change the nature of this impact and would create a minimal increased impact over what has already been approved.

10.2 Overlay Assessment

The following overlays cover the site of the addendum. Commentary is provided addressing each overlay.

10.2.1 Environment and Food Production Area Overlay

DO 1 **Protection of valuable rural, landscape, environmental and food production areas from urban encroachment.**

The proposed addendum does not seek to expand into any areas outside of the existing approved allotments designated for this operation. Therefore, there would be no additional impact on designated food production areas.

10.2.2 Hazards (Acid Sulphate Soils) Overlay

DO 1 **Development is located and undertaken to minimise disturbance of potential or actual acid sulfate soils and / or the release of acid drainage.**

The existing development is an EPA licenced operation in which the operation incorporates suitable barriers between it and the local geology. It is not anticipated that the ongoing operation would disturb acid sulphate soils, however, this will continue to be assessed and managed during the detailed design process for future cells and other site infrastructure.

10.2.3 Hazards (Bushfire – General) and (Bushfire – Medium Risk) Overlay

DO 1 **Development, including land division responds to the general level of bushfire risk by siting and designing buildings in a manner that mitigates the threat and impact of bushfires on life and property taking into account the increased frequency and intensity of bushfires as a result of climate change.**

DO 2 **To facilitate access for emergency service vehicles to aid the protection of lives and assets from bushfire danger.**

The currently approved operation has an Environmental Management Plan which includes a Fire Risk Management Plan. This plan is considered applicable and suitable for the proposed addendum and would ensure that any ongoing operations would mitigate the threat and impact of bushfires.

10.2.4 Hazards (Flooding – Evidence Required) Overlay

DO 1 **Development adopts a precautionary approach to mitigate potential impacts on people, property, infrastructure, and the environment from potential flood risk through the appropriate siting and design of development.**

The currently approved operation has an Environmental Management Plan which includes a Surface Water and Drainage Management Plan. This plan is considered applicable and suitable for the proposed addendum and would ensure that the operation continues to mitigate potential flood risk.

10.2.5 Interface Management Overlay

DO 1 Development of sensitive receivers in a manner that mitigates potential adverse environmental and amenity impacts generated by the lawful operation of neighbouring and proximate land uses.

This is not applicable to this development as the operation is not considered a sensitive receiver.

10.2.6 Major Urban Transport Routes Overlay

DO 1 Safe and efficient operation of Major Urban Transport Routes for all road users.

DO 2 Provision of safe and efficient access to and from Major Urban Transport Routes.

The access arrangements for this operation are already established. It is not proposed to alter these arrangements in this addendum. Therefore, the continued safe and efficient access would not change.

10.2.7 Native Vegetation Overlay

DO 1 Areas of native vegetation are protected, retained and restored in order to sustain biodiversity, threatened species and vegetation communities, fauna habitat, ecosystem services, carbon storage and amenity values.

The industrial nature of this land use has been established. Assessment on the original condition of native vegetation was assessed and approved during the original EIS assessment. The addendum does not propose to impact upon any additional areas of native vegetation outside of the footprint of the originally approved development.

10.2.8 State Significant Native Vegetation Overlay

DO 1 Protect, retain and restore significant areas of native vegetation.

The industrial nature of this land use has been established. Assessment on the original condition of native vegetation was assessed and approved during the original EIS assessment. The addendum does not propose to impact upon any additional areas of native vegetation outside of the footprint of the originally approved development.

10.2.9 Traffic Generating Development Overlay

DO 1 Safe and efficient operation of Urban Transport Routes and Major Urban Transport Routes for all road users.

DO 2 Provision of safe and efficient access to and from urban transport routes and major urban transport routes.

The access arrangements for this operation are already established. It is not proposed to alter these arrangements in this addendum. Therefore, the continued safe and efficient access would not change.

10.2.10 Water Resources Overlay

DO 1 **Protection of the quality of surface waters considering adverse water quality impacts associated with projected reductions in rainfall and warmer air temperatures as a result of climate change.**

DO 2 **Maintain the conveyance function and natural flow paths of watercourses to assist in the management of flood waters and stormwater runoff.**

The current approved operation has an Environmental Management Plan which includes a Surface Water and Drainage Management Plan. This plan is considered applicable and suitable for the proposed addendum and would ensure that the operation continues to mitigate potential flood risk.

10.2.11 Technical and Numeric Variations (TNV)

The only TNV evident is that land for development have a minimum site area of 40 ha which the existing approved development meets.

10.3 General Policies

10.3.1 Waste Treatment and Management Facilities

The general policies seek that waste treatment and management facilities mitigate the potential environmental and amenity impacts. Practically this equates to the incorporation of separation distances and attenuation measures within the site between waste operations areas (including all closed and capped, operating and future cells) and sensitive receivers and sensitive environmental features to mitigate off-site impacts from noise, air and dust emissions. In addition, waste treatment and management facilities should be screened, located, and designed to minimise adverse visual impacts on amenity.

In terms of the addendum, the increase in maximum finished height of 5.0 metres would be considered to potentially impact upon the locality. As previously discussed, the preliminary assessment is that whilst the proposed height increase will have visual impacts on the locality, having regard to the existing use of the site, the extent of the proposed height increase and the context of the locality, those impacts should be reasonable and within that anticipated.

11.0 ASSESSMENT OF SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS

11.1 Social Impacts

11.1.1 Original EIS Assessment

In terms of social impact assessment, the original EIS focussed on:

- Heritage
  - In summary the EIS outlined that there were no impacts upon either European or Aboriginal Heritage as no features of heritage value were identified.
- Land Use Change
  - The land was considered in an already highly disturbed and degraded state. The poor soil quality, low rainfall, high soil salinity and sparse vegetation restricted the land use options at the time.
  - It was also anticipated that the development would have minimal effects on adjacent land uses.
- Visual Amenity
  - Visual impacts and obtrusiveness created by the development was considered to be minimal through design of the re-vegetation, landscaping program and naturally by the lie of the land. There was anticipated to be little view of the filling activity from Port Wakefield Road and adjoining properties.
- Mining Tenements
  - It was expected that landfilling operations would not impact existing tenements regarding groundwater resources, given the hydrogeological conditions at the site, nor was it expected that litter would be an issue due to the modus operandi and the form of the waste received.
- Public Health and Safety
  - The impacts from landfill operations on public health and safety arise from leachate generation, litter (poor covering operations), dust and noise (earthmoving equipment and truck movements), vermin, birds, physical hazards, and fires. Given the design and operation details of the landfill at the time, any detrimental effects to public welfare were expected to be avoided.
- Property Values
  - It was expected that in overall terms, the subject land, its boundaries and the view of the site would be considerably enhanced and would have a minimal impact on the amenity and/or value of properties surrounding the site.

11.1.2 Addendum Impacts

In terms of social impact, the only matter of impact from above is visual impact. A full assessment of the visual impact of the proposed addendum is located in **Section 9.2** with the conclusion being that the impact of an increased maximum height of 5.0 metres is considered negligible.

11.2 Environmental Impacts

11.2.1 Original EIS Assessment

The original EIS assessment on the environmental impacts focussed upon:

- Groundwater
  - No adverse effects on groundwater in the area were expected, with a groundwater monitoring program to be implemented.
- Noise
  - To summarise, the EIS outlined that the contribution of noise associated with landfill activities would not be significantly above that of existing background noise levels.
- Air Quality
  - The balefill method of disposal of waste ensures the waste is not worked over and hence no odours would be released that would be detectable at the site boundary with minimal odour at the filling face.
- Litter
  - Due to the bailing and proposed wind breaks it was not expected that escaped litter would be significantly evident in and around the site.
- Landfill Gas
  - A best practice landfill gas strategy would be implemented.
- Traffic
  - Impacts on the major traffic routes were assessed to be negligible as they are main, heavy vehicle routes such that the types and numbers of vehicles generated will have minor impacts on existing heavy traffic volumes and flows.
- Surface Water
  - Surface water run-off would be controlled through diversion drains, salt marsh and retention basin system. Surface water would be contained and treated within the site.

- Flora/Fauna/Pests

    - Collectively it was expected that the filling operations would not adversely impact the existing natural biological environment. It was also stated that due to the operating conditions detailed in the EIS, in the long term an improvement of local environmental quality is anticipated.

11.2.2 Addendum Impacts

The development has now been operating for years and has proven that it can operate in accordance with approval conditions and the licence granted by the EPA. It is not anticipated that the addendum would create significant additional environmental impact over and above what has already been assessed and approved as outlined above.

11.3 Economic Impacts

11.3.1 Original EIS Assessment

At the time of the original EIS, an assessment was undertaken to provide an indication of the cost of waste disposal at the landfill, together with total waste handling costs (collection – transfer – haulage – disposal).

The expenditures at the time represented a very significant investment in the South Australian economy that would create employment opportunities and the use of local skills and services.

It was also provided that if this facility was not proceeded with, other alternatives such as conventional landfilling, enclosed vessel digestion and composting, incineration etc were not seen to be economically or environmentally viable.

11.3.2 Addendum Impacts

As waste treatment and management technology have progressed, the existing operation must respond to these matters to ensure it is being operated at current time best practice. This addendum seeks to improve the site operations in terms of efficiency and longevity. It has become a critical waste management facility from an economic standpoint.