# Buronga Landfill Expansion

Amendment Report

#### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



# **Document History and Status**

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# **Glossary and Abbreviations**

Abbreviation/Term	Definition
BAM	Biodiversity Assessment Method
BDAR	Biodiversity Development Assessment Report
BHCC	Broken Hill City Council
BSC	Balranald Shire Council
CDSC	Central Darling Shire Council
Cth	Commonwealth of Australia
DPIE	NSW Department of Planning Industry and Environment
Environmental Impact Statement (EIS)	The environmental impact statement prepared to support the application for the Project
EPA or NSW EPA	New South Wales Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPL	Environment Protection Licence
FERF	Front End Recycling Facility
Landfill Guideline	Refers to the Environmental Guidelines: Solid Waste Landfills (EPA, 2016)
LEMP	Landfill Environmental Management Plan. This document details the operations of the landfill and presents the management and monitoring requirements based on the site's risk
LFG	Landfill Gas
m AHD	Metres Australian Height Datum
m bgl	Metres below ground level
MRCC	Mildura Rural City Council
Project	Buronga Landfill Expansion Project as described in the EIS
Proponent	The person or entity seeking approval for a State significant project or acting on an approval for a State significant project, including any associated entities that have been engaged to assist with project delivery. For this Project the Proponent is Wentworth Shire Council
SEARs	The Planning Secretary's Environmental Impact Assessment Requirements for the preparation of an EIS for the Project
SEPP	State Environment Planning Policy
State significant development (SSD)	Development projects which have State significance due to their size, economic value or potential impacts assessed and approved under part 4.1 of the EP&A Act

Abbreviation/Term	Definition
Submission	A written response from an individual or organisation, which was submitted to the DPIE during the public exhibition of the EIS
Submission Report	This report which has been prepared to respond to issues raised in the submissions
TfNSW	Transport for New South Wales
tpa	Tonnes per annum
Tonkin	Tonkin Consulting PTY LTD
WSC	Wentworth Shire Council

## **Executive Summary**

Wentworth Shire Council (WSC) provides waste collection and management services to its residents. The Buronga Landfill is the largest disposal facility within the WSC council area and closest to the largest population centre in the Western region. It covers 124 ha comprising three main Lots, two being crown land where the existing landfill is located and one owned by WSC, where the proposed expansion is located. The site has been used as a landfill since the 1930's and currently holds Environment Protection Licence 20209.

The proposed development is to expand the waste management services provided by WSC at Buronga Landfill to:

- Increase recycling
- Provide upgraded facilities
- Safeguard waste management facilities
- Become a regional waste management facility

The scope of the project consists of expanding the resource recovery facilities within the short term and developing additional disposal facilities on an as needs basis. By consolidating the waste management, WSC is aiming to meet the NSW Government targets for recycling by providing better economies of scale for managing these facilities. In becoming a regional waste management facility, the proposed development will retain Buronga as a medium-sized landfill with an increase in waste acceptance up to 100,000 tpa and improve resource recovery facilities to reduce the proportion going to landfill.

Within the EIS, it was demonstrated that the site is suitably located with most potential impacts being managed or mitigated by standard operating procedures for landfills. A key item to investigate further was the management of biodiversity which will be impacted by clearing to construct new landfill cells and the intersection of the entrance with Arumpo Road. Whilst there were no concerns with native fauna at the site, the proposed development was refined during the EIS process to minimise the impact to vegetation, commence works on the south-western side in the area of greatest disturbance and the area which will assist in screening southern neighbours from any potential noise impacts, improve stockpile areas and provide additional fire-fighting tanks to reduce bushfire risks and improve the Arumpo Road intersection and provide shoulder sealing.

Following exhibition of the EIS, no public comments were received. Submissions were only received from government departments requesting clarifications which were grouped into categories and subcategories.

In response to the submissions received the following amendment has been made:

• The application has been reduced to apply for development consent for Stages 1A-1D. The entire footprint which includes the potential future cells 1E, 1F and Stage 2, are referred to within this document to ensure that the current proposal can accommodate future expansion, if required and subsequently approved in the future.

No further amendments are proposed. In response to the remaining submissions received the following summarises the categories and responses:

- Justification for the quantity of waste and need for a regional waste facility
  - Based on the population projections to 2050 and the current waste generation rates, it is likely that the Buronga facility could receive up to 100,000 tonnes per year of waste. By co-locating improved resource recovery facilities with the landfill the aim is to increase recycling rates; however standard metrics for likely increases are not available to provide estimates of increased rates.
  - RAMJO identified that sub-regional facilities need to be investigated for Western NSW and has provided a letter of support as has Mildura Rural City Council. Buronga is unique placed on arterial roads with links to recyclers in Adelaide and Melbourne and near the largest growth centre of Mildura.

- P
- Further details on the design and operation of the resource recovery and landfill facilities
  - Design and operation of the facility will be controlled by the EPL. Control and limits on waste entering the site, engineering design requirements and monitoring and rehabilitation requirements are all included in the EPL and best practice guidance developed by EPA.
  - Rehabilitation will use endemic trees, shrubs and groundcover to reinstate vegetation and habitat once the landfill cells are completed. Council has provisions for rehabilitation within their balance sheet as required by Australian Accounting Standards
- Provision of Information not provided in EIS
  - Landowners consent from Crown Lands has been obtained for the southern road corridor to enable construction of the FERF. There were no conditions of consent that have affected the proposed development.
  - The DPI- Ag SEARs was not included in the original SEARs request provided. As a result, a Land Use Conflict Risk Assessment was not completed. This has now been corrected and has concluded that the proposed development is compatible with the surrounding agricultural and mining land uses.
  - MEG's requirements were not completed in accordance with all their requirements and hence this
    has now been corrected. No further comments on the proposed development were received from
    any of the mining stakeholders contacted.
  - A detailed landscaping plan has been provided which lists the species proposed to be planted on the landfill final landform. There are no specific zones or variation in the species proposed as the landform is similar across the site.
  - Additional engagement with government regulators did not raise further issues than those already received in the submission responses
- Additional Studies on Environmental and Social Impacts
  - The additional studies have not materially altered the risks identified in the EIS and there are no additional management or mitigation measures proposed with the exception of an additional measure for noise.

Modelling using the worst-case scenario found that if crushing and grinding operations were undertaken concurrently then the noise levels at the nearest receptor may be exceeded. As a result the additional measure is to limit crushing or grinding to only one of these activities at one time.

Overall, as concluded in the EIS, the expansion of the Buronga Landfill is an effective solution that will provide a long term, secure repository for the recycling of waste and disposal of residual material for the region. The balance of impacts and benefits favour the public interest as:

- There is a genuine need and want for regional waste management facilities in Western NSW
- The site is an existing landfill and meets NSW EPA siting requirements
- · Aggregation of waste management improves recycling opportunities
- Recycling waste locally creates more employment locally than disposal
- Consolidation improves economies of scale and value for money for rate payers
- The potential impacts from the proposed development can be managed through standard landfill best management practice.

For these reasons, we endorse the expansion of the Buronga Landfill as proposed within the EIS and herein.

# **1** Introduction

## **1.1 Project Context**

Wentworth Shire Council (WSC) provides waste collection and management services to its population with its waste facilities comprising the Buronga Landfill, Wentworth Transfer Station, Dareton Transfer Station and three small rural facilities at Ellerslie, Pomona and Pooncarie. The Buronga Landfill (the site) at 258 Arumpo Road, Buronga is located 4.75 km north of the town of Buronga and over 2.5 km north-west of the Murray River. The site occupies Lot 197 and 212 of DP756946 and Lot 1 DP1037845 and is zoned SP2 (Infrastructure) for the purpose of waste or resource management facility. Environment Protection Licence 20209 (EPL) issued by NSW Environment Protection Authority for the scheduled activity of waste disposal currently allows the site to accept up to 30,000 tonnes of general solid waste per year. The current site layout is shown in Appendix A, Figure 3 (which replaces EIS Figure 3).

The proposed development (the Project) is to expand the waste management services provided by WSC at the Buronga Landfill to secure a dedicated location for waste management activities into the future. The existing Buronga landfill is the largest site and is located near to the major towns of Wentworth, Dareton, Gol Gol and Buronga. By co-locating the recycling and disposal facilities, WSC aims to increase current recycling rates to meet NSW Government targets, provide surety in planning for waste management facilities for rate payers into the future and provide better economies of scale for managing these facilities. The specific project objectives are:

- improve recycling in the region to assist in achieving the NSW Waste and Sustainable Materials Strategy 2041 (DPIE, 2021) targets of 80% average recovery rate from all waste streams and tripling plastics recycling by 2030;
- provide best practice facilities for the residents which comply with the requirements of NSW EPA, as described in Environmental Guidelines: Solid Waste Landfills (NSW EPA, 2016) and consider the recommendations in the Handbook for Design and Operation of the Rural and Regional transfer Stations (NSW DEC, 2006);
- safeguard provision of waste management service for the region into the future;
- provide a service to surrounding local government areas to improve recycling and environmentally responsible waste management throughout the region.

### 1.2 Assessment Steps

The previous steps in the assessment are summarised in

Date	Milestone	Key Changes to Proposal
October 2020	Request for SEARs	
November 2020	SEARs Received	
January 2022	EIS Submitted	Recycling infrastructure upgrades included as part of development
		Layout changed to reduce impact to ecological communities and ensure separation to aboriginal artefacts
February – March 2022	EIS Exhibited	

#### Table 1.1 Key Project Milestones

Date	Milestone	Key Changes to Proposal
April 2022	Response to Submissions Received	No public responses to the submission were received. Eleven government agencies provided further advice (Appendix B). It was identified that DPIE did not provide the SEARs advice from Department of Primary Industries
May to September 2022	Additional liaison with Government stakeholders	Update to BDAR required due to changes in ecological communities SIDRA modelling requested by TfNSW
7 September 2022	Submission of Submission Report	Additional information provided, including LUCRA to address DPI's SEARs comments. This report was not formally accepted by DPIE.
September to December 2022	Additional liaison with DPIE	Agreed reduction in extent of landfill development as part of this application. The option to apply at a later date for further development of the site as a landfill or other waste management infrastructure has been retained by WSC.
February 2023	Submission of Amendment Report	Response includes response to submission as well as amendment of the proposal to request approval for the resource recovery facilities (unchanged from original) and an amendment to reduce the request for approval to Stages 1A to 1D. The associated infrastructure remains unchanged. Text, drawings and the BDAR have been updated to reflect reduction in areal extent of proposal. Further consultation with Biodiversity Conservation Trust is still required once consent is obtained to accurately reflect the final
		development proposed.

## **1.3** Project Description and Amendment

The Project is to be staged over the next 38 years [a reduction from the original application for 120 years] and comprises:

- upgrading the existing recycling infrastructure to provide a dedicated recycling facility, community resource recovery area and bulking up areas to improve recycling rates and economics of recycling over the next 5 years. A detailed description of the proposed changes is provided below. This remain unchanged from the original application and is shown in Appendix A Figure 6.
- constructing new landfill cells to the north of the existing landfill area, increasing the landfill footprint from 13 ha to approximately 32 ha not including recycling areas or ancillary infrastructure. The expansion is proposed to be undertaken in four stages (Stages 1A to 1D) with each stage providing 3-5 landfill cells (refer to Appendix A Figure 7). This is the only aspect of the original proposal which has changed. Originally, it was proposed to expand a 50 ha area in eleven substages (refer to EIS Figure 9).
- increasing approved maximum waste volumes from 30,000 tonnes per annum to 100,000 tonnes per annum. Current waste acceptance from within WSC is nearing the limit of 30,000 tonnes per annum. It is also proposed to accept waste from the surrounding NSW local government areas (LGAs), such as Balranald, Central Darling and Murray River and from interstate councils such as Mildura and Renmark-Paringa. The combination of increased waste quantities and improved resource recovery facilities is likely to increase the total quantity of waste accepted at Buronga to nearer 100,000 tpa. This remain unchanged from the original application.



Following discussions with DPIE, the original application for development of landfill Stages 1 and 2 has been reduced to Landfill Stages 1A to 1D to provide a practical timeframe for approval. The works undertaken herein consider the potential for the site to be completely developed but this application is only for Stages 1A to 1D. If further development is proposed in the future, another application for development consent will be required at that time.

### **1.4 Format of Report**

This amendment report also provides a response to submission received on the EIS. The document has been set out as follows:

- Analysis of Submission
- Action Taken Since Exhibition
- Amendment Description, including the impact of the amendment on the strategic context and statutory context
- Submission Responses Justification
- Submission Responses Project
- Submission Responses Procedural
- Submission Responses Environment and Social, including any change in impacts from he amendment
- Updated Project Justification, including consideration of the amendment submission responses

# 2 Analysis of Submissions

The application for SSD and EIS were exhibited from Tuesday 22 February until 21 March 2022. On 14 February 2022, Tonkin, on behalf of WSC, emailed the community stakeholders consulted during the process, to advise that the EIS had been submitted to DPIE along with the link to the project.

On 23 March 2022, DPIE notified WSC that no public submission responses were received during the exhibition period. Eleven government agencies, including DPIE, provided further advice. It was identified that the SEARs advice from Department of Primary Industries was not provided with the original SEARS advice but was provided with the Submission Responses. Also, the SEARS advice from Regional NSW Mining, Exploration and Geoscience required further action. As a result, these two Government agencies have not yet been provided the application and EIS for further advice.

## 2.1 Breakdown of Submissions

The following government agencies provided further advice:

- Department of Planning, Industry and Environment: Industry Assessments (DPIE)
- Department of Planning and Environment: Biodiversity and Conservation Division, South West Branch (DPE BCD)
- Department of Planning and Environment: Crown Lands, Western Region (Crown Lands)
- Department of Planning and Environment: Western Region, Local and Regional Planning Team (DPE WR)
- Department of Planning and Environment: Water (DPE Water)
- Fire & Rescue NSW, Operational Liaison and Special Hazards Unit (FRNSW)
- Heritage NSW
- NSW EPA, Western Region (EPA)
- NSW Rural Fire Service, Development Assessment & Planning (RFS)
- Transport for NSW, Development Services West (TfNSW)
- Water NSW

All advice was received from State Government agencies from head office or regional divisions. In addition, the SEARS advice has been received from:

- NSW Department of Primary Industries: Agriculture, Land Use (DPI-Ag)
- NSW Department of Regional NSW Mining, Exploration & Geoscience (MEG), Land Use

The advice received has been categorised into four categories with several subcategories, as described below. The number of advice statements for each category from each government agency is summarised in Table 2.1. It is noted that in a number of cases the advice provided by DPIE also included the comments provided by the other agencies and hence there is overlapping of advice between the agencies. Also, advice provided by four agencies (DPE Water, EPA, FRNSW, RFS and Heritage) was to provide recommendations for conditions of consent. The submissions register is provided as Appendix B.

The categories and subcategories are:

- Justification: This loosely aligns to Section 2 of the EIS and has been divided into two subcategories for advice related to:
  - Historical Use
  - Demand for the Project

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- Project details and design: This loosely aligns to Section 3 of the EIS and is divided into five subcategories for advice related to:
  - General project information such as overall capacity of the facility in terms of tonnages received and/or diverted
  - General design requirements that relate to the recycling areas as well as the landfill
  - Landfill design requirements, including more description of the landfill, leachate management and drainage and groundwater considerations in design
  - Operation of the facility including additional detail on operational hours, landfill gas (LFG), water supply and employment
  - drawing and layout additional details
  - costs used for the capital investment value
- Procedural matters: These are areas which were not included in the EIS and need to be addressed to enable complete assessment of the proposed development. This is divided into three subcategories for advice related to:
  - Statutory obligations in obtaining landowners consent for the development to proceed
  - SEARS, which are the specific requirements in the SEARS which were not included in the EIS
  - Engagement where additional consultation with stakeholders has been requested to be undertaken
- Environmental and social: This section aligns to Section 6 of the EIS and is divided in the same seven subcategories, being:
  - Air quality
  - Traffic and Access
  - Soil and Water
  - Hazard Analysis
  - Bushire
  - Biodiversity
  - Heritage
  - Noise
  - Social impactVisual amenity

The issues raised were not beyond the scope of the project, noting that some issues raised were related to conditions of consent to ensure that the detailed design works and operational matters are conducted in accordance with approvals.

#### Table 2.1 Categorisation of Advice Received

Category	Subcategory	Agency	Advice (no.)
Justification	Historical Use	DPIE	2
	Demand	DPIE	5
		DPE WR	2
Project details and design	General	DPIE	4
	Facility Design	FRNSW	8
	Landfill Design	DPIE	10
		DPI – Ag	3
		DPE Water	2
	Operations	DPIE	10
		EPA	4
		NSWFR	13
		DPI – Ag	3

Category	Subcategory	Agency	Advice (no.)
	Drawing and layouts	DPIE	9
		DPE Water	1
	Costs	DPIE	4
Procedural matters	Statutory	DPIE	6
		Crown Lands	1
	SEARS	DPIE	7
		Crown Lands	1
		DPI – Ag	10
		MEG	5
	Engagement	DPIE	2
		DPI Ag	1
Environmental and social	Air quality	DPIE	4
	Traffic	DPIE	6
		TfNSW	8
		DPI Ag	1
	Soil and Groundwater	DPIE	3
		Water NSW	3
	Hazards	DPIE	2
	Bushfire	NSW RFS	1
	Biodiversity	DPIE	1
		DPE BCD	6
		DPI Ag	3
	Heritage	Heritage NSW	5
	Noise	DPIE	4
	Social Impact	DPIE	1
	Visual Amenity	DPIE	2



## **3** Action Taken Since Exhibition

The actions undertaken since exhibition have consisted of:

- Engaging archaeologist, Landskape, to complete and submit an Aboriginal Site Impact Recording Form to AHIMS with respect to site 46-3-0192.
- Requesting and receiving a proposal from Landskape to prepare a Heritage Management Plan if the project is approved.
- Engaging air quality specialists, Vipac, to undertake further air quality assessments and respond to advice.
- Engaging acoustic engineers, Sonus, to undertake further modelling and respond to advice.
- Engaging ecologist, Pinion Advisory, to undertake additional surveys and respond to advice.
- Engaging quantity surveyor, Capsice, to update costings and respond to advice.
- Engaging architects, Grieve Gillet Anderson, to provide sightline drawing.
- Consulting with government agencies and interested mining parties.
- Preparing a Land Use Conflict Risk Assessment in according with DPI- Agriculture's guidelines.
- Preparing a Landscaping Plan.
- Engaging planners, Golsworthy, to submit a request for Crown consent and respond to advice.
- Liaising with and gaining support from RAMJO and Mildura Rural City Council.
- Preparing a water balance for the site, including modelling leachate and stormwater.
- Providing additional clarity around the project details and design including the provision of additional drawings.
- Updating the mitigation measures as appropriate. The updated mitigation table is provided as Appendix C.
- Reduce the extent of the application to cover Stages 1A to 1D only. The potential for further development in the future is still considered within the proposal to demonstrate that it can be accommodated.

## 4 Amended Project

### 4.1 Strategic Context

The strategic context of the proposed development has not altered from the EIS. The *Waste Avoidance and Resource Recovery Act 2001 (NSW)* (WARR Act) provides the hierarchy for waste being avoidance, resource recovery and finally disposal. The avoidance of waste is outside the scope of this proposal; however the proposed development at the Buronga Landfill will increase resource recovery by expanding and improving the resource recovery facilities and providing additional points during the handling of waste that materials may be recovered.

The proposed development aligns with the *NSW Waste and Sustainable Materials Strategy 2014 Stage 1: 2021-2027* as follows:

- increasing recovery to 80%: construction of a Front End Recycling Facilities (FERF) for zero cost waste, such as paper, cardboard, steel, etc.; constructing easily dedicated areas with all-weather access for recyclables (concrete, bricks, soil, green waste, tyres); providing opportunities to recover more recyclables by sorting residual waste in the Residual Drop Off Area prior to transport to the landfill. These opportunities for resource recovery do not currently exist at Buronga Landfill.
- significantly increase the use of recycled content by government and industry: increased recovery
  provides a larger volume of materials, construction of dedicated areas assists in keeping separated
  wastes "clean" and the provision of all -weather haul roads increases the opportunity for recyclables to
  be included in Council or private industry development projects which can use waste fill (e.g. clean soil
  or crushed concrete, bricks etc.) or organic amendments (i.e. mulched green waste).
- reduce organic waste to landfill by 50%: providing a dedicated, all-weather area for green waste which is accessible to the general public as well as commercial contractors. The improvement in facilities is likely to result in an uptake by local residents as it will be easier to access and use.

As waste volumes continue to grow, infrastructure and services will need to keep pace. WSC needs to ensure it has the capacity to meet its critical future needs. As WSC supports the transition to a circular economy, it must also plan to continue to provide a way to safely manage residual waste into the future so that it can protect the environment and the health of the community. The expanded landfill facilities are to provide best practice regional waste facilities in line with Action 7.6 of the *Regional Waste Strategy 2017-2021*.

## 4.2 Description

The original scope of the resource recovery facilities remains unamended as does it proposed operation. The amendment to the proposal was to reduce the proposed footprint of the Buronga Landfill from Stages 1 and 2 to Stages 1A-1D. This reduced the estimated timeframe for the development from over 100 years to less than 40 years and reduces the vegetation clearing required for this amended proposal. There are no other amendments to the potential magnitude of impacts related to air, traffic, soil and groundwater, hazards, bushfire, biodiversity, cultural heritage, noise, social impact or visual amenity. This reduction in footprint also does not alter the need for additional stormwater, leachate and landfill gas facilities as the facility progressively expands. A summary of the amended project is provided in Table 4.1

Element	Original Project	Amended Project
Entrance Upgrades	New turns as described in Traffic Impact Assessment	Unchanged

#### Table 4.1 Amended Project Summary Table

Element	Original Project	Amended Project
Front End Recycling Facility	Shed after entrance and before weighbridge for drop off of zero cost wastes (e.g. paper, cardboard, ferrous and on- ferrous metals)	Unchanged
Resource Recovery Area, Residual Drop Off and Storage Areas	As shown in Figures in Appendix A	Unchanged
Waste Accepted (tonnes per annum)	Up to 100,000	Unchanged
Landfill		
Increased Footprint (ha)	50	20
Longevity (years)	>120	38
Cell development	Stages 1A to 1F and Stages 2A to 2E	Stages 1A to 1D. Further stages will require further approval
Cell design	As per Landfill Guidelines	Unchanged
Rehabilitation	Phytocap with endemic native species	Unchanged
Associated Infrastructure	Haul roads and leachate, stormwater and LFG systems	Unchanged

## 4.3 Statutory Context

The facility is proposed to accept waste from other LGAs and would have the ability to accept > 75,000 tpa of putrescible waste; however, this is estimated to be < 65,000 tpa in the next 30 years. The proposed expansion would have the capacity to receive approximately 4 million tonnes in Stage 1A to 1D. The proposed activity is a State significant development as specified under Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011 (NSW)* as, if approved, it is proposed to:

- become a regional landfill by accepting waste from other LGAs
- have the ability to accept > 75,000 tonnes per annum of putrescible waste
- have the capacity to receive more than 650,000 tonnes of waste over its site life As identified during the EIS phase, the amended development remains a State Significant Development.

## 4.4 Further Consultation

No further consultation has been undertaken specifically on the amended proposal as this amendment reduces the landfill footprint and timeframe and hence further comment from stakeholders was considered unlikely.



# **5 Submission Response - Justification**

## 5.1 Historical Use

#### **DPIE Comment:**

History of use of the site

Prior to approving any expansion, the Department must ascertain that the existing landfill has been operating consistently with the planning controls applicable during its history of operation. In this regard, the following information is required:

• A complete history of the zoning of the site and permissible use of the land for waste management

• A copy of the Council approval and assessment report for the borrow pits (DA15/54)

• A complete history of the zoning of the site and permissible use of the land for waste management James Golsworthy Consulting has reviewed the history of the site.

According to anecdotal evidence the site was first used for waste disposal in 1934. In 1967, the Local Government Gazettal notes Reserve No. 86496 (which contains part of the site being Lot 197 DP 756946) was trusted to WSC under the *Public Trusts Act 1897* (NSW) for use in landfilling. The reservation is listed on the Crown Plan and noted as being undertaken on 3 November 1967. Similarly Lot 212 DP756946 was made part of the same reserve which was notified on (as listed on the plan) 31 October 1975. The title plans are presented in Appendix D.

Prior to introduction of the *Wentworth Local Environment Plan 2011* (2011 LEP), the land had historically been zoned for primary production purposes. Upon introduction of the 2011 LEP the land (along with Lot 1 DP 1037845) was zoned SP2 Infrastructure (waste or resource recovery facility).

From inception of the use in 1934 until 2011, the waste facility was operated by WSC. Through the period of 2011-2015 the facility was operated by a private contractor on behalf of WSC. Since 2015 WSC has operated the facility.

The earliest and only Development Application for the land was in 2015 (DA15/134). The consent was issued for the establishment of borrow pits to gather soil for the use in association with the operation and capping of the existing landfill. A copy of DA15/134 is provided as Appendix D.

The site is licenced by the NSW EPA under the *Protection of the Environment Operations Act 1997*, with WSC holding Environment Protection Licence 20209. The current EPL was issued 5 April 2013 and was most recently varied on 24 November 2017. The site is operated under the conditions required by this licence, as well as by the LEMP. The licence sets out operational procedures protecting human health and the environment from impact by the operations at the Buronga Landfill.

The land is appropriately zoned for use as a waste management facility.

#### • A copy of the Council approval and assessment report for the borrow pits (DA15/54)

A copy of the notice of determination and development application for the borrow pits is provided as Appendix D. The correct application is DA15/134.

This existing approval is over a portion of the land proposed for the Buronga Expansion and the investigations undertaken and conditions of consent have bearing upon the current development approval.

A Statement of Environmental Effects (SEE) was prepared for the development of the borrow pits which notes the main impacts are from removal of soil, clearing of vegetation, potential for discovery of aboriginal heritage items and dust. A flora assessment found no vegetation species, populations or communities of local, regional or state significance were observed within the area proposed (approximately in the location of Stage 1). A site inspection was conducted by an archaeologist and two members of the Barkindji community. The western side was noted as being open cleared land affected by grazing and burrowing animals whilst the eastern side was noted as being highly disturbed by former quarrying operations (loam extraction) and motorbike riders. One aboriginal item was found, an artefact scatter which required an Aboriginal Heritage Impact Permit (AHIP ) to be obtained, which was subsequently obtained.

The main mitigation measures proposed to address these potential impacts were to:

- Soil: Train staff in soil conservation and management, supervise earthworks, extract borrow material as required, extract on days of suitable conditions (no rain or high winds)
- Vegetation: Measures proposed were to mark the area to indicate no go zones, keep on-site list of threatened species and check trees for fauna prior to removal
- Cultural heritage: Obtain AHIP, follow contingency plan for accidental discovery
- Air quality: cease operations if severe wind conditions are present

A number of other standard mitigation measures were also recommended.

The borrow pit has targeted already cleared areas to the north of the landfill (Figure 1). A haul road has been provided for safe access as recommended in the SEE. Topsoil has been stripped from the eastern side of the borrow for use as daily cover. The deeper pit was used to extract clay for construction of the current landfill cell. The heritage item was located to the south of the deeper excavation, further discussion on this item is provided in Section 8.7.



Figure 1 LIDAR Image of Buronga Landfill (Source: MetroMap)

### 5.2 Demand

#### **DPIE Comment:**

#### Demand for regional waste facility

The Department seeks additional information on how the size of the landfill and the 120-year timeline has been determined and whether the scale of the landfill is justifiable. Furthermore, the EIS needs to respond to the potential need to progressively increase the capacity of the community recycling facility relative to the capacity of the landfill having regard to the anticipated increase in diversion of waste from landfill during the proposed life of the landfill. In this regard, please submit the following information:

- Detailed projections showing how the waste disposal amount of 100,000 tpa has been determined
- Evidence demonstrating the demand for a regional waste facility (e.g. memorandum of understanding or letter of support from neighbouring councils)
- Justification for the size of the recycling facility relative to the size of the landfill having regard to the waste hierarchy that seeks to reduce, reuse, recover and use landfill as last resort
- Consideration of the Regional Waste Strategy 2017-2021 prepared by RAMROC of which Wentworth Shire Council is a member
- Update / correction of the Direction numbers in the Far West Regional Plan 2036
- DPE WR Comment:
- Updated Far West Regional Plan 2036 numbering errors
- Request additional information on justifying the demand for regional scale facility and 100,000 tonnes/year limit
- Detailed projections showing how the waste disposal amount of 100,000 tpa has been determined
- Request additional information on justifying the demand for regional scale facility and 100,000 tonnes/year limit

The quantity of waste received by the facility is a major factor in defining the potential impact from the proposed development. If the waste receival is higher than predicted in the EIS then the facility will be undersized and the impact to neighbours and the environment could be significantly higher; it is also important for Council to ensure that this approvals process will provide the sized facility required for the longer management of waste in the region without having to repeat it. It is also important to ensure that the facility lower quantities of waste than predicted or the facility will be oversized and be a waste of ratepayers' money.

With respect to the sizing of landfills, the EPA Landfill Guidelines define small rural landfills as receiving < 20,000 tpa of waste and large landfills as receiving > 100,000 tpa of waste. Buronga is currently licenced to dispose of 30,000 tonnes of waste so the proposed development will still retain the landfill as a medium sized landfill (i.e. 20,000 – 100,000 tpa).

In line with the NSW Government's Waste and Sustainable Materials Strategy and Victorian Government's Circular Economy Policy, this proposal seeks to support the cross-border region to:

- Embrace and drive efforts towards the principles of a circular economy to achieve strong environmental and economic outcomes, through processing waste and resources within the local region of participating Councils.
- Lead and remain at the forefront of waste management innovation and service delivery.
- Achieve best service outcomes and value for each of the Council's local government areas and their respective local communities.

Buronga and Mildura are separated by the River Murray in a similar manner to Albury-Wodonga. Mildura is the regional service centre for the area and currently operates its own landfill in Mildura. The Mildura Landfill is nearing completion and there are no other landfills currently operating within its LGA. This landfill is also poorly sited being located across the road from the hospital and within an expanding residential area. The closest landfill to Mildura is Buronga Landfill and it provides safe and easy transport access. Mildura's other options are to transport waste further to Horsham or Echuca where larger landfills are available but this would be at significantly increased cost or to develop a new landfill but the lead time on this would be decades and would be difficult to justify to residents, regulators and economically given the proximity and potential size of the Buronga Landfill.

NSW EPA provides detailed reports of the kerbside waste collection, including the quantity of kerbside waste disposed. For WSC the kerbside waste was reported 3,580 tonnes in 2019/20 (Table 5.1). Based on the NSW Waste and Sustainable Material Strategy 2014 Stage 1: 2021-2027 (DPIE, 2021) target of a 10% reduction in waste generated per person by 2030, the projected waste for disposal from kerbside in WSC in 30 years is approximately 4,700 tpa due to population growth. For the surrounding LGAs, it is expected that only the waste for disposal will be transported to Buronga Landfill, with the current sorting and recycling activities undertaken at the local waste transfer stations continuing, as depicted schematically in Figure 2. In 2019/20, over 54,000 tonnes of waste was disposed by LGAs around WSC (Table 5.1). Assuming a 10% reduction in waste generation rates, it is estimated that this will increase to a total of 64,000 tpa by 2050 in WSC and surrounding LGAs.

Local Government Area	ABS 2021	Total Waste Disposed from Kerbside (tonnes in 2019/20)	Residual Waste Generation Rate with 10 % reduction (kg/person/wk)	Estimated Population in 2050 °	Waste for Landfill (tonnes/yr)
Balranald	2,208	220	1.7	1,797	161
Broken Hill	17,588	10,095	9.9	16,964	8,763
Central Darling	1,725	931	9.3	1,163	565
Mildura	56,972	<b>37,688</b> ª	11.4	73,061	43,498
Murray River	12,850	2,231	3.0	18,934	2,959
Renmark Paringa	9,783	3,228 <sup>b</sup>	5.7	11,385	3,381
Wentworth	7,453	3,580	8.3	10,880	4,704
TOTAL		57,973			64,031
Additional waste rec Buronga Landfill	eived at	23,030	6.2 <sup>d</sup>		27,006
Recycling Received a Community Recyclin 2020-21	at Buronga g Centre in	6,300	1.7 <sup>d</sup>		7,388
TOTAL POTENTIAL REGION	WASTE IN	90,373			98,424

Table 5.1 Projected Waste Estimates Assuming 10% Reduction in Waste Generation but no Increase inDiversion (Recycling)

LocalABS 2021Total WasteResidual WasteEstimatedWaste forGovernmentDisposed fromGeneration RatePopulationLandfillAreaKerbsidewith 10 %in 2050 °(tonnes/yr(tonnes inreduction2019/20)(kg/person/wk)	otal WasteResidual WasteEstimatedWaste forsposed fromGeneration RatePopulationLandfillKerbsidewith 10 %in 2050 °(tonnes/yr)(tonnes inreduction2019/20)(kg/person/wk)
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 $^{\rm a}$  Mildura quantity is the total waste disposed to landfill as reported MRCC Annual Report 2019-2020

<sup>b</sup> Renmark waste generation rates is sourced from the regional estimated presented by GISA in "South Australia Kerbside Performance Repot 2018-19"

<sup>c</sup> Linear extrapolation from 2016 and 2021 census numbers

 $^{\rm d}\,\mbox{Assumes}$  a 10% reduction in waste generation and sourced from Mildura and Wentworth

The waste disposal estimates do not allow for increases in diversion rates and hence provide a conservative estimate of waste for disposal. For example, the recent introduction of the green waste and food organics bin in Mildura is likely to result in a significant reduction on the quantity of waste for disposal. Also, WSC records (presented in EIS Table 3.4) show that an additional 23,000 tonnes was received as construction and demolition waste and commercial and industrial waste and a further 6,300 tonnes was received at the existing community recycling centre in 2020/21. The additional waste includes mixed wastes streams from domestic sources, tyres, etc., a significant proportion of which may be diverted from landfill by improving facilities to allow sorting.



Figure 2 Schematic Representation of Waste Sources and Destinations

The combined total of the kerbside waste for disposal (64,000 tpa) which may be directed from other LGAs combined with the other wastes received at the Buronga Landfill results in a total waste projected to be received at the facility by 2050 of around 100,000 tonnes. The actual volume is likely to be less than this as the estimates have assumed that waste for disposal from other LGAs is all received at Buronga and that there is no reduction due to improved diversion. The 100,000 tonnes was assumed as a conservative estimate to indicate the maximum scale of operation for approval purposes.

• Evidence demonstrating the demand for a regional waste facility (e.g. memorandum of understanding or letter of support from neighbouring councils)

In ensuring that the proposed development is a regional facility, it is necessary to demonstrate that the development has support from neighbouring Councils. A letter of support from RAMROC (now RAMJO) has been received and is presented in Appendix E. The Mayor & General Manager of WSC and the Mayor and Chief Executive Officer of MRCC have meet on 4 occasions from January to September 2022 and on the agenda of each meeting has been discussions around future Regional Waste Management needs. A letter of support from Mildura Rural City Council is also presented in Appendix E.

Whilst located in separate States, Mildura & Wentworth are one region, one community (similar to Albury/Wodonga, Echuca/Moama etc). The project will secure the long-term waste disposal and resource recovery needs of the Mildura/Wentworth region for the long term. The current Mildura site has a few considerable constraints that inhibits its ability to expand its current footprint. These constraints include but are not limited to the following:

- situated next to an environmentally sensitive wetland
- urban encroachment from neighbouring golf course and housing development
- the current public hospital for the Mildura/Wentworth Region is situated directly across the road from the site

Mildura Rural City Council (MRCC) is a member of the Loddon-Mallee Waste and Resource Recovery Group. The group released a long-term Waste and Resource Recovery Plan in 2017. As part of that plan MRCC was required to identify future waste and resource recovery infrastructure needs for the its Local Government Area. No new infrastructure has been planned for or identified in the long-term focus of the plan. When the current site reaches the end of its useful life, MRCC will be required to transport their waste outside of the Mildura/Wentworth region if it is unable to identify a suitable site within the Mildura/Wentworth region to effectively dispose of its residual waste.

That is where this proposal becomes a win/win situation for the Mildura/Wentworth region. It means the waste stays within the region which is beneficial from environmental and financial perspectives. It keeps jobs within the region, caters for the expansion of existing resource recovery infrastructure, which is a key action in MRCC's Waste and Resource Recovery Strategy 2022 to 2026 and allows the Buronga landfill and subsequently WSC greater opportunity to develop financial autonomy and reduce the average cost per tonne to manage waste & recycling materials. This is a win for the residents as this will result in lower annual domestic waste management charges for the ratepayers of both Councils.

• Justification for the size of the recycling facility relative to the size of the landfill having regard to the waste hierarchy that seeks to reduce, reuse, recover and use landfill as last resort

Over the next 20 years, New South Wales waste volumes are forecast to grow from 21 million tonnes in FY2021 to nearly 37 million tonnes in FY2041. NSW has developed the Waste and Sustainable Material Strategy 2041 – Stage 1 2021-2027 which has specific targets on reducing waste and increasing recycling as discussed in EIS Section 2.4.1.

To align with the targets, WSC needs strategies to reduce the volume of waste generated; reuse, repair and recycle what can't be avoided; and make sure there is capacity to safely dispose of the material cannot be recycle. WSC currently recycles about 2/3 of waste and the ambition is to continue to increase that proportion. WSC also needs to provide safe and adequate disposal options for the material that cannot be recycled. The challenge is to manage this material to avoid the worst of its impacts.

Rural and regional communities have specific challenges regarding access to safe disposal options. As trucks need to travel long distances to collect small amounts of waste, some waste services can be costprohibitive for regional Councils. While systems are put in place to reduce the amount of waste, continued population growth and societies current consumption habits will still result in an increase in waste going to landfill. The proposed Buronga Expansion is being developed to maximise the opportunities to recycle waste with a focus on waste generated within the surrounding towns by improving and expanding facilities. In particular, increased opportunities to recycle the 23,000 tonnes of commercial and industrial waste and construction and demolition waste will dramatically assist in reducing the waste being disposed to landfill. Recycling at greater distance from Buronga, such as in Wentworth, and in the surrounding LGAs will continue to be undertaken locally at waste transfer stations, as depicted in Figure 2. The expanded landfill facilities are to provide best practice regional waste facilities in line with Action 7.6 of the *Regional Waste Strategy 2017-2021* (refer below).

As waste volumes continue to grow, infrastructure and services will need to keep pace. WSC needs to ensure it has the capacity to meet its critical future needs. NSW already has a network of waste and resource recovery infrastructure, but it needs to be expanded and modernised to meet the challenge of developing a circular economy. A strong pipeline of infrastructure investment is needed to maintain and improve capacity to collect, sort, process and dispose of waste. As WSC supports the transition to a circular economy, it must also plan to continue to provide a way to safely manage residual waste into the future so that it can protect the environment and the health of the community.

# • Consideration of the Regional Waste Strategy 2017-2021 prepared by RAMROC of which Wentworth Shire Council is a member

WSC is a member of the RAMJO Waste Group (formerly RAMROC) and RAMJO has provided a letter of support for the proposed Buronga expansion (Appendix E). The Regional Waste Strategy 2017-2021, has a number of areas where the consideration of future planning is encouraged, including:

• Section 4.7:

"To support practices and resource recovery at existing waste management facilities across the Region, member council's need to plan for the future in order to transition towards a sustainable waste management system. The infrastructure required to provide the necessary resource recovery and waste management services needs to be strategically identified and implemented across all member council's"

Action 7.5 – Landfill Rationalisation

"Prepare a Regional Waste Disposal Strategy to determine the most cost-effective long term landfilling options across the region. Option should consider regional and sub-regional facilities."

• Action 7.6 - Sub-Regional Facilities

"Identify suitable locations for long-term regional or sub-regional best practice infrastructure and understand the requirements to secure these facilities for long-term waste management purposes."

Waste management infrastructure planning is a critical component in transitioning to a sustainable waste management system. Its success will be measured by an improved environmental performance, the consolidation of several waste facilities and an increase in the establishment of resource recovery infrastructure. The planning will also need to be adaptable, flexible and provide the member councils with the opportunity to implement best practice infrastructure. Consequently, the successful implementation of waste management infrastructure planning will:

- Reduce the average cost per tonne to manage waste & recycling materials
- Increase resource recovery processing capacity

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- Increase compliance at waste management facilities
- Present member councils with greater opportunity to develop financial autonomy
- Increase the recoverable material collected and reduce the material for disposal
- Identify, secure and safeguard best practice, long-term waste management facilities
- Update / correction of the Direction numbers in the Far West Regional Plan 2036
- Updated Far West Regional Plan 2036 numbering errors

In EIS Section 4.1.1.2, an error in referencing has been made. Paragraph 3 notes Direction 23 as managing rural communities but Direction 29 Manage Rural Residential Development is the correct direction. Also Direction 26, which is noted as enhancing cross border strategies, should refer to Direction 21: Strengthen Communities of interest and cross-regional relationships as the correct direction. The other content remains the same.

# **6 Submission Response - Project**

## 6.1 Project General

#### **DPIE Comment:**

Development description - general

- It is currently unclear from the EIS what portion of the total waste (100,000 tonnes per annum (tpa)) would be received directly at the recycling facility versus what would be sent directly to the landfill. We therefore require confirmation of the proportion or ratio of recyclable versus landfill waste anticipated over the proposed life of the landfill.
- Also, clarification is required of whether residuals (non-recyclables) from the recycling facility would be sent to the landfill. If so, please provide details of expected amounts of waste in tpa.
- Please ensure that the EIS and appendices are all based on a total of 100,000 tpa waste receival, being the maximum annual waste receival (worst-case scenario). Please include an explanation of all assumptions used in the modelling and assessment of the development's impacts.
- A clear description is required of the current operations of, and proposed changes to, the community recycling facility. This should include the existing and proposed capacity in tpa and how this facility would accommodate future increases in the proportion of waste diverted from landfill over time in line with government policies and strategies.
- It is currently unclear from the EIS what portion of the total waste (100,000 tonnes per annum (tpa)) would be received directly at the recycling facility versus what would be sent directly to the landfill. We therefore require confirmation of the proportion or ratio of recyclable versus landfill waste anticipated over the proposed life of the landfill.

Based on current diversion rates the approximate proportion of total waste that is likely to be received at the recycling facility is 10% of total waste with the remainder reporting for disposal. This does not consider the potential for updated recycling facilities and government initiatives to encourage more recycling from local residents. A literature search to quantify the likely increase did not find any metrics to apply. Discussions with industry peers has also suggested the increase is highly variable depending on the community and the facilities and no "rule of thumb" is available.

As noted above and shown in Table 5.1 and represented in Figure 2, the increase in waste received is predominantly expected to be in waste for disposal as recycling will continue at local waste transfer stations to retain product value locally and reduce haulage costs with only the residuals being transported to Buronga. The centralisation of waste disposal facilities will assist in providing best management for the local and regional community and minimise the environmental impact whilst providing economies of scale for the increasing costs of landfilling.

• Also, clarification is required of whether residuals (non-recyclables) from the recycling facility would be sent to the landfill. If so, please provide details of expected amounts of waste in tpa.

Residual from the recycling facility will be sent to the landfill. Future estimates are not able to be provided as there are no standard metrics to enable this extrapolation. For drop off recycling, NSW EPA reports a range of disposal percentages from 0 to 100% with a mean of 4%. Different reporting, methods of operation and facilities available will skew the reported figures. The FERF and RRC are proposed to be placed near the weighbridge and staff amenities which increases the supervision and limits the potential for residuals to contaminate recyclable materials.

The only available estimates are from current records for Buronga Landfill. In 2020/21, 145 tonnes of residuals were transferred from other waste transfer stations, suggesting that it is a relatively small

proportion of sorted wastes (< 2%). A similar quantity of waste was transferred in 2019/20 demonstrating that this is likely to be representative of current operations.

• Please ensure that the EIS and appendices are all based on a total of 100,000 tpa waste receival, being the maximum annual waste receival (worst-case scenario). Please include an explanation of all assumptions used in the modelling and assessment of the development's impacts.

The EIS and appendices are based on 100,000 tpa received at the site (refer to specific sections below and attached appendices). The exception is the cell development and rehabilitation which are based on the quantity of waste disposed and not the total waste received. The disposal quantities were assumed to be 60,000 tpa which is slightly less than that shown for 50 years' time in Table 5.1. Given the waste quantities to be received on site are not known as contracts are not yet being negotiated, this is considered a conservative estimate.

• A clear description is required of the current operations of, and proposed changes to, the community recycling facility. This should include the existing and proposed capacity in tpa and how this facility would accommodate future increases in the proportion of waste diverted from landfill over time in line with government policies and strategies.

#### **Community Recycling Centre Current Operations**

In 2015/16 a community recycling centre (CRC) was constructed at Buronga Landfill partially funded by a grant from round 3 of the "Waste Less Recycle More Initiative" by NSW EPA. The grants were targeted at constructing CRCs to accept problematic wastes from households, as listed in Table 6.1.

Waste	Capacity	2020/21 Quantities
Paints (oil and water based)	Two x 1 m <sup>3</sup> stillage	Not reported
Motor oils	$3 \text{ m}^3$ (3000L) lockable shed	3000 Litres
Cooking, hydraulic and transmission oils	1 m <sup>3</sup> stillage	Not reported
Household single use batteries		Not reported
Car batteries (lead acid)	48 battery	40 batteries
Fluorescent and compact florescent lighting (mercury containing lamps)	0.5 m <sup>3</sup> stillage	Not reported
Gas cylinders (including fire extinguishers)	72 -80 gas bottle capacity and approx. 100 extinguishers	No reported
Aerosols	200 L capacity	Not reported
Plastic, glass, paper and cardboard	Five x 45 m <sup>3</sup> skip bins	Plastic = $600 \text{ m}^3$ Paper/cardboard = $600 \text{ m}^3$
Drum muster	50 m <sup>3</sup> cage	Not reported
Polystyrene	Five x 0.5-1 m <sup>3</sup> boxes	Not reported

#### Table 6.1 CRC Wastes and Capacity

The CRC is currently accessed via the weighbridge, requiring all vehicles, domestic and commercial, to be weighed prior to accessing the site. Cars for the CRC are then directed to the two-car undercover

CRC (Figure 3, top left) with the waste motor oil shed adjacent (Figure 3 right). Cars then drive past the skip bins for recyclables (glass, plastic, paper/cardboard) and drum muster (Figure 3, bottom left) to the storage areas for green waste, steel, concrete before returning to the existing public waste acceptance area before returning to the weighbridge to exit. These facilities are shown on EIS Figure 3.



Figure 3 Buronga Landfill CRC with Two Bay Recycling Shed (top left), Motor Oil recycling shed (right) and Recyclables and Drum Muster (bottom left)

#### **Upgraded Facilities - FERF and RRA**

The upgraded facilities are proposed for two main reasons:

- Separate domestic and commercial customers to limit the potential for accidents in line with best practice work, health and safety for landfill sites;
- Improve the customer experience and encourage recycling with expansion of the drum muster drop off.

The proposed upgrade to these facilities will include a Front-End Recycling Facility (FERF) and Resource Recovery Area (RRA). The FERF, which accepts only non-levied wastes, has been placed before the weighbridge to encourage domestic customers to separate recyclable materials and other items (excluding e-waste) which may be resold or has value by making access fast and easy. Similarly, the new larger drum muster facility (> 300 m<sup>2</sup>) has been placed adjacent to the FERF to also improve the customers experience and encourage recycling (EIS Figure 5). The waste accepted at the FERF and DrumMUSTER will be aggregated and quantities (either weight, volume or number) recorded prior to removal from site. A similar method is currently used for material accepted at the existing community recycling facility.

Other items for recycling/disposal will require domestic customers to enter over the weigh bridge and pay fees as appropriate. Following the weighbridge, domestic customers are separated from commercial customers, heading north past the existing CRC. The CRC is relatively new and hence has sufficient capacity for most waste receptacles able to accommodate a year of disposals; noting that this

can vary significantly from year to year. To ensure that expansion may be possible in the future, the RRA has been located north of the CRC.

The RRA is for domestic customers to separate and drop off larger items which can be recycled, comprising green waste, construction and demolition waste and waste tyres. The existing facilities allow domestic customers to access the larger storage areas to the north so this expansion will separate the domestic customers from commercial customers using these busier areas. On-site machinery can access these bays from the rear (north) of the building to retain separation with domestic customers and reduce the potential for accidents.

Once all recyclable materials have been removed, domestic customers can then drop off residuals to the residual drop area prior to exiting the site. All customers will be required to exit via this area to encourage separation of non-recyclable items. Additional recycling stillages will be placed in this area for customers to recycle any items missed prior to this point. The residuals are dropped onto a large concrete floor where a front end loader sort through the waste and remove any recyclables uncovered and load the residuals into site trucks to be taken to the landfill tipping face. This area has the potential to be expanded in the future to the north and south. Expansion in the future may involve establishing additional recycling facilities for FOGO or local material recovery facilities for separating the kerbside recycling bins as the economics of larger scale recycling operations and markets open for these commodities.

Following the residuals drop off area, domestic customers combine with commercial customers to leave the facility.

The upgrades proposed will reduce conflict between commercial and domestic customers and provides covered drop off areas to encourage the use of the facility and recycling.

#### **Upgraded Facilities – Storage Area**

The storage area will also be improved. These areas will be accessed by commercial customers and onsite machinery. The stockpile areas have room for access by fire vehicles and comply with the buffer areas required for storage of potentially flammable wastes. The areas have been sized to enable storage of unprocessed and processed waste ready to be sent to recycling.

The proposed design will also improve the environmental outcomes by collecting stormwater runoff. The current informal stockpiles of received materials will be replaced with dedicated areas with a hardstand base and stormwater collected and directed to a stormwater basin. Runoff from the green waste stockpile area will firstly be collected in a sump to enable retention of lighter fractions. By dedicating specific areas, this will also limit encroachment into the adjacent vegetated areas.

## 6.2 Facility Design

#### FRNSW Comment:

Following a review of the EIS report FRNSW provides the following recommendations for your consideration:

- 1) FRNSW recommend that Consent authorities issue as a condition on the development consent that the requirements of Clause E1.10 and E2.3 of the NCC be complied with to the satisfaction of FRNSW and NSW Department of Planning, Industry and Environment, achieved through either providing an acceptable solution or through direct consultation with FRNSW.
- a) The waste facility is to provide safe, efficient and effective access for emergency vehicles as detailed in FRNSW guideline Access for fire brigade vehicles and firefighters . Aerial appliance access is to be provided if the facility is located within a fire district covered by an aerial appliance.



- b) The waste facility is to have a fire hydrant system installed appropriate to the risks and hazards for the facility. FRNSW recommends a fire hydrant system designed and installed to Australian Standard AS 2419.1-2017 and have an enhanced standard of performance appropriate to special hazards.
- c) The waste facility is to have an automatic fire sprinkler system installed if the building has a floor area greater than 1000 m<sup>2</sup> or contains 200 m<sup>3</sup> or more of combustible waste material. FRNSW recommends the fire sprinkler system be installed to Australian Standard AS 2118.1-2017.
- d) The waste facility is to have a fire detection and alarm system installed appropriate to the risks and hazards identified for each area of the facility. FRNSW recommends a fire detection and alarm system installed to Australian Standard AS 1670.1-2015 Fire detection, warning, control and intercom systems system design, installation and commissioning.
- e) Buildings containing combustible waste material are to have an automatic smoke hazard management system appropriate to the potential fire load and smoke production rate installed within the building.
- f) The waste facility is to have effective and automatic means of containing fire water run-off, with primary containment having a net capacity not less than the total hydraulic discharge of the worst-case fire scenario. The total hydraulic discharge is the discharge from both the fire hydrant system and automatic fire sprinkler system for a duration of four hours. Failure to contain fire water run-off can result in pollution of the environment and require a protracted hazardous materials response.
- *g)* The owner is encouraged to engage a fire safety engineer or other suitably qualified consultant to develop a performance design specific to the facility and its operations. The performance-based design should consider all possible fire scenarios.
- h) The occupier/operator is to develop an emergency plan for the waste facility to AS 3745– 2010 Planning for emergencies in facilities. An external consultant should be engaged to provide specialist advice and services in relation fire safety planning and developing an emergency plan.

It is essential for the detailed design of the Buronga facility to reduce the potential for fires to occur, minimise the potential for fires to grow and maximise the opportunities for fires to be quickly and efficiently extinguished. To this end, we endorse this condition being part of the condition of consent and will engage a fire safety engineer or other suitably qualified consultant to develop a design specific to the operations and consult with FRNSW.

Incorporated within the concept design are haul roads around the storage areas and landfill cells which can accommodate fire brigade vehicles. A new water tank to the north of the site will also be constructed with a compliant access track for fire vehicles.

## 6.3 Landfill Design

### 6.3.1 Description

DPIE Comment:

Development description – landfill

• Area(s) subject to land clearing in square metres or hectares



- Clarification of the extent of the historic unlined landfill proposed to be overlaid/'piggybacked' by the new lined landfill cells, the likelihood of disturbing any existing contaminated land, and details of how the interface between existing and proposed cells would be treated
- Existing, Stage 1 and Stage 2 landfill capacity in cubic metres
- Detailed description of construction phases in particular: Initial construction activities (e.g. land clearing, demolition or relocation of structures, earthworks, construction of internal roads, ponds) and timeframe for each activity Ongoing construction activities (e.g. capping, rehabilitation, progressive landfill cell creation, extension of roads and drainage infrastructure, additional ponds, etc) and timeframe for each activity
- Maximum gradients of side batter slopes as a %
- Intended ultimate land use upon closure of landfill

DPI – Agriculture Comment:

Land Stewardship

- Describe the final proposed land use and landform.
- Detail the proposed rehabilitation and decommissioning/closure measures to achieve this land use including the expected timeline for the rehabilitation program.
- Outline the monitoring and mitigation measures to be adopted for rehabilitation remedial actions.

#### • Area(s) subject to land clearing in square metres or hectares

The project (comprising Stages 1A to 1D) will require approximately 17.5 ha of land to be cleared outside for the Stage 1A to 1D cells, supporting infrastructure and the front end recovery facility, subject to detailed design. Of this area, approximately 25 ha has been cleared due to historical activities on site, including the existing landfill. Within the existing consent area, 14 ha of native vegetation will be cleared and an additional 4 ha outside the existing development consent for the borrow pits.

• Clarification of the extent of the historic unlined landfill proposed to be overlaid/'piggybacked' by the new lined landfill cells...

Areas of the historic unlined landfill that are not yet at or near the proposed final landform levels and require additional filling will be piggyback lined in accordance with the requirements of the *Environmental Guidelines: Solid waste landfills* and as agreed with the EPA. Figure 4 shows the approximate extent of historic unlined landfill that will require piggyback lining.

The depth of the historic landfill is unknown, however the site Landfill Environmental Management Plan (LEMP) (GHD, 2012) states that "it is understood that the majority of landfilling in this area (the historic unlined landfill) occurred above the natural ground level, with minor excavation to approximately 3 m in some areas". The lowest point of the landfill toe is at 36.5 m AHD. Based upon this, the current height of the landform crest of 56 m AHD, and the LEMP the waste in the unlined landfill is expected to be no greater than 23 m deep. According to the design documentation, the existing lined cell has an invert of approximately 35 m AHD within the sump, with a maximum filling depth of approximately 21 m due to the cell being located near the edge of the final landform.

The final extent of piggyback liner will be determined during detailed design and will be influenced by the surface levels of the existing landfill at the time of design, slope stability assessments, settlement assessments and regulatory requirements and best practice at the time of design.



Figure 4 Extent of Existing Landfill and Future Piggyback Liner

### • ..., the likelihood of disturbing any existing contaminated land,...

During construction of the piggyback liner disturbance of the surface of the existing landfill will be required to facilitate construction of the piggyback liner above it. It is possible that localised cut and fill of the waste face will be required to achieve appropriate levels and grades for construction of the piggyback liner.

The design of the piggyback liner will be developed to minimise the disturbance required and to minimise any uncovering and exhumation of existing waste. Disturbance of the existing surface shall be addressed in the construction contractor's construction environmental management plan (CEMP) to address potential risks associated with disturbance of potentially contaminated material including surface water and landfill gas controls if these are determined to be required. Safety associated with disturbance of potentially contractors WHS plan.

Any exhumation or exposure of existing landfilled waste will require approval from NSW EPA who are the regulator for the environment protection licence for the site. Any potential approval will require a formal plan to be prepared detailing the proposed exposure and/or exhumation of waste and the appropriate environmental and safety controls that will be put into place during this work occurring.

#### • ... and details of how the interface between existing and proposed cells would be treated

The base and sideliner of the new cells will interface with the sideliner of the existing lined cell at the site. The sideliner of the existing cell consists of the following profile, from the bottom up:

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- Prepared subgrade
- Earthen layer (Engineered fill to support the overlying geosynthetics)
- Geosynthetic clay liner (GCL)
- 2.0 mm double sided textured HDPE geomembrane
- Cushion geotextile
- 300 mm drainage aggregate
- Separation geotextile

The liner terminates in an anchor trench at the crest of the northern batter slopes. The future cells will interface with the existing lined cell along the northern extent of the cell and the liners of both existing and future cells will be connected to provide a continuous barrier and leachate collection system in this area. The connection into the future lining system will be determined during detailed design, the final configuration of the connection will depend on the final design levels and liner profile used in the future landfill cells.

Depending on the extent of landfilling against the sideliner of the existing landfilled cell disturbance of the existing waste mass may be required. If any disturbance or exhumation of waste is required during the construction of the interface connection between a future cell and the existing lined cell, the same safety and environmental controls as discussed above will be implemented during construction.

Where the underlying landfill proposed for filling above is unlined (i.e. the full extent of the existing landfill except the known existing lined cell) a 'piggyback' lining system will be installed as agreed with the EPA to provide a barrier to leachate infiltration from the newly placed waste into the existing waste mass.

During progressive cell development, connections between base liners of adjacent cells will be made to create a continuous barrier system below the new lined cells of the landfill within each stage.

#### • Existing, Stage 1 and Stage 2 landfill capacity in cubic metres

The total capacity of the existing landfill is unknown as there is no design documentation for the majority of the historical landfill. As identified above, the majority of historical landfilling is believed to have occurred above the natural ground level, with minor excavation to up to 3 m below ground level in some places. The lowest point of the toe of the existing landfill is approximately 36.5 m AHD and based upon the deepest extent of the landfill, the waste placement is expected to extend to 33.5 m AHD or above. A volume calculation between the site survey within the existing landfill area and a flat level of 33.5 m AHD estimates a maximum of 1,450,000 m<sup>3</sup> of material possibly placed in the existing landfill footprint. Alternatively, if the underside of waste was consistent with the lowest level of the toe of the existing landfill at 36.5 m AHD the volume would be approximately 1,055,000 m<sup>3</sup>. Based upon this analysis it is expected that the volume of the historical landfill is in the order of 1,000,000 m<sup>3</sup>. The design model for the current lined landfill cell provides approximately 160,000 m<sup>3</sup> of landfill airspace, of which, approximately 105,000 m<sup>3</sup> has been filled.

Based upon the concept baseliner level and concept top of cap, there is a total of 3.3 million m<sup>3</sup> of airspace in Stages 1A to 1D. There is also approximately 470,000 m<sup>3</sup> of airspace remaining between the top of cap and existing surface within the existing landfill area, some of which will be filled following piggyback liner construction and some that will become part of the cap volume. This volume will not be confirmed until detailed design of the piggyback liner is completed. Subsequent stages are no longer part of this Project.

A breakdown of the estimated airspace and expected life of each stage and substage is shown in Table 6.2. This estimate is based on the expected disposal tonnages (Table 5.1) and the 2020 calculated density from the Buronga Landfill. The size of each cell within the substages will be adjusted during

detailed design based upon waste receival rates expected during each cells operation to limit the size of the active cell and facilitate faster rehabilitation, which in turn limits the LFG emission and leachate generation.

Stage	Airspace (m <sup>3</sup> )	Life (Years)
1A	923,477	10.6
1B	792,427	9.0
1C	790,159	9.0
1D	797,711	9.1
Total	3,303,774	37.8
Notes: Life is based on 64,000 t waste/annum at a density of 0.733 t/m3		

#### Table 6.2 Estimated Airspace for Each Substage and Expected Life

Table 6.2 supersedes Table 3.5 of the EIS. Minor adjustments have been made to ensure sufficient space exists for haul roads and service around the landfill footprint. The airspace that will be realised above the existing landfill following construction of the PBL is not included in Table 6.2.

- Detailed description of construction phases in particular: Initial construction activities (e.g. land clearing, demolition or relocation of structures, earthworks, construction of internal roads, ponds) and timeframe for each activity Ongoing construction activities (e.g. capping, rehabilitation, progressive landfill cell creation, extension of roads and drainage infrastructure, additional ponds, etc) and timeframe for each activity
- Detail the proposed rehabilitation and decommissioning/closure measures to achieve this land use including the expected timeline for the rehabilitation program.

Construction will occur progressively throughout the life of the site with staged construction of landfill cells and supporting infrastructure as well as regular staged rehabilitation of filled landfill cells. Design of the first stage of road and cell construction will occur in FY 2022/2023. Specific timing of the proposed construction phases is not known at this stage of the project as the progressive development of the landfill will be dependent on waste receival rates at the site over time. Initial construction activities at the site are expected to commence during FY 2023/2024 and consist of the following activities:

- Upgrade of Arumpo Road intersection consisting of:
  - Detailed design by independent consultants and approval by Council
  - Construction by contractors
- Construction of first new landfill cell in Stage 1A to provide continuing disposal capacity as the capacity of the new facility nears exhaustion. This is expected to include the following activities:
  - Finalisation of landfill cell design following consultation with NSW EPA
  - Land clearing within the footprint of the cell and access roads
  - Construction of access roads to the location of the new cell to be determined during detailed design
     Earthworks to achieve design levels across the cell footprint including within the existing landfill
  - footprint to facilitate piggyback liner construction - Construction of landfill cell liner and leachate collection system including pipework to transfer
  - Construction of landfill cell liner and leachate collection system including pipework to transfer leachate to existing pond
  - Stormwater controls to manage stormwater within the footprint of the new cell
- Construction of FERF and RRA consisting of:
  - Stripping and grubbing within the footprint of the proposed structures, access roads and ponds
     Construction of hardstand areas for proposed storage of scrap metal, tyres, inert C&D waste, drum muster, roro bin storage, residual waste drop off area and green waste
  - Construction of roads and signage within RRA and waste acceptance areas
  - Construction of structures proposed for resource recovery shed, site office & amenities, and FERF
  - Construction of RRA stormwater basin and swales

- P
- Capping of the southern batter of the existing landfill to begin progressive rehabilitation consisting of:
  - Finalisation of proposed cap design following consultation with NSW EPA
  - Earthworks to prepare the existing cover surface to form a suitable subgrade for the construction of the landfill cap
  - Construction of the final cap profile supported by NSW EPA
  - Construction of stormwater controls to manage runoff from the capped area
  - Revegetation of the capped area with appropriate native vegetation to be determined during detailed design
- Upgraded stormwater facilities consisting of:
  - Stripping and grubbing within the footprint of proposed stormwater controls
  - Construction of stormwater ponds required to manage stormwater flows during operation of landfill cell, FERF and RRA. Construction of the north western and/or southern ponds may be required at this time depending on the location of the first landfill cell constructed. This will be determined during detailed design.

Ongoing construction activities will occur regularly as a part of the progressive development of the landfill. The timing of these construction campaigns is not known as they will be dependent on the rate of waste disposal at the facility. These construction activities are generally expected to consist of the following:

- Progressive landfill cell construction including:
  - Finalisation of landfill cell design following consultation with NSW EPA
  - Land clearing within the footprint of the cell and access roads
  - Construction of access roads to the location of the new cell to be determined during detailed design if required.
  - Earthworks to achieve design levels across the cell footprint including within the existing landfill footprint to facilitate piggyback liner construction for Stage 1A cells.
  - Construction of landfill cell liner and leachate collection system including ring main pipework to transfer leachate to existing pond
  - Stormwater controls to manage stormwater within the footprint of the new cell as require
- Progressive capping and rehabilitation of completed landfill areas including:
  - Finalisation of proposed cap design following consultation with NSW EPA
  - Earthworks to prepare the existing cover surface to form a suitable subgrade for the construction of the landfill cap
  - Construction of the final cap profile supported by NSW EPA
  - Construction of stormwater controls to manage runoff from the capped area
  - Revegetation of the capped area with appropriate native vegetation to be determined during detailed design.
- Progressive extension of access roads including detailed design and construction of the access roads.
- Progressive construction of drainage infrastructure including:
  - Progressive development of drains and swales to direct stormwater flows to basins as required
     Construction of additional stormwater basins as the development of the site progresses
- Construction of additional leachate ponds including:
- Finalization of anomal design following approximation with NG
- Finalisation of proposed design following consultation with NSW EPA
   Stripping and grubbing of proposed pond location
- Earthworks to form basin subgrade
- Construction of proposed basin lining system
- Extension of leachate ring main to transfer leachate to the new pond
- Installation of new firefighting tank once substage 1D is commencing development
- Maximum gradients of side batter slopes as a %

Best management practices are that final slopes of the landfill are between 5% and 20%. The lower limit is to minimise the risk of water ponding and increasing infiltration whereas the maximum gradient is to minimise erosion and facilitate easy maintenance. During the after-care period, the maintenance can require the repair of the cap surface, weed spraying, mowing and other operations which are easier and safer to perform on slopes of < 20%.
In accordance with best practice, the side batter slopes of the final landform and landfill cap (permanent external landfill batters) will have maximum slopes of 20% (1V:5H). Internal (temporary) landfill batter slopes will be determined during detailed design.

• Intended ultimate land use upon closure of landfill

## • Describe the final proposed land use and landform.

It is intended that following closure, the site will be rehabilitated and revegetated for an ultimate land use of passive open space. The ultimate use upon closure impacts the long-term impact of the proposed development on land use and the type of final capping and rehabilitation most suited to the intended use.

The final proposed landform is described in EIS Section 3.9.1. The final landform has been designed as a series of parallel east-west oriented hills to be sympathetic to the regional dunal landforms and utilising endemic vegetation.

• Outline the monitoring and mitigation measures to be adopted for rehabilitation remedial actions.

The environmental monitoring is described in EIS Section 3.8 and is in accordance with best management practices outlined in the Landfill Guidelines and detailed in the LEMP for the site. Prior to closure of the facility, i.e. once the facility is no longer operational, the LEMP will be replaced with a Landfill Closure Plan (refer to EIS Section 3.9). This plan details the continued management and monitoring of the site until it is stable and the EPL can be surrendered; this is typically 30-50 years after closure.

## 6.3.2 Leachate Management and Drainage

### **DPIE Comment:**

Leachate management and drainage

The Department seeks clarification of leachate management and drainage system, including:

- Details of the surface and stormwater management system and assessment of potential surface water impacts for the landfill and community recycling facility
- Amended drainage plan showing drainage lines consistent with the north-south orientation of Stage 2 landfill cells
- Details of how the new landfill cells in Stage 1 would connect to the existing leachate pond, which would be used until such time as the new leachate pond and service alignment are constructed
- Details of the capacity of the existing leachate pond, including approximate service life remaining and likely timing of the construction and use of the proposed new leachate pond and service connections
- Details of the surface and stormwater management system and assessment of potential surface water impacts for the landfill and community recycling facility

The stormwater management plan has retained the full extent of the proposed landfill development (Stages 1 and 2). This will ensure if future landfill development is undertaken, there is adequate provision for and siting of infrastructure. All three stormwater ponds will be required for Stages 1A to 1D and will be located within the envelopes shown; however, the stormwater infrastructure will require detailed design to confirm sizing and is typically staged along with the landfill cell development and closure.

The governing methodology for the surface and stormwater management system is to detain potentially sediment laden runoff generated from the disturbed areas in a series of sediment basins. Runoff is to be discharged once a suitable level of water treatment is achieved. External catchments that are not subject to land disturbing activities have been identified. Runoff generated from these catchments is to be directed around the active recycling centre works area.

The topography of the site and surrounding landscape was reviewed to define the internal and external catchments. For the catchments within the site, the design contours for the landfill caps and existing site survey were used. To define the external catchments, DEM data (obtained from ELVIS) was used to generate contours of the surrounding area. Where external catchments are identified, bunds have been proposed to ensure runoff from these external catchments is directed away from disturbed areas of the site. As such, there are no external catchments draining to the stormwater treatment systems managing runoff from the disturbed areas of the site. The resulting catchment plan is shown in Figure 5.



### Figure 5 Catchment Plan

Bunds are proposed along external alignment of the haul roads. These bunds direct external catchments (clean water) around the disturbed areas and into existing natural depressions in the surrounding landscape. Details of the bunds will be finalised in detailed design.

The catchment plan shows all but one of the catchments will have runoff detained on site. That one small catchment around the FERF will directly discharge runoff to Arumpo Road. The concrete hardstand of the FERF will be designed to grade toward a central location to prevent flows outside the footprint. Collected water will evaporate or be conveyed to the leachate pond. Roof runoff from all sheds will be collected in rain water tanks to allow reuse. Runoff from all other catchments will be conveyed via grass

lined swales towards sedimentation basins. These were sized based on Managing Urban Stormwater: Soils and Construction guideline or "The Blue Book" (Landcom, 2004), as provided in the EIS.

An additional sediment basin has also been proposed on the western portion of the site to detain runoff generated by the recycling facility. Overflows from this basin are directed via a grass lined swale towards the north western basin. This catchment consists of the haul road leading into the landfill, the proposed resource recovery area and storage areas. To ensure that the runoff from this catchment is treated prior to discharge, a grass-lined swale is proposed, to allow for infiltration and nutrient uptake.

Preliminary sizing of the grass-lined swales has been conducted using DRAINS. The model was run using the sub-catchments as shown in Figure 5 for the 20-year ARI (5% AEP) rainfall event. Based on the modelling results, a typical swale sizing is obtained and described below:

- Batters 1V:5H
- Depth 0.5 m
- Base width 1 m

It should be noted that the sizing of the grass-lined swales as well as the swale surface treatment is to be finalised during detailed design. The concept drainage plan showing the proposed alignment of the grass-lined swales is provided in Figure 6.



#### Figure 6 Drainage Plan

Figure 6 also shows the proposed sedimentation basin spill directions. The spill directions have been determined to allow the overflows from the basin to spill towards the natural watercourses and depressions in the surrounding landscape. Spillway design for the basins will be finalised in detailed design.

According to Volume 2B of 'The Blue Book', the sediment retention basins are designed based on the soil type used for waste cover and capping. In the absence of site-specific data, type D soils (i.e. dispersive soils) have been assumed. As such, Type D sediment retention basins are designed for the site to be conservative. As per Table 6.1 and Table 6.2 in Volume 2B of 'The Blue Book', type D sediment retention basins to be designed for nominated five-day duration 90<sup>th</sup> percentile event, with an indicative average annual sediment basin overflow frequency of 2-4 spills per year.

To assess whether the sedimentation basins achieve the spill frequency requirements, a water balance model was constructed using MUSIC modelling software. The MUSIC model was based on 100 years of rainfall data, obtained from the Irymple station (BoM station number 76015). The average annual rainfall observed is approximately 275 mm/year. Monthly average evapotranspiration rates were obtained from the BoM database. The monthly evapotranspiration rates ranged between 53 mm to 321 mm, with an average rate of 175 mm.

Using the catchment plan shown in Figure 5, lumped catchments were configured for all the capped landfill areas in MUSIC for the generation of runoff into each sedimentation basin. Given the presence of the impervious liner for each of the landfill caps, groundwater seepage was ignored. Also, the soil storage capacity and field capacity for the lumped catchments draining towards the sedimentation basins were modified based on the rehabilitated state of the landfill caps. This resulted in an approximate rainfall-runoff ratio of 0.15. It should be noted that water reuse for activities such as dust suppression, truck washdowns, and toilet flushing, were not considered as part of the water balance modelling conducted.



The configuration of the MUSIC model is shown in Figure 7 below.

Figure 7 MUSIC Model for Water Balance Modelling of Sedimentation Basins

Based on the results obtained from the water balance model, the average number of spills per year in each of the basins is as follows:



- North western basin: 0.81 spills per year
- North eastern basin: 0.96 spills per year
- Southern basin: 2.72 spills per year

The results show that the north western and north eastern sedimentation basins on average spill less than once per year, while the southern basin will spill approximately 3 times per year. This satisfies the criteria outlined in 'The Blue Book', whereby the acceptable average number of spills per year is between 2-4 spills.

# • Amended drainage plan showing drainage lines consistent with the north-south orientation of Stage 2 landfill cells

Stage 2 has now been excluded from this application; however a response is provided.

The drainage plan is for stormwater drainage and hence needs to be consistent with the final landform and not the cell orientation. Whilst the cells are being filled, any rain falling within the cell will be in contact with waste and hence is considered leachate and directed to the leachate ponds from the cell sump and via pipework to the leachate evaporation ponds. The stormwater design is for the interim and final landforms where the waste is covered by soil and any runoff is not in contact with the waste so remains "clean".

The stormwater drainage lines are consistent with the final landform which is an east-west orientation. The cells are in a north-south orientation as this is operationally efficient but this does not dictate the final landform.

• Details of how the new landfill cells in Stage 1 would connect to the existing leachate pond, which would be used until such time as the new leachate pond and service alignment are constructed

Stage 1 landfill cells will include an engineered liner layer and leachate collection system. Leachate will be collected in the leachate collection system and pumped from the cells, discharging into the existing leachate pond.

It is expected the new cells will use a similar pump system to the existing lined landfill cell which utilises a pneumatic bore pump commonly used in landfill applications. Leachate is pumped directly from the sump into the leachate pond through pipework laid on or near the surface. This pipe is placed over the surface of the batter into the leachate pond and discharged into the pond. The new Stage 1 landfill cells will discharge in a similar manner through poly pipes laid along the surface into the pond until new leachate ponds and a permanent leachate ring main are established at the site. The detailed design for the leachate collection will form part of the cell detailed design, which is to be submitted to EPA for in principal support before it is constructed.

# • Details of the capacity of the existing leachate pond, including approximate service life remaining and likely timing of the construction and use of the proposed new leachate pond and service connections

The existing leachate pond was constructed in 2017 and includes an engineered lining system to contain leachate within the basin. The basin is 30 m wide by 40 m long with a total depth of 1.6 m. When operated at a depth of 1.3 m to provide 300 mm freeboard, the maximum capacity of the pond approximately 1,180 m<sup>3</sup>. When the pond is filled to freeboard level the surface area of the leachate is 1,075 m<sup>2</sup>. The original design documentation does not specify the designed service life of the leachate pond.

The pond is lined with the following profile, from the bottom up:

Compacted subgrade

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- Geosynthetic Clay Liner
- 300 mm Compacted Clay Liner
- 2.0 mm smooth HDPE Geomembrane

In this configuration, the HDPE geomembrane provides the primary barrier to leachate infiltration into the base of pond.

HDPE geomembranes deteriorate over time through several mechanisms; those most relevant to the degradation of a HDPE geomembrane in an exposed leachate pond application include ultraviolet light (UV) exposure, oxidation, and chemical exposure. According to a white paper published by the Geosynthetic Institute<sup>1</sup> the life of a HDPE geomembrane in an exposed application in an arid climate is predicted to exceed 36 years based upon the data available at the time of publication.

Based upon this, it is expected that the HDPE geomembrane in the pond will be serviceable for at least 36 years. This assumes that no physical damage to the pond liner occurs (e.g. during maintenance or from animals entering the pond) or that any physical damage is remediated when it occurs. As the pond was constructed in 2017, it is expected that the life of the pond extends to at least 2053. Once the HDPE geomembrane is life expired, decommissioning of the pond or replacement of the HDPE geomembrane will be required.

A high-level estimation of leachate generation and disposal has been made to assess when new leachate ponds will be required to increase the leachate disposal capacity at the site. Additional ponds will need to be constructed when the leachate generation of the landfill exceeds the disposal capacity of the existing pond. This assessment has been made based upon assumed infiltration factors into the waste and assumed evaporation from the pond.

According to data from the Mildura Airport climate station, the mean annual rainfall is 285.4 mm and the mean annual pan evaporation is 2,185 mm. Assuming that the evaporation from the pond is 80% of the pan evaporation, the annual evaporation from the pond (the leachate disposal capacity) is approximately 1,540 m<sup>3</sup>.

Leachate generation has been estimated using approximate infiltration factors for daily cover, interim cover and final cover. The final cover generation has been adopted from the Landfill Guidelines requirement for a phytocap to restrict infiltration into the waste to 5% of the mean annual rainfall. The daily cover and interim cover infiltration factors have been adopted based on experience with previous landfills in similar climates to the Buronga Landfill. The infiltration factors and corresponding leachate generation for each cover type are shown in Table 6.3 below. In a semi-arid area, these infiltration factors are likely to be an overestimate due to the high evaporative demand.

Cover Type	Infiltration Factor	Leachate Generation (mm)
Daily Cover	25%	71
Interim Cover	10%	29
Final Cover	5%	14

### **Table 6.3 Leachate Generation Factors**

To estimate the generation of leachate during the site's operation, the catchment areas contributing to the leachate collection system were adopted. The areas contributing to the leachate collection system will be all future cells and the existing lined cell. For the purposes of the assessment, it was assumed that Stage 1A would be developed into four cells of equal size. The areas are:

<sup>&</sup>lt;sup>1</sup> Koerner, R.M., Hsuan, Y.G. and Koerner, G.R. (2011). *GRI White Paper #6, Geomembrane Lifetime Prediction, Unexposed and Exposed Conditions,* 8 February 2011, Geosynthetic Institute, Folsom, PA, USA.

- Existing Lined Cell 14,350 m<sup>2</sup>
- Stage 1A including Piggyback Liner 85,600 m<sup>2</sup> (Four cells of 21,400 m<sup>2</sup>)

For the purposes of estimating leachate generation, it was assumed that 1,000 m<sup>2</sup> of the active area is covered with daily cover at any time during operation with the remainder of the active area under interim cover. It has been assumed that the existing lined cell is capped when Stage 1A begins operation. The historic landfill has not been included in this assessment as it is unlined and has no leachate collection system. Using these assumptions, the staging shown in Table 6.4 below has been adopted. The leachate generation shown in Table 6.3 has been applied to these areas to estimate the leachate generation.

Phase Active Cells	Active	Capped	Estin	Leachate				
	Cells	Active	Daily	Interim	Final	Total	Generated (m <sup>3</sup> /yr)	
0	Existing	-	14,400	1,000	13,400	0	14,400	460
1	1A1	Existing	21,400	1,000	20,400	14,400	35,800	860
2	1A1 - 1A2	Existing	42,800	1,000	41,800	14,400	57,200	1,470
3	1A1 - 1A3	Existing	64,200	1,000	63,200	14,400	78,600	2,080
4	1A1 - 1A4	Existing	85,600	1,000	84,600	14,400	100,000	2,700

#### Table 6.4 Staging and Estimated Leachate Generation

As shown above, the disposal capacity of the existing leachate pond is approximately 1,540 m<sup>3</sup>. Based upon the estimated leachate generation shown in Table 6.4, this capacity will be sufficient until Phase 3, i.e. when the third cell in Stage 1A is constructed (assuming that the cells in Stage 1A are of equal size) and only the existing landfill cells have final cover, i.e. are rehabilitated. Based upon this, it is expected that there is sufficient disposal capacity provided by the existing leachate pond for the first cell constructed in Stage 1A. It is expected that this cell will be approx. one quarter of the footprint of Stage 1A overall to provide disposal capacity for a similar amount of waste to the current waste acceptance rate at the site. Prior to the construction of any subsequent cells, the need for construction of new leachate basins shall be confirmed once exact cell footprints are established during detailed design. Also, it is expected that additional leachate generation data will be available to provide more accurate modelling inputs or to calibrate the model.

It is proposed that the construction of the first cell in Stage 1A will occur in or around FY 2023/2024 (approx. 12 to 24 months from now). It is assumed that subsequent cell construction campaigns will occur every two to four years, and hence it can be assumed that the second and third cells in Stage 1A will be constructed between four and eight years following the construction of the first cell. It is therefore expected that the new leachate pond will be required within 5 - 10 years from now.

It is proposed to decommission the existing leachate pond once the first new pond is constructed. As identified above, it is expected that the existing leachate pond has in excess of 30 years of service life remaining and hence it is expected that the existing leachate pond will remain serviceable until a new pond/ponds are constructed at the site to replace this existing infrastructure.

## 6.3.3 Groundwater

DPE Water Comment:

Groundwater:

Recommendation – Post Approval :

If during the detailed design phase, the proponent determines that the construction of the landfill cells would intercept and take groundwater during construction of the lined cells, the proponent should:

• Undertake an assessment according to the requirements of the Aquifer Interference Policy 2012.

• Account for any groundwater take and obtain a water licence as required.

Noted and agreed. Please refer to further details in Section 8.3 on the potential to intersect groundwater during cell construction. The water source for the site is the Mourquong Irrigation Pipeline and there is no intention of using groundwater as a water source for the site. If this changes in the future, any interference with groundwater or taking of groundwater would be undertaken in compliance with the relevant legislation at the time.

## 6.4 **Operations**

## 6.4.1 General

DPIE Comments:

Operational details

The Department seeks clarification and/or additional information on the following operational aspects of the development:

- Hours of operation are to be consistent between the EIS and consultants' reports (e.g. EIS page 24 and the air quality impact assessment page 9 currently have inconsistent hours of operation)
- Details of management and interim measures for the continued operation of the community recycling facility and active landfill cell during initial and progressive expansion works
- Information demonstrating that the existing gas monitoring system is adequate to address the risks associated with LFG emissions as identified in the hazard assessment, and explanation of the 'economic levels' trigger for the implementation of the LFG (flare) management system
- Information on the gas flare system (new and existing, if any) in particular, maximum line sizes (piping diameters) and maximum operating pressures, fuel source
- Details of how acceptance of flammable wastes (e.g. oils, paints, tyres) would be limited and the proposed maximum volume of stockpiles of flammable waste
- Information on any water licensing requirements under the Water Act 1912 or Water Management Act 2000 in Section 4.4.1 of the EIS and indication of whether the project requires water licensing(Section 6.3.4)
- Details of operational water supply and usage (in addition to the information provided on water supply for firefighting)
- Detailed and consolidated site water balance for the site, which is to take into account the proposed soil and vegetation characteristics of the rehabilitated landfill cells
- Funding mechanism for rehabilitation of the landfill
- Estimate of jobs to be created during both initial and progressive construction and operational phases

DPI Ag comments:

Suitable and secure water supply

- Detail the estimated water demand and water availability and the source of water and any sanitisation methods proposed.
- Outline any impacts to water use for agriculture and measures to mitigate against these impacts.

EPA Comment:

The EPA recommends the following conditions (or conditions with similar wording) are incorporated into any approval of the proposed expansion.

- 1. A maximum of 100,000 tonnes can be received at the premises in any EPL reporting year.
- 2. New landfill cells must be constructed consistent with best practice detailed in the EPA's 'Environmental Guideline – Solid waste landfills – Second edition, 2016'.
- 3. The premises must have the same configuration and operate as described in the Environmental Impact Statement titled 'Buronga Landfill Expansion' prepared by Tonkin Consulting Pty Ltd and dated 25 January 2022.
- 4. Prior to the commencement of any expansion operations, the proponent must update the site's landfill environmental management plan to include the mitigation measures detailed at Table 7.1 of the EIS."
- Hours of operation are to be consistent between the EIS and consultants' reports (e.g. EIS page 24 and the air quality impact assessment page 9 currently have inconsistent hours of operation)

The hours of operation in the EIS were quoted based on the current opening hours for the Buronga landfill as compared with the allowable opening hours as specified in the licence. Given that the operating hours can change over time, EIS Table 3.1 should have quoted the approved opening hours and not the actual hours. This was an unintentional discrepancy in the presentation of the data.

All of the assessments undertaken were based on the approved hours in the EPL and hence potentially represent a worst-case scenario. As a result, the correct hours are as quoted in the EPL, which are:

- 6 am to 7 pm Monday to Friday and
- 7 am to 6 pm Saturdays, Sundays and Public Holidays
- Details of management and interim measures for the continued operation of the community recycling facility and active landfill cell during initial and progressive expansion works

It is proposed to continue the operation of the existing facility as is during initial construction activities. Adequate space is available within the footprint of future landfill cells to use for the construction contractor's compound and laydown facility during construction of the first new landfill cell and supporting infrastructure away from existing operations.

Construction of the proposed FERF and RRA facility will require more considered management to allow continued operation of the public waste drop off facilities. It is not expected that this construction will impact access to the landfill cells, noting that it is expected that a new landfill cell in Stage 1A will be operational during this construction.

The new resource recovery shed and residual drop off areas will occupy areas currently used for public waste drop off. Due to this, staged construction of the new waste drop off and storage areas may be required to allow the public drop off areas to be moved to the new hardstand drop off areas temporarily while the residual drop off area and resource recovery shed are constructed within the footprint of the existing public drop off. Alternatively, temporary public drop off outside of the construction footprint may be required.

Construction of the FERF is expected to be able to occur without disrupting access to the site.

Detailed plans to facilitate the continued operation of the CRC and landfill will be developed prior to construction of the FERF and RRA areas once the timing and duration of works has been confirmed. These plans will address public safety and traffic management in these areas.

• Information demonstrating that the existing gas monitoring system is adequate to address the risks associated with LFG emissions as identified in the hazard assessment, and explanation of the 'economic levels' trigger for the implementation of the LFG (flare) management system

Landfill gas is generated from the decomposition of the entombed waste. The composition of the gas is controlled by microbial processes and chemical reactions. In anaerobic decomposition, the main gas of concern is methane, whereas in aerobic decomposition, carbon dioxide is the main gas generated. Anaerobic conditions in the waste are caused by compaction during placement, waste depth and moisture content. In small rural landfills in dry climates, the waste decomposition will often be dominated by aerobic decomposition, whereas in larger facilities with specialised machinery the decomposition tends to be more anaerobic.

LFG monitoring is undertaken to ensure that the LFG control system is minimising the greenhouse gas emissions. The proposed monitoring program for Buronga landfill will measure the methane concentrations emitted through the cap and ensure that they meet NSW landfill guideline limits. In addition, methane and carbon dioxide monitoring of structures is undertaken to protect workers and ensure safe conditions in buildings where methane and carbon dioxide can accumulate and potentially cause an asphyxiation or explosion risk. Where concentrations exceed NSW EPA limits, a risk assessment will be undertaken to determine appropriate management and mitigation measures. This assessment will include site-specific measurements to assess the best management system for LFG for the site.

The LFG generated by the waste mass control the type of control system used at a particular facility. The quantity and quality of the gas is important in determining the appropriate system. LFG control systems can be passive and/or active and may also include energy recovery. The systems can be described as follows:

- Passive systems rely on gas pressure, diffusion and convection to vent the LFG to the atmosphere with methane being oxidised by soil micro-organisms to reduce methane emissions. This system is appropriate for waste with low gas generation rates or with predominantly aerobic decomposition. Passive systems can also include "biopiles" or "biowindows" where horizontal pipes are used to collect gas and direct it to areas which are actively maintained to maximise microbial breakdown of methane prior to gas release, i.e. optimum temperature and moisture.
- Active systems remove the LFG from the waste by applying suction to the waste mass. A network of
  pipes is used to collect the LFG from the waste and then burn the LFG in a flare. A small flare may be
  used to destroy gas from a low LFG generation landfill whereas higher generation and quality of LFG
  may allow energy recovery for use on-site or in some cases provide energy into the electricity grid.
  The minimum methane concentration for flaring is 15-20% by volume with energy recovery typically
  requiring LFG with > 35% methane by volume.

The quantity of gas which is typically associated with the different management systems has been presented by Vic EPA (2015) in their Landfill BPEM and as shown in Table 6.5. The actual technology for any site is determined from a site-specific assessment as the location of the facility (e.g. close to the power network) as well as the quality of the gas, amongst other things, will affect which technology/ies may be suitable.

Table 6.5	<b>Potential Landfill Gas</b>	Treatment 1	<b>Fechnologies for</b>	a Range of	<b>Gas Generation</b>	Rates (Vic EPA,
2015)						

LFG Generation Rate (m <sup>3</sup> /hr)	Potentially Suitable LFG Treatment Technologies
> 1000	Combined heat and power generation Substitute fuel Power generation Intermittent use and off-time flaring High-temperature flaring
250-1000	Power generation Intermittent use and off-time flaring High-temperature flaring Low-calorific flaring
100-250	Power generation Intermittent use and off-time flaring High-temperature flaring Low-calorific flaring Other oxidative technology and discharge e.g. passive flares, biofilters, biocover
<100	Other oxidation technology and discharge, e.g. passive flares, biofilters, biocover

Currently Buronga Landfill does not produce sufficient LFG to warrant active control systems. It is expected that as the quantity of waste increases then active systems will be required to control LFG emissions. It will be necessary to conduct tests to predict the quality and quantity of gas available to determine if and when the Buronga Landfill may require an active system. The high evaporation and low rainfall of Buronga results in placed waste tending to be placed drier than other major facilities and hence site-specific trials will need to be conducted to determine the appropriate control. A crude estimate of LFG generation using a first order decay function estimates that after 5 years of placing 60,000 tpa, the LFG generation may exceed 150 m<sup>3</sup>/hr, demonstrating that the need for more active LFG management will not be required in the short term. Regardless, monitoring will be undertaken routinely to ensure LFG generation is not proposing an environmental risk and allowance has been made for an active LFG control system to ensure that it is not overlooked.

• Information on the gas flare system (new and existing, if any) in particular, maximum line sizes (piping diameters) and maximum operating pressures, fuel source

If and when an active control system is required, an experienced LFG company will be engaged to trial, design, construct and maintain the system. This will ensure the system is appropriately sized and will maximise the collection efficiency and destruction of greenhouse gases.

An active control system is typically comprised of:

- Vertical gas collection wells. Wells are typically < 1 m diameter and placed at a grid spacing of around 50-100 m. The wells are drilled to around 75% the depth of the waste to ensure no damage to the liner;
- Horizontal gas collection wells

- Gas collection header lines
- Blower
- Condensate collection system
- Gas treatment system

Typical information for an active LFG control system is provided in Appendix F.

The fuel source is methane which is extracted under vacuum directly from the landfill cells and is not stored in any vessel prior to flaring.

• Details of how acceptance of flammable wastes (e.g. oils, paints, tyres) would be limited and the proposed maximum volume of stockpiles of flammable waste

The volumes of flammable waste are limited in the site's EPL (EIS Appendix B). The LEMP specifies the waste control program to ensure only permitted wastes are accepted for processing or disposal and that the quantities of waste received and recycled are recorded. WSC records the type and quantity of all waste received over the weighbridge. These records must be maintained and can be inspected and audited by the EPA at any time.

The types of waste were summarised in EIS Table 3.4; however WSCS records more specific wastes types. The current waste types recorded are as below but this is subject to change and is based on EPA requirements:

- Comingled recycling: received (in) and recycled (out)
- Cardboard/paper: received (in) and recycled (out)
- Mattresses: single, double
- Tyres: car, truck, tractor
- Other domestic
- Other council
- Kerbside
- Transfer stations
- Deep burial -Commercial and industrial
- General waste -construction and demolition
- Asbestos
- Concrete
- Waste oil: received (in) and recycled (out)
- Scrap metal: received (in) and recycled (out)
- Clean fill
- Garden organics/municipal
- Plastic: received (in) and recycled (out)
- Batteries: received (in) and recycled (out)
- Information on any water licensing requirements under the Water Act 1912 or Water Management Act 2000 in Section 4.4.1 of the EIS and indication of whether the project requires water licensing(Section 6.3.4)

The concerns of the Department of Planning and Environment - Water regarding water licencing requirements under the *Water Act 1912* or *Water Management Act 2000* centres on the need to account for any water take that may occur through aquifer interference by holding a Water Access Licence



(WAL) with sufficient entitlement. There are no production bores on the site and therefore no WAL is required. The WM Act identifies that aquifer interference activities require a controlled activity approval; however the approval process has not been enacted yet. Monitoring bores normally require a Water Supply Works Approval UNLESS they are part of approved State Significant Development – see EP7A Act s.4.41(1)(g).

Section 4.41(1)(g) of the EP&A Act states that a water use approval under Section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the Water Management Act 2000 are not required for State significant development that is authorised by a development consent.

Division 6 of the *Water Management Act 2000* (WM Act) relates to controlled activities and aquifer interference activities. Aquifer interference activity is defined in the WM Act as:

Aquifer interference activity means an activity that involves any of the following-

- (a) the penetration of an aquifer,
- (b) the interference with water in an aquifer,
- (c) the obstruction of flow in an aquifer,
- (*d*) the taking of water from an aquifer in the course of carrying out mining, or any other activity prescribed by the regulations,
- (e) the disposal of water taken from an aquifer as referred to in paragraph (d).

Aquifer interference approvals are not enacted by the project and approvals under the WM Act are not required for water supply works that are approved as part of the State significant development assessment – this is based on s.4.41(1) (g) of the EP&A Act 1979. The above exemption does not apply to Water Access Licences which are required if water is to be extracted through aquifer interference activities.

If water supply works approvals are required and have not been assessed as part of the state significant development, then relevant approvals are required under the WM Act 2000. The EIS however provides that groundwater monitoring wells will be installed for monitoring purposes on a six-monthly basis, therefore, no additional approval is required separately under the WM Act.

- Details of operational water supply and usage (in addition to the information provided on water supply for firefighting)
- Detail the estimated water demand and water availability and the source of water and any sanitisation methods proposed.
- Detailed and consolidated site water balance for the site, which is to take into account the proposed soil and vegetation characteristics of the rehabilitated landfill cells
- Outline any impacts to water use for agriculture and measures to mitigate against these impacts.

The source of water along with the site water balance is important to ensure that there is sufficient water for the proposed development and that this will not affect other water users or water-dependent ecosystems. The site water balance assists in understanding where and how water is moved around the site.

As discussed in EIS Section 3.7.3, the main source of water for the site is the Mourquong Irrigation Pipeline with drinking water provided by delivered bottled water. Additional sources of water on-site include roof water (collected in small rainwater tanks), stormwater and leachate. The site currently uses 8-10 ML/yr of water for site purposes, mainly dust suppression. This volume will increase with the proposed expansion with additional water required for cleaning resource recovery areas and dust suppression during crushing and grinding and on internal haul roads. Even if it is assumed that water consumption increases by 100%, in comparison, this would irrigate < 5 ha of horticultural crops (such as citrus) in the area and the filtered water supply for Buronga/Gol Gol in 2016/17 was over 320 ML<sup>2</sup>.

The water balance for many sites is important in ensuring that there is sufficient capacity in the system and to maximise the reuse of water on-site. In the Buronga area the climate is predominantly in a water deficit. The average annual rainfall is 285 mm with a maximum of 657 mm compared with annual evaporation of 2,190 mm, based on Mildura Airport (BoM Station Number 076031). On a monthly basis, the evaporation exceeds the rainfall also. Comparison of decile 9 rainfall with 80% if the evaporation, to reflect the reduction in evaporation from a pond surface compared with pan evaporation shows that evaporation still exceeds rainfall in every month (Figure 8). There is likely to be a water deficit in every month of the year and hence a more detailed water balance has not been undertaken.



### Figure 8 Comparison of Decile 9 Rainfall with 80% Pan Evaporation Recorded at Mildura Airport

Stormwater ponds will be constructed to accommodate the short duration of stormwater from high intensity storms and provide a maximum of 5.5 ML of water; however the ponds will provide only opportunistic use of water for operational or construction purposes.

The existing on-site tank of 50,000 L provide sufficient water for firefighting purposes and daily water needs for approximately 200 days or in future this may reduce to 100 to 150 days based on a 50-100% increase, which is highly conservative. The on-site tank and the new 45,000 L tank will remain the primary source of water for the site. The usage represents a small proportion of the water usage around Buronga.

The proposed development will not impact on agricultural water users or limit further development of irrigated agriculture due to the small volumes of water required.

### • Funding mechanism for rehabilitation of the landfill

The funding mechanisms are an important consideration to ensure that the rehabilitation of the site has been adequately accounted and a legacy is not left for future generations to remediate. The Buronga

<sup>&</sup>lt;sup>2</sup> WSC. 2018. Development Servicing Plan No 1 - Water Supply and Sewerage Services. Wentworth Shire Council

facility is not a one-time civil works activity. Design works, general construction and on-going management are all key components requiring consideration when planning for the development of a site and affect the timing of rehabilitation and hence the funding requirements require detailed consideration.

EIS Section 3.9.3 discusses the financial assurance requirements for Buronga Landfill. Further to this, the Australian Accounting Standards require Council to account for any landfill rehabilitation provisions as a liability on its Balance Sheet. Council's current provision as at 30 June 2022 is \$2,713,009. Funding of the actual works will be via a long-term loan which has been factored into Councils 10-year Long Term Financial Plan. This financial planning takes into consideration elements such as future cell construction, closure (rehabilitation) costs and post closure (ongoing monitoring and maintenance requirements) costs. Rehabilitation includes capping and vegetation establishment whilst post-closure includes repairs to the cap and weeding and replacement of vegetation as required.

## • Estimate of jobs to be created during both initial and progressive construction and operational phases

The estimate of jobs for the project is presented in EIS Section 6.9.2. For the expanded operations it is expected that the operation of the facility could employ an additional 18 people with flow on of an additional 50 full-time equivalents for construction and other support services (e.g. survey, engineers).

The EPA recommends the following conditions (or conditions with similar wording) are incorporated into any approval of the proposed expansion.

- 1. A maximum of 100,000 tonnes can be received at the premises in any EPL reporting year.
- 2. New landfill cells must be constructed consistent with best practice detailed in the EPA's 'Environmental Guideline – Solid waste landfills – Second edition, 2016'.
- 3. The premises must have the same configuration and operate as described in the Environmental Impact Statement titled 'Buronga Landfill Expansion' prepared by Tonkin Consulting Pty Ltd and dated 25 January 2022.
- 4. Prior to the commencement of any expansion operations, the proponent must update the site's landfill environmental management plan to include the mitigation measures detailed at Table 7.1 of the EIS."

We endorse and agree with these conditions. The tonnages represent the maximum likely tonnages to be received at Buronga Landfill. Buronga Landfill is situated in accordance with EPA recommendations (as detailed in EIS Section 3.3) and operates in accordance with its EPL. The proposed landfill designs (EIS Section 3.6), operations (EIS Section 3.7), monitoring (EIS Section 3.8) and final landform and rehabilitation (EIS Section 3.9) have all been proposed to be conducted in accordance with the site's EPL and the Landfill Guidelines. As the EPL and Landfill Guidelines are amended, site practice will be amended to maintain best practice management on-site.

## 6.4.2 Fire

## FRNSW Comment:

Following a review of the EIS report FRNSW provides the following recommendations for your consideration:

1. To ensure that the fire prevention, detection, protection and firefighting measures are appropriate to the specific fire hazards and adequate to meet the extent of potential fires, a comprehensive Fire Safety Study (FSS) is recommended to be undertaken.

- 2. That the FSS is developed in accordance with the requirements of Hazardous Industry Planning Advisory Paper No.2 (HIPAP No.2).
- 3. That the FSS is required to be developed in consultation with FRNSW and to the satisfaction of the operational requirements of FRNSW. FRNSW recommend that the development of a FSS be a condition of consent.
- 4. That the development of the FSS considers the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence.
- 5. FRNSW preference is to review the Preliminary Hazards Analysis (PHA) report as this will determine the approach and design of the recommended fire safety study.
- 6. That a comprehensive ERP is developed for the site.
- 7. That the ERP specifically addresses foreseeable on-site and off-site fire events and other emergency incidents, (e.g. fires involving solar panel arrays, bushfires in the immediate vicinity or potential hazmat incidents).
- 8. That the ERP detail the appropriate risk control measures that would need to be implemented in order to safely mitigate potential risks to the health and safety of firefighters and other first responders (including electrical hazards). Such measures would include the level of personal protective clothing required to be worn, the minimum level of respiratory protection required, decontamination procedures, minimum evacuation zone distances and a safe method of shutting down and isolating the photovoltaic system (either in its entirety or partially, as determined by risk assessment).
- 9. Other risk control measures that may need to be implemented in a fire emergency due to any unique hazards specific to the site should also be included in the ERP.
- 10. That two copies of the ERP (detailed in recommendation 1 above) are stored in a prominent 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s.
- 11. An Emergency Services Information Package is to be developed as detailed in FRNSW guideline -Emergency Services Information Package and Tactical Fire Plans for use by responding firefighters. It is to be stored along with the ERP in an 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s.
- 12. All stockpiles of rubber tyres are to be stored in accordance with FRNSW guideline Guideline for bulk storage of rubber tyres.
- 13. FRNSW note that FRNSW fire safety guideline for Fire Safety in Waste Facilities is acknowledged as a reference. This document includes legislated requirements and development considerations and should continue to be referenced throughout the design process.

The Bushfire Assessment, presented as Appendix L in the EIS, recommended a Bushfire Emergency Management and Evacuation Plan be prepared and form part of the existing Emergency Response Plan for the site. In developing this plan, it is expected that a Fire Safety Study would form the platform from which the ERP can be updated and this is accepted as one of the mitigation measures to be undertaken as a condition of approval Procedure (ERP) to incorporate any recommendations from the FSS be undertaken as a condition of approval.

As noted by FRNSW, the proposed stockpile area of rubber tyres was developed in consideration of the FRNSW guidelines and the ERP will include the management practices presented in this guideline as relevant to the site.

## 6.5 Drawings and Layouts

DPIE Comment:

Civil drawings and layouts



The Department requests additional drawings that show the relationship between existing and proposed structures, roads and other site infrastructure, and that illustrate how the progressive expansion of the landfill would work in relation to the continued operation of the community recycling facility and the active landfill cell. The additional drawings should include:

- Site plan(s) showing existing and proposed structures, site entrance, onsite road network (sealed and unsealed), car park and connections between structures, hardstand areas and roads with relevant dimensions, separations, setbacks and site boundaries shown
- Plans showing proposed upgrades to Arumpo Road at the entrance to the site
- Plans showing progressive construction / opening of internal roads to the active landfill cell. Access to the tipping face of the landfill over time appears unclear
- Location and details of the existing 45,000L static water supply, proposed additional water supply, draw off points and new emergency access road from Arumpo Road to the water supply
- Elevations and sections of relocated and proposed new structures
- Cross sections showing the historic unlined landfill proposed to be overlaid/'piggybacked' by the proposed lined landfill cells
- Concept landscape plan for the rehabilitated landfill cells
- Signage strategy including at entry and onsite directional signage
- Plans showing sediment and erosion control measures for initial works to relocate or construct buildings, hardstands, basins and internal roadways, and ongoing/progressive extension of roads and landfill cell and basins construction

DPE Water Comment:

Sediment & Erosion Control:

Recommendation – Post Approval :

The proponent must prepare a Soil and Water Management Plan to address stormwater management and sediment and erosion control. The plan is to address the requirements of the guideline Managing Urban Stormwater: Soils and Construction (Landcom 2004) and the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018)

The drawings have been updated to include additional details on the staging of the proposed development and are provided in Appendix A. The exceptions are as follows:

- Concept landscape plan. There are only two zones, being a zone of undisturbed vegetation which is
  outside the development footprint and a zone of rehabilitated landfill cells. As further discussed in
  Section 7.2.2, the latter zone will incorporate a mixture of endemic native vegetation selected from
  species associated with PCT15 Black Box Open Woodland, PCT58 Black Oak Western Rosewood and
  PCT170 Chenopod sandplain mallee.
- Plans showing erosion and sediment controls. These plans will be developed in accordance with the Blue Book by the selected contractor as part of the tender requirements. They are not able to be developed at this stage as the timing, duration, staging and methodology of works is not known. All external haul roads will be constructed with drains which will be directed to the stormwater basins. We endorse the DPE Water recommendation that a Soil and Water Management Plan is prepared as a condition of approval to ensure that the facility appropriately manages all stormwater and provides adequate erosion and sediment controls. This pan can be updated as the facility is developed over the next five years and into the future.

It is also noted that:

- more detailed plans of the Arumpo Road upgrades were provided in the Traffic Impact Assessment presented as Appendix H in the EIS.
- elevations for the proposed structures were provided in the EIS but it was noted that the drawings were missing the height details, so this has now been corrected. The only structure which has not

been detailed is the drum muster storage cage, which is 2.4 m high and would be screened by the FERF. This cage is formed from similar materials to that shown in Figure 9.

• No updated signage is proposed for the entrance at Arumpo Road as the existing signage contains all necessary details of landfill licencing, operations, waste acceptance so it is not included in the Signage Plan shown on Drawing 23.



Figure 9 Current Drum Muster Cage Showing Construction Materials

## 6.6 Project Costs

### DPIE Comment:

Justification for:

- excluding cell staging (or otherwise confirm the allowances are adequate to account for the cost of works when split into stages)
- excluding dust control, water infrastructure and gas management, which are considered to be key establishment costs
- excluding escalation costs, even though the project timeline and expected life of each cell for both Stage 1 and Stage 2 are described in Table 3.5 and p.60 of the EIS
- limiting rehabilitation plantings to shrubs only, with no allowance for trees
- (Justification for) excluding cell staging (or otherwise confirm the allowances are adequate to account for the cost of works when split into stages)

The costs of construction have not been granularized to the individual cell due to the unknown size and number of the proposed cells and the time duration of the proposed development. A contingency has been provided to account for staging of the construction of the landfill cells.

• (Justification for) excluding dust control, water infrastructure and gas management, which are considered to be key establishment costs

The costs were initially excluded as they are partially operational costs and the timing and type of LFG requirements is not currently known. To provide an indicative cost of these items, the cost estimate has been updated to specifically include dust control, water infrastructure and gas management costs, as

provided in Appendix G. The impact on the overall cost of the development is minor, consisting of less than 5% of the overall estimated cost.

# • (Justification for) excluding escalation costs, even though the project timeline and expected life of each cell for both Stage 1 and Stage 2 are described in Table 3.5 and p.60 of the EIS

Initially the costs were not escalated as the rate of increase of operations, rapidly changing face of the waste management and uncertainty in longer term projects make these numbers unreliable. To provide an indication of the likely impact of cost escalation, an allowance over the next 10 years (until 2032) has been provided in the updated cost estimate as shown in Appendix G. Due to the time over which the construction of this development is proposed, it is impractical to estimate the escalation of construction costs over this much longer time period. This remains though the development application has been reduced to Stages 1A to 1D only. The cost estimate has been provided in terms of current cost to provide an estimate of the capital cost for the project in current terms.

## • (Justification for) limiting rehabilitation plantings to shrubs only, with no allowance for trees

The cost estimate has been updated to specify an allowance for planting of shrubs and trees during rehabilitation to rectify this oversight as shown in Appendix G. The impact of this on the rehabilitation costs is minor, comprising approximately 6% of rehabilitation costs. Note these costs have reduced due to the reduced extent of this current application.

## 7 Submission Response – Procedural

## 7.1 Statutory

## DPIE Comment:

Landowner's consent

Landowner's consent is required from Crown Lands.

- The request for Crown consent would need to address the following:
  - Subject Lots 197 and 212 in DP 7569460 which are Crown land (reserved for the purpose of a rubbish depot)
  - Arumpo Road and the east-west road on the southern boundary of the site which are identified as Crown land. The proposal requires upgrades to Arumpo Road and part of the front end recycling facility building appears to encroach onto the east-west road.
- The request for Crown consent may be lodged through cl.western.region@crownland.nsw.gov.au

Crown Lands Comment:

*No Crown waterways are contained within the project footprint, however, two Crown road lots adjoin the project footprint, LOT 1 DP 1037845. If the proposal requires the use of these Crown roads in order to implement the Buronga Landfill Expansion proposal, the land will need to be acquired under the Land Acquisition (Just Terms Compensation) Act 1991 (LAJTC Act).* 

Landowner's consent was not obtained during preparation of the EIS as the majority of works are being conducted on Council-owned land (Lot 1), Council road reserves (Arumpo Road) or land which has approval to be used as a waste facility (i.e. Lots 212 and 197). Following completion of the ecological survey, the design was adjusted to minimise the impact of vegetation clearance by moving the FERF into the entrance road corridor, which it was incorrectly assumed was Council road reserve as no lot boundary was apparent between the entrance road and Arumpo Road. We acknowledge the importance of ensuring that consent is obtained from all parties and have obtained Crown consent to undertake the proposed development as presented in Appendix H. It is noted that the submission responses suggested that Arumpo Road was Crown Land; however, consultation with Crown Lands (email correspondence contained in Appendix H) and WCC has confirmed that Arumpo Road is Council Land so consent is not required. Crown Lands has provided further advice suggesting that WSC should apply to Crown Lands to have the part crown road transferred to WSC (Appendix H).

Appropriate landowner's consent has now been obtained for the proposed development. No conditions were applied that have required a change to the proposed development

## 7.2 SEARS

## 7.2.1 Land Use Conflict

## DPIE Comment:

Potential land use conflicts

The EIS needs to identify potential conflicts with cultural, agricultural, mining and Crown interests within or in the vicinity of the site and outline how the development addresses these conflicts. The following additional information is required:

- Address the undetermined Aboriginal Land Claim (ALC 22090) on Lots 197 and 212 DP 7569460 which may limit use of the existing landfill lots
- Confirmation that two Crown road lots adjoining the project footprint will not be impacted, or otherwise provide Crown consent or details of any proposed acquisition of Crown land



- A Land Use Conflict Risk Assessment (LUCRA) to address potential conflicts with surrounding agricultural uses, prepared in consultation with the Department of Primary Industries – Agriculture, including but not limited to consideration of suitable water supply and impacts on agricultural resources and land and any travelling stock routes
- Map and information on existing mining lease titles from the Department of Regional NSW Mining, Exploration & Geoscience's MinView website in Figure 21 of the EIS in place of or in addition to Council map
- Details of consultation with current mining lease title holders in the area (i.e. Larmon Pty Ltd, Mallee Quarries Pty Ltd and Morello Earthmoving Pty Ltd) and in particular include consultation by letter with Morello Earthmoving as required by Department of Regional NSW – Mining, Exploration & Geoscience in their advice on SEARs
- Confirmation that no biodiversity offset areas are proposed within the site that would result in a reduction in access to prospective land for mineral exploration or potential sterilisation of mineral or extractive resources

## Crown Lands Comment:

It is also noted that Lot 197 DP 756946 and Lot 212 DP 756946 are currently the subject of an undetermined Aboriginal Land Claim (ALC22090), which may limit how the land can be used. However, whilst we acknowledge this claim is undetermined the recommendations provided by Aboriginal Land Claim Assessment Team suggest this claim be refused (LBN21/890).

#### **DPI Agriculture Comment:**

#### Site Suitability:

- Include a Land Use Conflict Risk Assessment (LUCRA) to identify potential land use conflict with sensitive receptors including surrounding agricultural land uses. The LUCRA is to address separation distances and management practices to minimise odour, dust and noise impacts. A LUCRA is described in the DPI Land Use Conflict Risk Assessment Guide.
- Include a map to scale showing the above operational and infrastructure details including separation distances from sensitive receptors including agricultural land uses.

Consideration of impacts on agricultural resources and land:

- Describe the soil, slope, land capability, agricultural productivity, land characteristics and the history of agricultural land uses on the proposed development site.
- Describe the current and historical agricultural land uses on surrounding land in the locality including the land capability and agricultural productivity of the surrounding land
- Detail the potential impacts from the proposed development on agricultural land and agricultural land uses on the site and in the locality.
- Detail the location and areas of land to be temporarily removed from agricultural use, and those areas which are to be returned to agricultural use on completion of the development.
- Consider possible cumulative impacts on surrounding agricultural enterprises and landholders.
- Assess impacts on agricultural support services, processing and value adding industries.
- Demonstrate that all significant impacts on current and potential agricultural developments and resources can be reasonably avoided or adequately mitigated.
- Detail the expected life span of the proposed development.

MEG Comment:

MEG requests the following project-specific requirements to be addressed in the EIS:

• The Environmental Impact Statement (EIS) must include a dated mineral, coal and petroleum titles and applications search through the MEG MinView application, with results shown on a map(s) including the location and extent of the project site. Current mining and exploration titles and applications can be viewed at: <u>https://minview.geoscience.nsw.gov.au/</u>



- The proponent must consult with Morello Earthmoving Pty Ltd. This should include a letter of notification of the proposal to the title holder including a map indicating the Buronga Landfill Expansion proposal area in relation to the exploration title boundary.
- The proponent must consult with all affected title holders. This should include a letter of notification of the proposal to the title holders including a map indicating the Landfill Expansion proposal area in relation to the title boundaries.
- *MEG specifically requires the proponent to check for new mineral and energy titles that may be granted in the vicinity of the subject site during all decision-making stages of the project to ensure that other stakeholders (such as title holders) with interest in the area are aware of the proposed landfill expansion project.*
- *MEG* requests to be consulted in relation to the proposed location of any biodiversity offset areas (both on and off site) or any supplementary biodiversity measures to ensure there is no consequent reduction in access to prospective land for mineral exploration, or potential for sterilisation of mineral or extractive resources
- Address the undetermined Aboriginal Land Claim (ALC 22090) on Lots 197 and 212 DP 7569460 which may limit use of the existing landfill lots
- It is also noted that Lot 197 DP 756946 and Lot 212 DP 756946 are currently the subject of an undetermined Aboriginal Land Claim (ALC22090), which may limit how the land can be used. However, whilst we acknowledge this claim is undetermined the recommendations provided by Aboriginal Land Claim Assessment Team suggest this claim be refused (LBN21/890).

The land claim is in respect to Crown land and not freehold land. The main part of the proposed development is freehold land owned by Council and hence is not part of the land claim. The Crown land is only affected with the development of the FERF along the entrance with the larger crown land parcels only minorly affected by a piggyback liner as their use as a landfill is nearing completion. As WSC currently maintain this part crown road reserve, Crown Lands has suggested that Council should request transfer of this land along the entrance from the Crown (Appendix H).

The aboriginal land claim has still not been determined and, as noted by Crown Lands, is still considered likely to be refused. A Request for Search of a Land Claim has been submitted to the Office of the Registrar but no response has been received to date (Appendix P). Previous discussion by Council Officers with staff from the Crown Land Aboriginal Land Claims Unit has indicated that Crown Lands intend to deny the claim as the parcels of land subject to the claims are being used for their gazetted purpose.

With respect to native title over the crown land and Council- owned land it is also noted that Schedule 5 – Description of Extinguished Areas as part of the above claim by the Barkandji Traditional Owners lists Lot 197 and 212 DP 756946 as extinguished. An extract from the National Native Title Tribunal is shown in Figure 10, extracted on 14/10/2022. The extinguishment of native title may reduce the potential for these lots to be subject to any native title claim.



#### Figure 10 Native Title Applications and Determinations (National Native Title Tribunal)

• Confirmation that two Crown road lots adjoining the project footprint will not be impacted, or otherwise provide Crown consent or details of any proposed acquisition of Crown land

Crown Lands consent has been obtained for the development as presented in Appendix H.

- A Land Use Conflict Risk Assessment (LUCRA) to address potential conflicts with surrounding agricultural uses, prepared in consultation with the Department of Primary Industries – Agriculture, including but not limited to consideration of suitable water supply and impacts on agricultural resources and land and any travelling stock routes
- Include a Land Use Conflict Risk Assessment (LUCRA) to identify potential land use conflict with sensitive receptors including surrounding agricultural land uses. The LUCRA is to address separation distances and management practices to minimise odour, dust and noise impacts. A LUCRA is described in the DPI Land Use Conflict Risk Assessment Guide.
- Describe the soil, slope, land capability, agricultural productivity, land characteristics and the history of agricultural land uses on the proposed development site.
- Describe the current and historical agricultural land uses on surrounding land in the locality including the land capability and agricultural productivity of the surrounding land
- Detail the potential impacts from the proposed development on agricultural land and agricultural land uses on the site and in the locality.
- Detail the location and areas of land to be temporarily removed from agricultural use, and those areas which are to be returned to agricultural use on completion of the development.
- Consider possible cumulative impacts on surrounding agricultural enterprises and landholders.
- Assess impacts on agricultural support services, processing and value adding industries.

• Demonstrate that all significant impacts on current and potential agricultural developments and resources can be reasonably avoided or adequately mitigated.

A Land Use Conflict Risk Assessment (LUCRA) has been prepared to identify and resolve any potential conflicts between the proposed development and the surrounding land uses. By undertaking this assessment at the planning stage, it can assist in reducing the potential for conflicts to occur at a later stage.

The LUCRA is presented in Appendix I. It identified several agricultural industries surrounding the site with mining industries located at greater distance. The surrounding activities are predominantly horticultural industry (grapes, orchards) to the south, unimproved grazing to the north and west, mining to the west and Lake Gol Gol to the east. No travelling stock routes are located within 2 km of the proposed development.

The site has been used for unimproved grazing prior to use by WSC for waste management purposes. Initially waste was disposed to Lot 212 before extending west into Lot 197 and into Lot 1. Increased development on site occurred between 1993 and 2017 with a significant change evident in waste management procedures resulting in a defined landfill footprint. The CRC is apparent in 2019. Historical aerial photographs show horticultural development from 1965 which expanded until 1979 and has since remained static in areal extent. The mining industries were developed from around 1990 onwards with composting facilities to the north a more recent development after 2017.

An initial risk assessment evaluated a range of activities including:

- erection of structures,
- transport, loading, storage, processing and placement of waste
- cell and cap construction
- landfill gas and leachate generation
- harvesting
- aerial spraying

The initial evaluation identified all risks as 10 or less suggesting no high land use conflict exists, with the exception of noise associated with crushing and grinding activities which was 12. Within the EIS, additional management strategies had already been proposed to minimise risks as far as practical. With the implementation of the mitigation strategies proposed within the EIS and the additional noise management strategy discussed in Section 8.8, the highest potential conflict was 9 rating due to potential impact from noise during crushing activities.

Overall, the existing use as a landfill combined with large buffer distances of over 300 m from the boundary and over 500 m from the landfill area and with landfilling activities moving northward away from the closest and potentially more sensitive horticultural receptors has provided a low risk of land use conflict for the proposed development. No additional management or mitigation measures are required to manage this risk.

Given the LUCRA has been undertaken following the development of the EIS, some aspects of DPI's comments are addressed within the EIS and not within the LUCRA, as follows:

- Detail the expected life span of the proposed development: this is provided in EIS Section 3.6.3.
- Include a map to scale showing the above operational and infrastructure details including separation distances from sensitive receptors including agricultural land uses: due to the size of the proposed expansion this is provided in the Figures in the EIS and within the Appendices, particularly EIS Appendix G and O.
- Describe the soil, slope, land capability, agricultural productivity, land characteristics and the history of agricultural land uses on the proposed development site: A brief summary is provided within the LUCRA, with the main details provided in EIS Section 6 and associated Appendices

- Map and information on existing mining lease titles from the Department of Regional NSW Mining, Exploration & Geoscience's MinView website in Figure 21 of the EIS in place of or in addition to Council map
- Details of consultation with current mining lease title holders in the area (i.e. Larmon Pty Ltd, Mallee Quarries Pty Ltd and Morello Earthmoving Pty Ltd) and in particular include consultation by letter with Morello Earthmoving as required by Department of Regional NSW Mining, Exploration & Geoscience in their advice on SEARs
- The Environmental Impact Statement (EIS) must include a dated mineral, coal and petroleum titles and applications search through the MEG MinView application, with results shown on a map(s) including the location and extent of the project site. Current mining and exploration titles and applications can be viewed at: <u>https://minview.geoscience.nsw.gov.au/</u>
- The proponent must consult with Morello Earthmoving Pty Ltd. This should include a letter of notification of the proposal to the title holder including a map indicating the Buronga Landfill Expansion proposal area in relation to the exploration title boundary.
- The proponent must consult with all affected title holders. This should include a letter of notification of the proposal to the title holders including a map indicating the Landfill Expansion proposal area in relation to the title boundaries.
- *MEG specifically requires the proponent to check for new mineral and energy titles that may be granted in the vicinity of the subject site during all decision-making stages of the project to ensure that other stakeholders (such as title holders) with interest in the area are aware of the proposed landfill expansion project.*

It was understood that the plan extracted from Council was from MinView; however it appears that this may not have been correct. An updated plan extracted from MinView is presented in Appendix J, which was extracted in July 2022. This plan shows the mining stakeholders within 2 km of the site boundaries as:

- Morello Earthmovers: EL9436 (which includes the Buronga Landfill), MLA615, MLA617, ML1679, ML1804
- Mallee Quarries: ML1644
- Larmon Pty Ltd: EL7175, ML1512
- Iluka Resources: EL9381

Morello Earthmoving was contacted as part of the community engagement undertaken during EIS preparation and, as reported in EIS Appendix E, they did not respond to the letter, email or phone calls. On 7 July 2022 letters were sent to each of the stakeholders requesting contact be made via email or phone call (Appendix J). The only response was received from Iluka Resources who had no objection to the proposed development.

As a result, there is no change to the potential land use conflict from the proposed development and no additional stakeholder requirements received.

- Confirmation that no biodiversity offset areas are proposed within the site that would result in a reduction in access to prospective land for mineral exploration or potential sterilisation of mineral or extractive resources
- MEG requests to be consulted in relation to the proposed location of any biodiversity offset areas (both on and off site) or any supplementary biodiversity measures to ensure there is no consequent reduction in access to prospective land for mineral exploration, or potential for sterilisation of mineral or extractive resources

Biodiversity offsets are required for the project; however the majority of offsets are associated with Stage 2 and the plant community type in this area will not be appropriate for the new landform created by the landfill. As a result, no biodiversity offset areas are proposed within the site that would result in a reduction in access to land.

## 7.2.2 Landscaping

#### DPIE Comment:

Landscaping

The Department requests the submission of landscape plans as specified in the SEARs:

• Landscape plans should include:

- trees to be removed / land clearing areas
- location of proposed plantings
- schedules showing the number and species of plantings throughout the site and including rehabilitation plantings that are representative of endemic vegetation sympathetic to the surrounding environment

Vegetation is only proposed to be cleared within the development footprint and is not proposed to be used as part of a biodiversity stewardship agreement to offset the biodiversity impacts discussed in Section 8.6 and Appendix O. Additional plantings are proposed for rehabilitation of the landfill final landform where species will be selected from endemic native species, including trees, shrubs, grasses and herbs. The actual species planted will depend on the availability of local provenance at the time of rehabilitation.

The rehabilitation area will incorporate endemic native vegetation associated with PCT15 Black Box Open Woodland, PCT58 Black Oak – Western Rosewood and PCT170 Chenopod sandplain mallee. A suggested species list is provided in Table 7.1. The species list has excluded species which are spiny as access to the final cap for maintenance purposes is required. A variety of understorey species have been suggested to provide additional groundcover for rehabilitation. The exact species are selected in consultation with Revegetation Consultants and local nurseries during the preparation of the Landfill Closure Plan and detailed designs for capping. All seed supplied should be local provenance, as far as possible and practical.

РСТ	Form	Scientific name	Common name
15	Tree	Eucalyptus largiflorens	Black box
15	Shrub	Rhagodia spinescens	Berry saltbush
15	Shrub	Maireana pyramidata	Black bluebush
15	Shrub	Atriplex vesicaria	Bladder saltbush
58	Tree	Casuarina pauper	Belah
58	Tree	Alectryon oleifolius subsp canescens	Western rosewood
170	Shrub	Dissocarpus biflorus	
170	Tree	Eucalyptus dumosa	White mallee
170	Tree	Eucalyptus oleosa	Red mallee
170	Tree	Pittosporum angustifolium	Weeping pittosporum

#### Table 7.1 Suggested Species List

РСТ	Form	Scientific name	Common name
Other	Ground cover	Lomandra effusa	Scented mat-rush
Other	Ground cover	Lomandra leucocephala	Woolly mat-rush
Other	Ground cover	Austrostipa spp	Speargrass
Other	Ground cover	Themeda triandra	Kangaroo Grass
Other	Ground cover	Astrebla spp	Mitchell Grass

Once the bulk earthworks are complete and to ensure the success of plant establishment, it will be necessary to control access into the area. Machine access should be limited inside the landscaping zones other than for landscaping purposes and re-shaping areas of erosion or maintaining a free draining surface. Appropriate sediment control fencing will be installed as specified in the detailed design for capping. Consideration will be given to alternative control structures, particularly those shown in "Best Practice Erosion and Sediment Control" (IECA, 2008). Areas of high erosion potential may require the installation of jute matting or hydromulching. The Hydromulch "mixture" will include jute fibre and a mixture of pre-treated native seed. Experience has shown that using a mixture of native peas and Acacia's in the hydro mulch is an inexpensive way to establish native vegetation at difficult sites.

Being highly modified, the site is unlikely to contain significant weed seed loads at the completion of the bulk earthworks, other than those growing on existing batters. Inspection for and removal of any noxious weeds prior to any landscaping works should be undertaken. All weed control activities are to be completed by a suitably qualified contractor.

Before revegetation activities commence an irrigation system, e.g. drippers or sprinklers, will be installed to assist in establishing vegetation. Once established (3-5 years) the irrigation will be removed and reused, where practical. Installation of an irrigation system helps ensure establishment targets are achieved.

A combination of landscaping techniques should be employed in each of the zones to maximise the potential for good establishment of plants. These techniques may include:

- hydromulching: mulch in the form of plant fibre can be placed onto topsoil using water as a carrier. Pre-treated seed, including native seed can be added to the mulch; native seed must be added with minimal agitation to minimise seed damage. Hydromulch encourages vegetation cover and provides protection against erosion. Initially, it is recommended that blends of the appropriate pre-treated native seed mix be added to the mulch and spread across the area. It is recommended that 2-3 kg/ha of seed be added to the mulch.
- tube stock may also be used by hand planting across smaller areas (up to 10 ha). Machinery is available but is not currently recommended for tube stock. The recommended planting density for trees and shrubs for each zone is 1 per 20 m<sup>2</sup> with 5 m interrow spacings to achieve a recommended density of 1 per 40 m<sup>2</sup> once established. It is recommended that ground covers are planted in the interrow at 4 per m<sup>2</sup>. When planted as tubestock each tree/shrub will have a surface mulch ring placed around its base and then protected using a tree guard, stabilised by stakes to prevent herbivory and weed competition and to encourage optimum growing conditions.
- native seed, particularly native grasses, may be mechanically sown on-site. Modified air seeders with trailing harrows have been successfully used across large areas to provide a light cover to native seed. Seeders may be used in the inter-row of tree and shrub tube stock. It is recommended that 3-5 kg/ha of seed be used.

In general, autumn is the best season for planting to reduce stress on young plants from high temperatures or frost. Planting in early spring can be effective provided a suitable watering regime is



implemented; however, has higher risk of lower survival rates. All plants will be 'watered in' on installation, with each plant receiving a minimum five litres. All plantings will receive a further three applications of water during the first 6 weeks to assist establishment, depending on rain fall. Irrigation will be undertaken by drip or sprinkler irrigation or by hand watering, depending on the zone and resources available. Weed spraying will be instigated as required from site inspections with all spraying carried out by suitably trained contractors.

These additional details are typically provided in the Technical Specification as is standard practice for landfill developments. No additional landscaping is proposed around the structures to maintain compliance with bushfire requirements. These details have not changed the proposed development from that presented in the EIS.

## 7.3 Engagement

**DPIE Comment:** 

### Consultation

The following consultation information is required, with reference to the SEARs:

- Evidence of consultation with:
  - Environment Protection Authority
  - Environment and Heritage of DPE (formerly Environment, Energy and Science)
  - Water Group of DPE
  - Fire and Rescue
  - NSW Rural Fire Service
  - WaterNSW
- Consolidation of Applicant's responses to the key issues raised by all agencies and Council in Section 5.2 of the EIS

DPI Ag Comment:

Community Consultation

- Consult with the owners / managers of affected and adjoining neighbours and agricultural operations in a timely and appropriate manner about; the proposal, the likely impacts and suitable mitigation measures or compensation.
- Evidence of consultation with:
  - Environment Protection Authority
  - Environment and Heritage of DPE (formerly Environment, Energy and Science)
  - Water Group of DPE
  - Fire and Rescue NSW
  - NSW Rural Fire Service
  - WaterNSW
- Consolidation of Applicant's responses to the key issues raised by all agencies and Council in Section 5.2 of the EIS

Additional consultation has been undertaken with the government agencies. All agencies who responded have indicated that they have no further comments and are awaiting this response. Correspondence sent and received is presented in Appendix K.

Agency	Consultation	Response
Environment Protection Authority	Called 26/08 - no answer. Sent email 26/08. Follow up 2/9 and 6/9 by phone and email	No response.

Agency	Consultation	Response
Environment and Heritage of DPE	Called 26/08 - no answer. Sent email 26/08	Received – no further comments beyond that provided to date
Water Group of DPE	Called 26/08 - no answer. Sent email 26/08. Follow up 2/9 by phone and email	Received – no further comments at this time and will respond to the submissions report.
Fire and Rescue NSW	No phone number provided. Sent email 26/08. Follow up 2/9 by phone and email	Received – no further comments at this time beyond that provided to date.
NSW Rural Fire Service	Called 26/08 and contact details provided. Sent email 26/08	Received – no further comments beyond that provided to date
WaterNSW	No phone number provided. Sent email 26/08	Received – will respond to submissions report during formal process

• Consult with the owners / managers of affected and adjoining neighbours and agricultural operations in a timely and appropriate manner about; the proposal, the likely impacts and suitable mitigation measures or compensation.

Community consultation formed an important part of the EIS and is summarised in EIS Section 5 and EIS Appendix F. Neighbours surrounding the site were contacted and invited to provide feedback. Of those who responded, a range of comments were received. A consistent area of concern was with respect to the existing state of Arumpo Road. Council has undertaken to consult further with the community about improvements to this road.

## 8 Submission Responses – Environmental and Social

## 8.1 Air Quality

## DPIE Comment:

Air quality assessment

The Department seeks the following clarifications and additional information in relation to air quality impacts:

- Assessment to be based on the hours of operation as indicated in the EIS
- Additional modelling of PM2.5 and PM10 with a view to attaining no incremental increase from the proposal, as required in the EPA's Approved Methods
- Clarification if actual data has been used in the modelling, and if not, provide justification
- Assessment of the impacts of the LFG flare

The following is a summary of Vipac's response with the complete report is provided as Appendix L.

• Assessment to be based on the hours of operation as indicated in the EIS

The air quality assessment was based on the EPL hours of:

- 6:00am to 7:00pm Monday to Friday; and
- 7:00am to 6.00pm Saturdays, Sundays and Public Holidays.

As discussed in Section 6.1, these are the correct hours.

• Additional modelling of PM2.5 and PM10 with a view to attaining no incremental increase from the proposal, as required in the EPA's Approved Methods

The measured background concentrations exceed the PM10 and PM2.5 criteria on 16 and 2 days, respectively. No additional exceedances of the criteria are predicted by the modelling inclusive of the landfill emissions. Furthermore, the maximum incremental contribution of the landfill emissions to the cumulative PM10 and PM2.5 are negligible (0.81  $\mu$ g/m3 and 0  $\mu$ g/m3) on those days. As specified in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, under these circumstances no additional assessment is therefore required.

## • Clarification if actual data has been used in the modelling, and if not, provide justification

There is no available measured data for the existing Buronga Landfill and has therefore not been used in the modelling. Furthermore, the majority of the landfill activities will cease at the existing landfill cells with the planned expansion such that measured data at the existing site would no longer be relevant.

It is also noted that where possible, conservative assumptions are adopted (cell locations, maximum activities and in the estimation of emission factors) such that predicted impacts are likely higher than those that would typically occur or as measured.

## • Assessment of the impacts of the LFG flare

The emissions inventory from the LFG Flare was developed based upon an anticipated maximum rate of  $1,000 \text{ m}^3/\text{hr}$ , as shown in Appendix L. The maximum rate was conservatively modelled on a 24 hour 7 days per week for the modelling assessment. Pollutant emission rates were estimated based upon

emission factors for flaring provided in Table 8 of the NPI EET Manual for Oil and Gas Extraction and Production Version 2. A 100% conversion of NOx to NO<sub>2</sub> is also conservatively assumed.

Modelling carbon monoxide and nitrogen dioxide concentrations at the closest four sensitive receptors showed that predicted concentrations were typically up to an order of magnitude below the criteria. As a result, the operation of the proposed LFG Flare is not expected to generate adverse air quality impacts at any potentially sensitive receptors in the surrounding environment.

Vipac's recommendations provided in EIS Appendix G are therefore unchanged such that air quality should not be considered a constraint to proposed landfill expansion.

## 8.2 Traffic

#### DPIE Comment:

#### Traffic and access

The Department seeks an amended traffic impact assessment that uses appropriate methodology for the full extent of the capacity and timeline of the landfill and that includes an assessment of the proposed internal road network, including the following:

- Assessment of traffic generation based on a landfill capacity of 100,000 tpa being the proposed maximum capacity of the landfill (rather than 60,000 tpa)
- Confirmation that assessment is based on Arumpo Road being a classified regional road
- Written confirmation from Transport for NSW (TfNSW) that the methodology used, being an alternative to SIDRA modelling, is satisfactory
- Justification for assuming the 'current AADT' (Annual Average Daily Traffic) for each of the affected roadways and whether any adjustments are warranted having regard to the 70-year life of Stage 1 and 50-year life of Stage 2
- Separate assessments for the initial construction/establishment phase, and the operational and ongoing progressive construction phases of the development
- Assessment of internal road network, including but not limited to the following matters:
  - swept paths for heavy vehicles
  - potential conflicts between light and heavy vehicles
  - progressive extension of road network to the active landfill face
  - queuing management for the community facility and landfill active face
- Additional information on peak traffic generation, including assessment of operational peaks for light and heavy vehicles relative to AM and PM peaks and how this may affect RMS operating capacity of the road network

#### TfNSW Comment:

*Pursuant to clause 2.121 of the State Environmental Planning Policy (Transport and Infrastructure)* 2021 TfNSW provides the following advice for your consideration:

- TfNSW supports the assessment for the proposed Rural Basic Right (BAR) turn and a Rural Basic Left (BAL) turn treatments in accordance with Figure 3.25: Warrants for turn treatments on major roads at unsignalised intersections at the site intersection with Arumpo Road as per the TIA.
- It is noted that Arumpo Road is a road train approved route and the design of the intersection to the site has stipulated B-double as the design vehicle within the swept path analysis. The intersection treatments need to be designed to allow for the through movements of the AB-triple road train, demonstrated in a swept path analysis.
- The intersection treatments of a BAR/BAL proposed at the Arumpo Road/site access are proposed to be delayed until the Buronga Landfill reaches its expanded capacity, which is assumed to be the peak traffic generation of 261 vehicles per day during construction plus operation. Given the deficiency in the existing width of the seal, the current road train access on Arumpo Road and the present turning volumes warranting a BAR/BAL at the intersection, it is recommended that the

completion of the BAR/BAL intersection treatment occurs prior to the commencement of the construction work associated with the Buronga Landfill Expansion.
• The facility is to be limited to waste volumes of 100,000 tonnes per annum
TfNSW provides the following requirements that will be subject to a future concurrence as a part of a section 138 Roads Act application to the Roads Authority (Wentworth Shire Council):
• The proposed intersection treatments and access to the site are required to comply with the Safe Intersection Sight Distance in accordance with Austroads Guide to Road Design.
• A Rural Basic Left (BAL see figure 8.2 within Attachment 1) and a Rural Basic Right (BAR see figure A6 with Attachment 2) turn treatments are required to be constructed at the intersection of Arumpo Road and the site access prior to the commencement of construction works associated with this project. The intersection treatments are to be designed in accordance with Austroads Guide to Road Design.
• A swept path analysis is to accompany the section 138 Roads Act application to Wentworth Shire Council and demonstrate that the B-double design vehicle can ingress and egress within the correct lane to and from Arumpo Road and include swept path analysis identifying how the AB-triple road trains will be able to simultaneously pass within the passing lane.
<ul> <li>Any ancillary aspects such as road signage, utilities or vegetation are to be identified within the scope of works for the intersection treatments.</li> </ul>
DPI Ag Comment:
Traffic Movements Detail the volume and route of traffic movements for the proposed development and how potential impacts on surrounding agricultural land uses are proposed to be mitigated (eg noise, dust, volume of traffic). This should include consideration of Travelling Stock Reserves (TSR) and the movement of livestock or farm vehicles along / across the affected roads.

The following information has been prepared by Nicholas Firth, Senior Transport Engineer and Senior Road Safety Auditor and author of the Traffic Impact Assessment presented as Appendix H in the EIS.

## 8.2.1 Landfill Capacity Increase

• Assessment of traffic generation based on a landfill capacity of 100,000 tpa being the proposed maximum capacity of the landfill (rather than 60,000 tpa)

The TIA report assessed the landfill on an average day (60,000 tpa) and a peak year (96,000 tpa) based on the assumption that the peak year is based on 1.6x the average volume. This has been increased to a 1.67x to enable the peak volume to be equal to 100,000 tpa as requested with the amended outputs shown in the tables below. The remaining assumptions from the original report still apply.

	Curr Opera	ent ition	Current Operation + Construction		Future Operation		Future Operation + Construction	
Vehicle Type	Average (60t)	Peak (100t)	Average (60t)	Peak (100t)	Average (60t)	Peak (100t)	Average (60t)	Peak (100t)
Light Vehicles	30	50	45	75	46	77	61	102
Light Rigid Trucks	4	7	5	8	15	25	16	27
Heavy Rigid Trucks	21	35	22	37	81	135	82	137

### Table 8.1 Daily traffic generated by the upgraded landfill

	Curr	ent	Current Operation		n		Future Operation	
	Opera	Ition	+ Construction		Future Operation		+ Construction	
Vehicle Type	Average	Peak	Average	Peak	Average	Peak	Average	Peak
	(60t)	(100t)	(60t)	(100t)	(60t)	(100t)	(60t)	(100t)
Articulated Trucks	1	2	3	5	2	3	4	7
TOTAL	56	94	75	125	144	240	163	272

## Table 8.2 Daily Traffic Generation per Area

	Current Operation + Construction		Future Op	eration	Future Operation + Construction	
Vehicle Type	Average	Peak	Average	Peak	Average	Peak
Mildura	17	29	66	110	83	139
Buronga	1	2	13	22	14	24
Wentworth	1	2	9	15	10	16
TOTAL	19	32	88	147	107	179

## Table 8.3 Future daily traffic assessment for average operational traffic

Road Name	Current AADT	Additional Vehicles	Traffic Increase Percentage	New AADT
Silver City Highway (North of Arumpo Road)	2,501	15	0.59%	2,516
Silver City Highway (South of Arumpo Road)	2,999	132	4.41%	3,131
Arumpo Road	478	147	30.74%	625
George Chaffey Bridge	18,000	110	0.61%	18,110

## Table 8.4 Future daily traffic assessment for a combination of average construction traffic

Road Name	Current AADT	Additional Vehicles	Traffic Increase Percentage	New AADT
Silver City Highway (North of Arumpo Road)	2,501	2	0.06%	2,503
Silver City Highway (South of Arumpo Road)	2,999	30	1.01%	3,029
Arumpo Road	478	32	6.64%	510
George Chaffey Bridge	18,000	29	0.16%	18,029

# Table 8.5 Future daily traffic assessment for a combination of average construction and operational traffic

Road Name	Current AADT	Additional Vehicles	Traffic Increase Percentage	New AADT
Silver City Highway (North of Arumpo Road)	2,501	16	0.65%	2,517
Silver City Highway (South of Arumpo Road)	2,999	162	5.42%	3,161
Arumpo Road	478	179	37.38%	656
George Chaffey Bridge	18,000	139	0.77%	18,139

## Table 8.6 Future Intersection peak hour volumes (no change)

	Current Major Road Volume per hour	Current Turn Volume per hour	Peak Additional AADT (daily)	New Major Road Volume per hour	New Turn Volume per hour
Silver City Highway (North of Arumpo Road)	130	24	16	132	26
Silver City Highway (South of Arumpo Road)	252	24	156	268	40
Arumpo Road	47	6	171	64	24

As is evident in the tables above, there is a very slight increase in the peak scenarios for the development, but no change to the resulting peak hour volumes. Despite increasing the peak landfill traffic from 96,000 to 100,000 tpa, there are no changes to any of the outcomes or recomendations of the TIA report, with the increases considered neglible.

## 8.2.2 Arumpo Road Classification

## • Confirmation that assessment is based on Arumpo Road being a classified regional road

We can confirm that Arumpo Road has been assessed based on being a classified regional road, hence the recommendations to upgrade Arumpo Road to meet the minimum seal width requirements of Austroads, as well as the recommendation to upgrade the primary access to the Landfill with a formalised intersection with BAR and BAL Treatments are appropriate.

## 8.2.3 Use of SIDRA

• Written confirmation from Transport for NSW (TfNSW) that the methodology used, being an alternative to SIDRA modelling, is satisfactory

In consultation with Transport for NSW (TfNSW), it was confirmed that SIDRA modelling would be advantageous and is to be undertaken at the intersection of Silver City Highway and Arumpo Road to confirm the adequacy of the intersection with the incorporation of future traffic volumes. Increased

traffic may occur as a result of the construction and operation of the upgraded Buronga landfill. The details of the modelling are detailed below in the below sections.

## 8.2.3.1 Assumptions

The following assumptions have been made in the SIDRA modelling process.

- During operating period of the landfill it is expected that:
  - 75% of the vehicles will travel to and from the site from Victoria (Mildura)
  - 15% of the vehicles will travel to and from the site from Buronga/Gol Gol
  - 10% of the vehicles will travel to and from the site from Wentworth
- During construction period of the landfill it is expected that:
  - 90% of construction vehicles will travel to and from the site from Victoria (Mildura)
  - 5% of construction vehicles will travel to and from the site from Buronga/Ġol Gol
  - 5% of construction vehicles will travel to and from the site from Wentworth
- Traffic utilising Arumpo Road not related to the landfill is split 44% travelling to and from the north and 56% travelling to and from the south. This was based off current total traffic split (Austraffic counts conducted March 2021).
- Approach distances from the North and East have been assumed to be 500m. These approaches are far greater than this in reality.
- Separated bus counts were not available and as such have been included within the heavy vehicle percentages in the model.
- Cyclists and pedestrians' volumes have been assumed to be negligible and as such have not been assessed within the model.
- Gap acceptance data including critical gap and follow-up headway has been modified as per Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections Table 3.5.
- Vehicle movement data including approach cruise speed and exit cruise speed has been modified as per data obtained from Austraffic counts conducted March 2021.
- Traffic generation volumes for the current, future and construction periods of the landfill have been taken as detailed in Tonkin's Traffic Assessment.
- An alternative approach to the auxiliary right turn (AUR) treatment has been modelled in SIDRA with a short right turn implemented in the model.

## 8.2.3.2 Outputs

SIDRA modelling was undertaken for the intersection of Silver City Highway and Arumpo Road for current traffic volumes and worst-case future volumes related to the Buronga landfill extension. Worst-case volumes were determined to be future operational volumes in addition to the construction associated volumes while the landfill is under construction.

The following outputs were obtained from the SIDRA model for current and future + construction traffic volumes.



Lane Use and Performance													
	DEMAND FLOWS		0	_ Deg. La	Lane	Aver.	Level of	95% BACK	OF QUEUE	Lane	Lane	Cap.	Prob.
	[ Total	HV ]	Cap.	Satn	Util.	Delay	Service	[ Veh	Dist ]	Config	Length	Adj.	Block.
South: Silver City Highway (Se	outh)	70	ven/m	v/c	70	Set						76	70
Long d	44.4	22.0	4004	0.070	100	0.0	100.4	0.0	0.0	E.J.	0050	0.0	0.0
Lane 1	114	23.0	1621	0.070	100	0.0	LOSA	0.0	0.0	Full	2350	0.0	0.0
Lane 2	16	23.0	816	0.019	100	9.2	LOS A	0.1	0.6	Short	75	0.0	NA
Approach	129	23.0		0.070		1.2	NA	0.1	0.6				
East: Arumpo Road													
Lane 1	29	23.9	803	0.037	100	8.7	LOS A	0.1	0.8	Full	5000	0.0	0.0
Approach	29	23.9		0.037		8.7	LOS A	0.1	0.8				
North: Silver City Highway (No	orth)												
Lane 1	9	19.5	1516	0.006	100	8.6	LOSA	0.0	0.0	Short	100	0.0	NA
Lane 2	145	19.5	1671	0.087	100	1.1	LOS A	0.0	0.0	Full	5000	0.0	0.0
Approach	155	19.5		0.087		1.6	NA	0.0	0.0				
Intersection	314	21.3		0.087		2.1	NA	0.1	0.8				

## Figure 11: Current traffic volumes - Lane summary

Lane Use and Performance													
	DEMANI I Total	) FLOWS	Cap.	Deg. Sata	Lane	Aver.	Level of Service	95% BACK	OF QUEUE	Lane	Lane	Cap.	Prob. Block
	veh/h	%	veh/h	V/C	%	Sec	Service	[ vcii	m	Coning	m	~uj. %	%
South: Silver City Highway (Sou	uth)												
Lane 1	114	20.4	1646	0.069	100	0.0	LOS A	0.0	0.0	Full	2350	0.0	0.0
Lane 2	35	24.9	810	0.043	100	9.4	LOS A	0.2	1.4	Short	75	0.0	NA
Approach	148	21.4		0.069		2.2	NA	0.2	1.4				
East: Arumpo Road													
Lane 1	60	24.6	808	0.074	100	8.9	LOS A	0.2	1.6	Full	5000	0.0	0.0
Approach	60	24.6		0.074		8.9	LOS A	0.2	1.6				
North: Silver City Highway (Nor	th)												
Lane 1	17	24.3	1470	0.011	100	8.7	LOS A	0.0	0.0	Short	100	0.0	NA
Lane 2	149	20.7	1658	0.090	100	1.1	LOS A	0.0	0.0	Full	5000	0.0	0.0
Approach	166	21.1		0.090		1.9	NA	0.0	0.0				
Intersection	375	21.8		0.090		3.1	NA	0.2	1.6				

Figure 12: Future + Construction volumes - Lane summary
	Degree Satura	e of tion (v/c)	Averag (sec)	e Delay	Level o	f Service	95% Back of Queue (m)	
	Current	Future + Construction	Current	Future + Construction	Current	Future + Construction	Current	Future + Construction
Silver City Hi	ghway (	South)						
Lane 1 (through)	0.070	0.069	0.0	0.0	LOS A	LOS A	0.0	0.0
Lane 2 (right)	0.019	0.043	9.2	9.4	LOS A	LOS A	0.6	1.4
Approach	0.070	0.069	1.2	2.2	N/A	N/A	0.6	1.4
Arumpo Road								
Approach	0.037	0.074	8.7	8.9	LOS A	LOS A	0.8	1.6
Silver City Hi	ghway (	North)						
Lane 1 (left)	0.006	0.011	8.6	8.7	LOS A	LOS A	0.0	0.0
Lane 2 (right)	0.087	0.090	1.1	1.1	LOS A	LOS A	0.0	0.0
Approach	0.087	0.090	1.6	1.9	N/A	N/A	0.0	0.0
Intersection	0.087	0.090	2.1	3.1	N/A	N/A	0.8	1.6

Relevant outputs from the SIDRA model have been summarised below.

Negligible increases are observed from current traffic volumes to future + construction volumes within the SIDRA model. It is evident that the current intersection configuration is adequate for the increased traffic volumes utilising the Silver City Highway / Arumpo Road intersection as a result of the Buronga landfill expansion.

The SIDRA model will also be provided to TfNSW for their review.

#### 8.2.4 Future Traffic Volume Justification

• Justification for assuming the 'current AADT' (Annual Average Daily Traffic) for each of the affected roadways and whether any adjustments are warranted having regard to the 70-year life of Stage 1 and 50-year life of Stage 2



The Traffic Impact Assessment has assessed the impact on future operation plus construction based on the current AADT of the road network. While it could be expected some growth of the AADT of the surrounding road network to occur in this period, it is better to assess against the current AADT as this shows a larger percentage increase now. It is unreasonable to predict what the traffic volumes would be for the surrounding road network in 50 or 70 years' time, as well as what land use change may occur in that time. On the basis that TfNSW has accepted the reporting, we do not believe further adjustments are required.

#### 8.2.5 Construction vs Establishment Phase Assessment

• Separate assessments for the initial construction/establishment phase, and the operational and ongoing progressive construction phases of the development

It is considered that the TIA has already considered and assessed separate initial construction/establishment phase, and operational and ongoing progressive construction phases.

#### 8.2.6 Internal Road Network Assessment

• Assessment of internal road network, including but not limited to the following matters:

- swept paths for heavy vehicles
- potential conflicts between light and heavy vehicles
- progressive extension of road network to the active landfill face
- queuing management for the community facility and landfill active face

Internal drawings have been updated to include the additional information required by DPE. The drawings are attached to this report in Appendix A.

Swept paths for the front-end facility are shown in drawings 020 to 023. Swept path analysis has been undertaken for light vehicles (passenger car & trailer) and heavy vehicles (12.5m rigid and B-Doubles) and demonstrates that sufficient clearance has been provided for vehicle access to various parts of the front end facility.

Potential conflicts between light and heavy vehicles have been minimised by segregating the public waste drop off areas including the front end recycling facility from the waste storage areas accessed by heavy vehicles. The residual drop off area and resource recovery shed are accessible from both front and rear sides to allow for light vehicle and heavy vehicle access to these areas to be segregated to avoid conflicts. Conflict points where roads merge will have controls including signage to manage light and heavy vehicle interactions at these points. These controls will be determined during detailed design.

Progressive extension of the road network to access the active landfill cells is shown in drawing 019. This drawing shows permanent access roads as well as temporary access roads and turnarounds. The road network will be progressively extended as stages are developed throughout the life of the landfill. Access roads to the active tip face will regularly change during operation due to the dynamic nature of the landfill face during filling activities. These roads will be developed as an operational measure from the stage access roads shown on drawing 019.

Queuing areas for the front end recycling facility are shown on drawing 020. The residual drop off area provides for multiple vehicles to drop off waste at any given time. As identified above, access roads to the active tip face will regularly change and will be determined as an operational measure. Queuing areas for heavy vehicles at the active landfill face will change along with these access roads. Adequate queuing areas will be provided, with traffic management at the tip face to be addressed in operation management plans for the landfill.

#### 8.2.7 Peak Traffic Generation

• Additional information on peak traffic generation, including assessment of operational peaks for light and heavy vehicles relative to AM and PM peaks and how this may affect RMS operating capacity of the road network

Peak traffic generation has already been adequately addressed in the report with TfNSW supporting the current assessment. No further amendments to the TIA are proposed.

#### 8.2.8 TfNSW Conditions of Consent – Traffic and Access

• TfNSW supports the assessment for the proposed Rural Basic Right (BAR) turn and a Rural Basic Left (BAL) turn treatments in accordance with Figure 3.25: Warrants for turn treatments on major roads at unsignalised intersections at the site intersection with Arumpo Road as per the TIA.

Noted.

• It is noted that Arumpo Road is a road train approved route and the design of the intersection to the site has stipulated B-double as the design vehicle within the swept path analysis. The intersection treatments need to be designed to allow for the through movements of the AB-triple road train, demonstrated in a swept path analysis.

Noted. The intersection design has been updated and is attached as Appendix M of this report. The updated design considers the swept path for the through movements of the AB-Triple Road Train. These drawings would be further developed on engineering survey post development consent, with approval obtained from Wentworth Shire Council as the road authority on the design.

• The intersection treatments of a BAR/BAL proposed at the Arumpo Road/site access are proposed to be delayed until the Buronga Landfill reaches its expanded capacity, which is assumed to be the peak traffic generation of 261 vehicles per day during construction plus operation. Given the deficiency in the existing width of the seal, the current road train access on Arumpo Road and the present turning volumes warranting a BAR/BAL at the intersection, it is recommended that the completion of the BAR/BAL intersection treatment occurs prior to the commencement of the construction work associated with the Buronga Landfill Expansion.

Noted. This recommendation has been taken on board and it is proposed to construct the BAR/BAL intersection treatment prior to the commencement of the construction work associated with the expansion.

• The facility is to be limited to waste volumes of 100,000 tonnes per annum.

Noted. This is the maximum quantity expected to be received at the facility.

• The proposed intersection treatments and access to the site are required to comply with the Safe Intersection Sight Distance in accordance with Austroads Guide to Road Design.

Noted. The assessment undertaken during the TIA confirms adequate Safe Intersection Sight Distance is available for the access, in accordance with the Austroads Guide to Road Design Guidelines.

• A Rural Basic Left (BAL see figure 8.2 within Attachment 1) and a Rural Basic Right (BAR) see figure A6 with Attachment 2) turn treatments are required to be constructed at the intersection of Arumpo Road and the site access prior to the commencement of construction works associated with this project. The intersection treatments are to be designed in accordance with Austroads Guide to Road Design.

Noted. Addressed in the comments above.

• A swept path analysis is to accompany the section 138 Roads Act application to Wentworth Shire Council and demonstrate that the B-double design vehicle can ingress and egress within the correct lane to and from Arumpo Road and include swept path analysis identifying how the AB-triple road trains will be able to simultaneously pass within the passing lane.

Noted. Updated drawings have been prepared as part of this response demonstrating the above and are provided as Appendix M. This will be further detailed onto engineering survey post development consent at detailed design stage.

• Any ancillary aspects such as road signage, utilities or vegetation are to be identified within the scope of works for the intersection treatments.

The updated drawings attached to this report (Appendix A) address some of these issues, however these will be assessed in further detail at the detailed design stage once translated to engineering survey post development consent.

• Detail the volume and route of traffic movements for the proposed development and how potential impacts on surrounding agricultural land uses are proposed to be mitigated (eg noise, dust, volume of traffic). This should include consideration of Travelling Stock Reserves (TSR) and the movement of livestock or farm vehicles along / across the affected roads.

This aspect has been covered within the EIS and with further detailed provided above. No further details are provided here.

## 8.3 Soil and Groundwater

#### **DPIE Comment:**

#### Groundwater

The Department seeks clarification of the potential impacts of the proposal on groundwater, including:

- Details of protection measures for Water NSW's monitoring borehole and how access to the borehole would be maintained
- Details of potential groundwater impacts on any licensed water users or other landholder rights
- Clarification about the maximum extent of excavation/cut, noting the EIS (p.37) indicates the landfill cells will extend to approximately 5-8m below ground level to achieve a 2m separation from groundwater, however, the Geotechnical Report (p.8) indicates groundwater has been detected at 5.9-9.7m below ground level, which would suggest a maximum excavation of 3.9m (rather than 5m) would be required to achieve the 2m groundwater separation

WaterNSW Comment:

- The impact on the existing groundwater monitoring bore (GW087083) located onsite is not considered in the EIS. This includes impact to the monitoring site itself from the landfill expansion and impact to access from changed conditions onsite.
- It is unclear from the assessment whether the proposed new stormwater detention pond, north of Area 7 (EIS figure 10) will impact on the GW087083 monitoring bore.
- WaterNSW supports the recommendation made in the EIS (section 6.3.4) to install groundwater monitoring wells to monitor groundwater and water quality data prior to construction and during operation. It is noted that the mitigation measures contained in section 6.3.4 are not all included in table 7.1 under groundwater.
- Details of protection measures for Water NSW's monitoring borehole and how access to the borehole would be maintained

- The impact on the existing groundwater monitoring bore (GW087083) located onsite is not considered in the EIS. This includes impact to the monitoring site itself from the landfill expansion and impact to access from changed conditions onsite.
- It is unclear from the assessment whether the proposed new stormwater detention pond, north of Area 7 (EIS figure 10) will impact on the GW087083 monitoring bore.

The network of groundwater bores monitored by Water NSW assist in understanding the longer-term changes to groundwater and groundwater-dependent ecosystems. Continued access to these bores is important for data continuity. The Water NSW monitoring bores are located along the boundary of the site and are not within the proposed development area (Appendix N). Access to the bore will not be altered.

The design of the upgraded facilities, including the landfill is being undertaken in accordance with best management practices to minimise the potential for impacts to groundwater to occur.

- Details of potential groundwater impacts on any licensed water users or other landholder rights
- Clarification about the maximum extent of excavation/cut, noting the EIS (p.37) indicates the landfill cells will extend to approximately 5-8m below ground level to achieve a 2m separation from groundwater, however, the Geotechnical Report (p.8) indicates groundwater has been detected at 5.9-9.7m below ground level, which would suggest a maximum excavation of 3.9m (rather than 5m) would be required to achieve the 2m groundwater separation

Groundwater levels are discussed within the Geotechnical Report (202597R02A) and the Groundwater Impact Assessment (202597R03Rev0). Groundwater was encountered in nine of 11 boreholes during drilling. Two of these boreholes were left open overnight to assess where groundwater levels would stabilise to overnight. Groundwater levels were recorded as varying between 5.9 m below ground level (m bgl) and 9.5 m bgl. Due to the variability of the surface level at each borehole, reducing groundwater standing water level (SWL) to an elevation in m AHD provides a more useful indication of the level of groundwater beneath the site rather than relying on a SWL in m bgl. The SWL in each borehole from the geotechnical investigation has been show in Table 8.7 below, along with the corresponding SWL reduced to m AHD.

Borehole	Surface Elevation (m AHD)	SWL at Time of Drilling (m bgl)	SWL at Time of Drilling (m bgl)	SWL Overnight Stabilisation (m bgl)	SWL Overnight stabilisation (m AHD)
H01	47	Groundwater No	t Encountered		
H02	40.5	9.5	31		
H03	39.5	8.5	31		
H04	39	8	31		
H05	40	9	31		
H06	42	Groundwater No	t Encountered		
H07	37	6.8	30.2	5.9	31.1
H08	38	7.2	30.8		
H09	38	7.8	30.2	6.8	31.2
H10	39	8.1	30.9		

#### Table 8.7 Geotechnical Investigation Standing Water Levels

Borehole	Surface Elevation (m AHD)	SWL at Time of Drilling (m bgl)	SWL at Time of Drilling (m bgl)	SWL Overnight Stabilisation (m bgl)	SWL Overnight stabilisation (m AHD)
H11	41	Groundwater No	t Encountered		
H12	39	8.1	30.9		

As shown in Table 8.7 standing water levels varied between 31.2 m AHD and 30.2 m AHD. This level is reasonably consistent with the highest observed groundwater levels from the groundwater monitoring well data provided by WSC; 30.2 m AHD in BH02 and 32.7 m AHD in BH04.

The levels of the site in the area proposed for the construction of the Stage 1 and Stage 2 landfill cells vary from 44.5 m AHD at a high point in the central area of the site to low points of 36.0 m AHD in localised depressions in the central area of the site. Much of the area proposed for the landfill cells lies between 43 m AHD and 39 m AHD. This excludes the low point of approx. 32.0 m AHD in the existing borrow pit and the high point of approximately 47.0 m AHD directly adjacent to the existing lined landfill cell.

Based upon the highest observed groundwater level of 31.2 m AHD, 2 metres separation above this level would require a baseliner invert level of 33.2 m AHD. The SWL from BH04 has not been used as these measurements are not quality controlled. When considering the site levels, this would result in an excavation depth varying between 12 m and 3 m to reach a level of 33.2 m AHD. Isolated deeper areas of cut may be required adjacent to the existing lined landfill cell.

The design groundwater level will be reviewed during the detailed design of each landfill cell to allow for future data on groundwater levels to be considered. This may result in baseliner invert levels being adjusted up or down to maintain 2 m separation to the design groundwater level established during detailed design and a corresponding change in maximum excavation depth. Final excavation depths will be established during detailed design to achieve required cell floor grades and separation to groundwater. The groundwater design level and separation provided will be documented in the design report for each landfill cell which shall be submitted to NSW EPA for approval prior to construction.

• WaterNSW supports the recommendation made in the EIS (section 6.3.4) to install groundwater monitoring wells to monitor groundwater and water quality data prior to construction and during operation. It is noted that the mitigation measures contained in section 6.3.4 are not all included in table 7.1 under groundwater.

This was an oversight. The updated mitigation measures are presented in Appendix C.

## 8.4 Hazards

#### DPIE Comment:

Hazard analysis

The Department is unable to complete its hazards assessment until the following information is provided:

- A preliminary risk screening in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 and the Department's Applying SEPP 33 as required in the SEARs
- Locations and quantities of dangerous or potentially hazardous goods (e.g. tyres, batteries, drums, waste oil, contaminated soil) which may be stored on-site or transported to and from the site



- Verification the Preliminary Hazard Analysis (PHA) is appropriate for the development with consideration of the gas flare system and its fuel source
- A preliminary risk screening in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 and the Department's Applying SEPP 33 as required in the SEARs

The preliminary risk screening was presented in EIS Section 6.4.3 where the development was assessed as being a "potentially offensive industry" as it requires a licence under the Protection of the Environment Operations Act 1997 (NSW). The subsequent assessment demonstrated that the offence can be controlled to a level which is not significant. It is acknowledged that no information was presented to support the development not being considered a "potentially hazardous industry" and this is necessary to enable a thorough assessment of the proposal and ensure that a hazardous industry is not permitted to be developed in this area.

The wastes which are stored on site are listed in Table 8.8. Many of the wastes stored at the CRC are not dangerous goods. No items will trigger the transport screening thresholds in Table 2 of the SEPP. No Items appear to trigger the threshold in Table 3/Figure 9 of SEPP. When the classes are combined they still remain below the thresholds, as follows:

- Class 2.1: combined quantity of <0.8 tonnes stored which is below the threshold of 10 tonnes
- Class 2.2: combined quantity of <1 tonne and there is no threshold listed in Table 3 or Table 9 of SEPP 33
- Class 3 PGIII: combined quantity of 2 tonne which is less than the threshold of 5 tonnes
- Class 8 PGII: combined quantity of <1 tonne which is below the threshold of 25 tonnes

All materials assessed to be well below thresholds in the SEPP 33. As a result, the development is not a potentially hazardous industry.

• Locations and quantities of dangerous or potentially hazardous goods (e.g. tyres, batteries, drums, waste oil, contaminated soil) which may be stored on-site or transported to and from the site

The locations of dangerous or potentially hazardous goods were shown in EIS Figure 2 for existing locations near the community recycling centre and in EIS Figure 3 for the updated facility, with further detail provided in the drawings in Appendix A. The quantities are limited by the allowable volumes in the licence and the storage capacity at the facility. This is discussed in Section 6.4.1.

• Verification the Preliminary Hazard Analysis (PHA) is appropriate for the development with consideration of the gas flare system and its fuel source

The fuel source is landfill gas which is discussed in EIS Section 6.4.2.3 and EIS Appendix K. The LFG is not stored prior to flaring but extracted under vacuum directly from the landfill. The risk assessment considered the risks associated with landfill gas, including the scenario of an active control system. As a result, the PHA is considered appropriate.

#### Table 8.8 Screening Risk Assessment for Potentially Hazardous Industry

Waste	Capacity	Material	DG Class	Max Quantity	Screening Method	Threshold (individual item)	Notes
COMMUNITY RECYCLING CEN	TRE						
Paints (oil and water based)	Two x 1 m <sup>3</sup> stillage	Paints (dry)	N/A	<1 tonne	Table 3	None applicable	Paints are dried in the container and no remaining flammable/corrosive material remains.
Motor oils	3 m <sup>3</sup> (3000L)	Motor oil	Not classified as DG Class 3 as not a volatile/flammable product	<3 tonne			
Cooking, hydraulic and transmission oils	1 m <sup>3</sup> stillage	Oil	Not classified as DG Class 3 as not a volatile/flammable product	<1 tonne			
Household single use batteries		Lead acid/other batteries	8 PG II	Not reported	Table 3	Below Threshold 5 tonne	Unlikely to be a large volume, well below trigger threshold.
Car batteries (lead acid/other?)	48 batteries	Lead acid/other batteries	8 PG II	<0.2 tonne acid (up to 800kg)	Table 3	Below Threshold 5 tonne	UN2794 -batteries wet, filled with acid
Fluorescent and compact florescent lighting (mercury containing lamps)	0.5 m <sup>3</sup> stillage	Contains Mercury	8 (no PG)	<0.5 tonne	Table 3	Below Threshold 5 tonne	
Gas cylinders (LPG)	72 -80 9kg gas bottle capacity	LPG	2.1	<0.8 tonne	Table 3	Below Threshold 10 tonne	Bottles are empty or close to empty. Low risk
Fire extinguishers	approx. 100 extinguishers	CO <sub>2</sub> Dry Chemical Other	2.2 (compressed or liquefied gas)	<1 tonne	Table 3	No threshold listed in Table 3 for non-flammable, non-toxic gases	Non-flammable, non-toxic gas. Assuming propellant has been mostly exhausted and that these are small fire extinguishers. NSW Workcover notification is 10 kL
Aerosols	200 L capacity	Various Aerosol	2/2.1/2.2/2.3/6.1/8/non-toxic?	<200kg	Table 3	Below any of the individual class thresholds starting at 0.5 tonne	UN1950 or UN2037 Risk is lower as are empty/almost empty NSW Workcover notification is 10 kL
Drum muster	50 m <sup>3</sup> cage	N/A			N/A		Drums are empty and have been washed prior to disposal at the transfer station – Low risk
Polystyrene	Five x 0.5-1 m <sup>3</sup> boxes	Polystyrene	Not Dangerous Goods according to ADG Code	Up to 5,000 m3	Not Applicable	Not Applicable	Combustible thermoplastic material and will give off toxic combustion products if ignited. Stored away from oxidising materials and organic solvents. Low risk
MAINTENANCE WORKSHOP							
Diesel	2000 L tank	Diesel Fuel	3 PG III	Up to 2 tonne	Figure 9	Below Threshold 10 tonne	Figure 9 is only applicable if $> 5$ tonne for 3PGIII WorkCover threshold from 10,000kg or L
AdBlue	500L	Adblue	N/A		N/A		Not a DG
Motor Vehicle Oil	100 L	Motor Oil	N/A		N/A		Not a DG
Grease	100L	Grease	N/A		N/A		Not a DG



## 8.5 Bushfire

#### NSW RFS Comment:

• The NSW RFS has considered the information submitted and raises no objection to the proposed Landfill Extension subject to development consent including a condition to ensure compliance with the bush fire mitigation measures listed in part 6.5.4 of the Environmental Impact Statement prepared by Tonkin dated 25 January 2022

DPI Ag Comment

Emergency Management

- The proposal is to detail contingency plans to enable the operation to deal with emergency situations. The proposal is to detail Emergency Management procedures and responsibilities for responding to bushfire threats and possible mass mortality events which might result from extreme climatic conditions, routine or emergency animal disease outbreaks.
- The NSW RFS has considered the information submitted and raises no objection to the proposed Landfill Extension subject to development consent including a condition to ensure compliance with the bush fire mitigation measures listed in part 6.5.4 of the Environmental Impact Statement prepared by Tonkin dated 25 January 2022

Noted. The updated measures are included in Appendix C.

• The proposal is to detail contingency plans to enable the operation to deal with emergency situations. The proposal is to detail Emergency Management procedures and responsibilities for responding to bushfire threats and possible mass mortality events which might result from extreme climatic conditions, routine or emergency animal disease outbreaks.

Emergency responses are included in the LEMP with further response requirements, particularly with respect to bushfire which is detailed in EIS Section

## 8.6 Biodiversity

#### DPIE Comment:

The Biodiversity Assessment Report (BDAR) has been reviewed by the Department's Biodiversity and Conservation Division (BCD) and found to be inadequate. Please submit:

• Revised Biodiversity Assessment Report (BDAR) to address SEARs requirements including but not be limited to the identification of regrowth native vegetation in the vegetation zones assessment and details of measures to mitigate, monitor and manage impacts at specific locations – refer to advice of the Biodiversity and Conservation Division in letter dated 17 March 2022 for details which can be found on the portal https://www.planningportal.nsw.gov.au/major-projects/projects/burongalandfillexpansion

DPE BCD Comment:

1 the BDAR requires some rearranging of report sections to adequately address the requirements of the BAM and improve readability.

Recommended action:

1.1 Update the BDAR to ensure each section addresses the chapters of the BAM including Stage 1 then Stage 2 and ensure the BDAR addresses the minimum requirements in Appendix K (Table 24 and 25) of the BAM (2020).

2 the construction and operational footprint of the proposal is unclear, and some ancillary facilities are not identified in the BDAR.

Recommended action:

- 2.1 Update Figure 1 of the BDAR or prepare a new map to outline the construction and operational footprint in stages.
- 2.2 Update the subject land and vegetation zones to ensure all ancillary facilities are included in the BDAR.
- 3 Only one landscape assessment has been prepared for the two related cases in BOAMS. The landscape assessment features require further detail in the assessment and some landscape features are not mapped.

Recommended action:

- *3.1* Update the landscape assessment section of the BDAR to include calculations and maps for each related case in BOAMS.
- 3.2 Update the landscape assessment map to include all landscape features outlined in Table 1.
- 4 definition of Category 1 land and regrowth requires further clarification. PCT selection require further justification. Vegetation zones require clarification. Patch size has not been addressed in the BDAR.

Recommended action:

- 4.1 Allocate a new vegetation zone for 'regrowth' native vegetation and update with VI plot data as required within BOAMS and the BDAR.
- 4.2 Update the landscape assessment non-native vegetation layer to include regrowth vegetation as 'native vegetation' and recalculate the extent of native vegetation in the BDAR and BOAMS.
- 4.3 Additional information should be provided in Tables 2 to 6 of the BDAR to justify the allocation of each PCT.
- 4.4 Update section 3.3.1 and Figure 6 to show the location of zone 2.
- 4.5 Provide patch size area and classes for each vegetation zone in the BDAR and map each relevant patch size.
- 5 Predicted and candidate credit species assessments require clarification. Survey methods applied and locations of survey effort require further detail.

Recommended action:

- 5.1 Provide further detail on the predicted and candidate species for each related case in the BDAR.
- 5.2 Provide further justification for the exclusion of predicted and candidate species in the BDAR.
- 5.3 Update the BDAR to include additional detail regrading survey method, effort and locations in accordance with section 5.3 of the BAM.
- 5.4 Provide further detail on the rationale, methods, results and use of the community survey data.

6 Occurrence of Plains Mallee Box Woodland CEEC has not been addressed.

Recommended action:

- 6.1 Update the BDAR to include an equivalency assessment of any additional EPBC TECs. The occurrence of any TECs should be mapped and updated throughout the BDAR.
- 6.2 Provide an assessment of the potential occurrence of the EPBC-Mallee bird community of the Murray Darling Depression bioregion.

DPI Ag Comment:

Biosecurity

• Include a biosecurity (pests, weeds and disease) risk assessment outlining the likely plant, animal and community risks. The relevant weed or pest animals for a region are addressed in the regional plans or strategies issued by NSW Local Lands Services.

- Include details of how the proposal will deal with identified biosecurity risks as well as contingency plans for any failures. Include monitoring and mitigation measures for weed and pest management.
- Detail the design of fencing and its adequacy to keep livestock out

Pinion has updated the BDAR by undertaking additional survey and assessment as requested above and amended the report to reflect the reduced footprint o the landfill development to Stages 1A to 1D. The complete report is provided in Appendix O with a summary of changes since the EIS provided below.

The existing environment is noted to present five plant community types, with the four presented in the EIS and a new category being:

• PCT 143 – narrow-leaved hopbush – Scrub turpentine – senna shrubland on semi-arid and sand plain dunes in poor condition/regrowth as it lacks the overstory vegetation across almost all the area, resulting in a VIS of 34.2. This additional PCT is only located within the existing consent area

These five community types were divided into nine vegetation zones, based on overall health, overstorey composition, understorey condition and past management/disturbance. No additional targeted species were identified during the additional surveys.

Threatened ecological communities (TEC) were reassessed due to the addition of:

- Mallee bird community of the Murray Darling Basin Depression, which may be presented in the assessment area. Further assessment has determined that the proposed development will not result in significant impact to this Endangered Ecological Community (EEC) and hence further mitigation measures (above those already proposed) are not required and referral to DCCEEW is not required;
- Plains Mallee-Box Woodland, with some areas broadly similar to this PCT but it did not meet the definition of the TEC.

None of the plant communities identified on-site are threatened ecological communities.

There is 17.53 ha of native vegetation occurring within the development footprint. The majority of this vegetation is PCT58 Black Oak – Western Rosewood open woodland (9.86 ha) followed by PCT170 Chenopod sandplain mallee woodland/shrubland (3.8 ha). An additional 24.16 ha of non-native vegetation has been historically cleared and consists of bare ground, tracks, exotics species and site infrastructure.

A targeted survey undertaken in October 2021 for eight credit species, three flora and 5 avian (bird) species, which may occur within the development area. No sightings of targeted species were observed over the field visits, conducted during daytime and nighttime, and hence they are not considered to occur within the development site.

At the request of DPE, the impacts have been separated into areas within the existing consent for the borrow pits (DA15/154) where consent exists for the removal of vegetation and areas outside the consent area where there is no existing consent to remove vegetation. The impacts within and outside the consent area are the same. The direct impacts on biodiversity are limited to the clearing of native vegetation and habitat. The residual indirect impacts include:

- Introduction of new weeds from landfill site to adjacent vegetation: Moderate
- Impact to adjacent vegetation outside of subject land: Moderate

Prescribed impacts have been assessed as low risk and there are no entities at risk of serious and irreversible impacts at the site. Additional management measures have been recommended to management the moderate risks and ensure other risks remain low. These measures have been reproduced in Appendix C

The reduction in the landfill area will significantly reduce the clearing required to predominantly within the existing development consent for the borrow pits. Within the existing consent area, 10.35 ha of native vegetation will be impacted by the proposed development. An additional 1.09 ha outside the

existing consent is also proposed to be impacted for the resource recovery areas and associated infrastructure (stormwater pond and haul road). The original proposal required 501 credits with 251 credits required for areas outside the existing consent. For the amended proposal, 185 credits are required, of which 23 credits are outside the existing consent area. Once approved, the proposed development will be discussed with Biodiversity Conservation Council to determine the final offsets required. It is intended to secure and retire credits from a third-party stewardship site, if possible.

Biosecurity risks are addressed in the EIS.

## 8.7 Cultural Heritage

Heritage NSW Comment

In AHIMS, site 46-3-0192 is listed as valid, the report states the object has already been harmed by the previous construction of a borrow pit under AHIP C0002579 / 4081. Recommended actions / options:

- If site 46-3-0192 was harmed under AHIP C0002579, the AHIP holder Wentworth Shire Council or their consultant Landskape on their behalf will need to complete and submit an Aboriginal Site Impact Recording Form to AHIMS, which will switch the site to destroyed.
- If site 46-3-0192 has not been destroyed under AHIP C0002579, it will need to be managed under the current EIS.
- We request the applicant respond to this item and any actions taken in the response to submissions"

Notification of Aboriginal objects Recommended action:

- Regarding recommendation dot point 2 on page 41 of the ACHAR, in addition to what is specified in this recommendation, if previously unknown Aboriginal objects are identified during works, Heritage NSW must be notified via a record submitted to AHIMS in accordance with s89A of the National Parks and Wildlife Act 1974.
- Prepare a Heritage Management Plan to the satisfaction of DPE, prior to construction. Include consultation Heritage NSW and Registered Aboriginal Parties
- If site 46-3-0192 was harmed under AHIP C0002579, the AHIP holder Wentworth Shire Council or their consultant Landskape on their behalf will need to complete and submit an Aboriginal Site Impact Recording Form to AHIMS, which will switch the site to destroyed.
- If site 46-3-0192 has not been destroyed under AHIP C0002579, it will need to be managed under the current EIS.
- We request the applicant respond to this item and any actions taken in the response to submissions"

A Site Impact Record Form was submitted this on 10 April 2022 and received confirmation from the Aboriginal Heritage Information Management System of Heritage NSW that the submission was approved on 12 April 2022. Proof is presented in Appendix P.

- Regarding recommendation dot point 2 on page 41 of the ACHAR, in addition to what is specified in this recommendation, if previously unknown Aboriginal objects are identified during works, Heritage NSW must be notified via a record submitted to AHIMS in accordance with s89A of the National Parks and Wildlife Act 1974.
- Prepare a Heritage Management Plan to the satisfaction of DPE, prior to construction. Include consultation Heritage NSW and Registered Aboriginal Parties

These measures are in the Mitigation Table in Appendix C. The Heritage Management Plan and consultation were included in the EIS mitigation measurements.

#### 8.8 Noise

#### **DPIE Comment:**

The Department requests clarification and additional information on noise and vibration impacts, including:

- Assessment to be based on the hours of operation as indicated in the EIS
- Clarification as to whether the assessment includes:
  - noise generated during the initial construction phase of the new/relocated structures, basins, roadways and other on-site infrastructure
  - noise from the general public using the recycling facilities
  - noise from monthly shredding of green waste and C&D waste, and the shredding of tyres to maintain a 3m stockpile height
  - differentiation of noise from light rigid, heavy rigid and articulated vehicles
  - noise associated with final capping and rehabilitation of each cell as it reaches completion
- Assessment to include:
  - assessment of annoying noise characteristics for the hours of operation up to 1900 Monday to Sunday (in addition to daytime measurements provided)
  - LA10 measurements (in addition to the LA90, Leq, and Lmax measurements provided)
  - justification for the use of 'default noise-enhancing meteorological conditions' and the exclusion of any noise-enhancing weather or worst-case sound propagation conditions in line with Fact Sheet D of the NPfI
     Noise contours
- Sonus has completed additional works with their complete report provided as Appendix Q. Extracts of their response is provided below.
- Assessment to be based on the hours of operation as indicated in the EIS

As with the air quality assessment, the assessment was based on the approved operating hours in the EPL.

- Clarification as to whether the assessment includes:
  - noise generated during the initial construction phase of the new/relocated structures, basins, roadways and other on-site infrastructure

Noise impacts associated with construction of new basins and cells were not specifically considered as these activities predominantly comprise civil earthworks, utilising the same or similar earthmoving equipment to that associated with ongoing waste management within the landfill cells. The EIS assessment considered the 'worst case' scenario for ongoing waste management, comprising placement of waste material at the top of the nearest new cells (Cells 1A and 2E) to noise sensitive locations to the south-west and north-east respectively. As construction of new cells will occur at or below ground level these activities will benefit from shielding by the existing landfill cell and previously completed new cells. As such, noise levels associated with construction of new cells and basins are predicted to be lower than those of the ongoing waste management presented and would therefore comply with the requirements of the ICNG.

An indicative assessment of noise impacts associated with these activities has been conducted based on a conservative construction scenario representative of construction of footings for the Front-End Recycling Facility (FERF) building occurring concurrently with road formation in the vicinity of the FERF. A noise level of 44 dB(A) is predicted at the nearest noise sensitive receptor, indicating that compliance with the requirements of the ICNG during 'recommended standard hours' will be achieved for construction activities associated with the expansion.

#### - noise from the general public using the recycling facilities

Noise from the general public using the recycling facilities was not specifically assessed as this component of the operations would generate lower noise levels compared with the more significant noise associated with the commercial receival and placement of landfill material within the landfill cells. The combined level of all activities conducted on-site (including the FERF and placement of material within the landfill cells) is 40 dB(A) during the day (inclusive of a noise character penalty), which complies with the day-time project noise trigger level.

# - noise from monthly shredding of green waste and C&D waste, and the shredding of tyres to maintain a 3m stockpile height

Processing of waste streams (green waste, C&D waste and tyres) will occur periodically to manage stockpile sizes (approximately monthly basis depending on the volume of each type of waste received), and as such forms part of the noise emissions from the site. These noise sources were not included in the noise predictions presented in the EIS.

Based on noise levels of up to 115 dB(A) for shredding or crushing, the operations will need to:

- confine crushing or shredding to the day period (i.e. cease by 6 pm) and
- ensure that only one of these activities (shredding green waste, crushing concrete or shredding tyres) is undertaken at any one time,

to comply with the day predicted noise trigger level under a worst-case scenario and including the operation of the landfill and FERF. WSC currently ceases these operations by 5 pm and only undertakes one operation at a time as the same contractor is used for these tasks.

The proposed additional mitigation measures have been included in Appendix C though they are part of current standard operating procedure.

#### - differentiation of noise from light rigid, heavy rigid and articulated vehicles

All truck movements were modelled as articulated trucks (which will generate a higher noise level than light rigid and heavy rigid trucks); as such lower noise levels would be predicted by an assessment which differentiated between the different vehicle types. The noise levels associated with these vehicles when moving within the site are significantly lower than those associated with heavy vehicles, and as such will provide a negligible contribution to noise levels in the context of the higher number of heavy vehicle movements within the site. The combined noise contours presented in Appendix Q include the influence of all vehicles accessing the site (both light vehicles and heavy vehicles).

#### - noise associated with final capping and rehabilitation of each cell as it reaches completion

Final capping and rehabilitation of the landfill cells will comprise the same noise sources and similar activities to ongoing placement of material within the cells and will occur at the top of the cells consistent with the worst-case scenario considered in the EIS.

As such, the noise levels presented in the EIS (and represented by the contours provided in Appendix Q) are representative of this phase of the activities. There is no additional noise which would alter the assessment based on this aspect.

#### • Assessment to include:

- assessment of annoying noise characteristics for the hours of operation up to 1900 Monday to Sunday (in addition to daytime measurements provided)

Based on the near field measurement data for the excavator, front end loader and road trucks moving within the site, a 5dB penalty for a low frequency characteristic would apply for the evening period, resulting in an exceedance of the project noise trigger levels at the nearest residence for the "worst case" operational scenarios presented in the EIS between the hours of 6:00pm and 7:00pm.

At the end of every day, the waste must be covered with daily cover and the site left in clean and tidy manner, so waste acceptance ceases earlier than the approved operational hours. Noise levels predicted for the evening period have been based on a scenario comprising dust suppression and waste management occurring at the worst-case locations relative to the nearest noise sensitive receptors to the south-west and north-east (cells 1A and 2E respectively), and as such represent a conservative assessment. The predicted noise levels indicate that compliance with the evening project noise trigger level of 35 dB(A) (including a 5 dB(A) penalty for a low frequency noise character associated with the wheeled loader) is achieved at all nearby noise sensitive receptors.

A 2dB penalty for an annoying noise characteristic during the day period, and a 5dB penalty during the evening period is reflected in the noise contours provided in Appendix Q.

- *LA10 measurements (in addition to the LA90, Leq, and Lmax measurements provided)* Background noise logging data is provided in Appendix Q on Page 11.

- justification for the use of 'default noise-enhancing meteorological conditions' and the exclusion of any noise-enhancing weather or worst-case sound propagation conditions in line with Fact Sheet D of the NPfI

The noise assessment adopted the first option; i.e. noise-enhancing meteorological conditions consistent with Table D1 of Fact Sheet D of the NPfI representing a conservative assessment. Specifically, Stability Category D was used with a wind speed of 2.5 m/s from all sources to each sensitive receiver location.

Noise contours for the day-time and evening periods based on the noise-enhancing meteorological conditions described above (stability category D, 3m/s wind from all sources to each receiver location) are provided in Appendix Q.

- Noise contours

Noise contours are provided in Appendix Q.

### 8.9 Social Impact

#### DPIE Comment:

#### Social impact assessment

The EIS appears to focus on positive social impacts of the development, however, does not identify or address any potential adverse social impacts of the development. The Department requests the following:

• Revised information (EIS Section 6.9) to include an assessment of any negative and cumulative impacts and issues such as way of life, health and wellbeing and aesthetic values

The potential social impacts of the proposed expansion are generally positive for the local community and regional waste management industry, as discussed in EIS Section 6.9.2, with a neutral impact on demographics and house prices or income. The potential impacts can be summarised as:

Table 8.9	Social	and	Economic	Impacts
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Impact	Comment	Timeframe
Employment	A slight increase in employment (< 100 people) is expected but it is not significant in the wider community	Positive impact mainly short term with some positive longer term impact for construction activities
Household income/ property value	Based on the current status of Mourquong/Gol Gol compared with the surrounding towns, there is no indication that proposal will detrimentally impact personal financial or wealth	Neutral impact
Cost effective waste service	The proposed development will improve the resource recovery facilities on-site and extend the extend the life of landfill. By providing a regional facility, cost efficiencies can be realised to provide a more cost- effective waste service to the local and regional community	Positive impact
Environmental	The proposed development will require the removal of over 40 ha of native vegetation. The rehabilitation strategy includes planting native vegetation which may improve the quality of the stands in the longer term	Negative short term impact Positive long term impact
Traffic	Increase vehicle movements can increased the risk of road damage and accidents The greater use of the road will also result in improvements to the road through better intersections and widening	Possible positive and negative impacts. Longer term impact should be positive
Security of planning	By securing a large area for waste management purposes, even if the land area is not used for a landfill in the future but for newer waste processing activities, it has allowed surety in planning for other developments	Indirect positive long term impact
Development and land use	Improving the facilities and road network may attract other commercial users to the area. This could be beneficial, provided the buffers to horticultural industries in the south are maintained and the industries are sympathetic to the existing mining opportunities, e.g. composting facilities, intensive animal husbandry	Indirect long term positive impacts to business growth and development Possible long term negative impacts to agriculture if industries are not compatible
Visual amenity	The landfill is effectively screened from most of the surrounding land uses and hence visual impacts are not likely	No or slight negative impact

Impact	Comment	Timeframe
Way of life	The landfill has been in operation since the 1930s, however increase waste tonnages will mean increased activity which, although does not exceed accepted criteria, can still impact sensitive people. The buffers to sensitive receptors are over 1 km and the landfill is planned to screen subsequently landfill stages	Negative short and long term impact moderated by buffer

## 8.10 Visual Amenity

#### **DPIE** Comment

#### Visual impact

The Department requests the following information to ascertain how the completed landfill cells would appear in the relatively flat landscape:

- Visual assessment from key sightlines with diagrammatic representation of views to proposed structures and Stage 1 and Stage 2 rehabilitated dunes
- Explanation of the north-south orientation of the Stage 2 cells being at right angles to the east-west orientation of the Stage 1 cells which are said to be sympathetic to other regional landforms (EIS pp. 51 & 68-69)
- Visual assessment from key sightlines with diagrammatic representation of views to proposed structures and Stage 1 and Stage 2 rehabilitated dunes

A visual assessment has been undertaken by developing sight lines from surrounding areas which may be impacted by the proposed development. These renders were not developed for the EIS as the distance from the proposed development and screening which will be afforded by the rehabilitated existing landfill was considered to result in little or no impact to surrounding receptors; however this was not clearly demonstrated within the EIS.

Four sightlines were selected following a site visit to locate potential view points and in discussion with Grieve Gillett Anderson, who completed the renders. The selected locations were:

- 1 To the north of the landfill where the tree screen along the road thins. Road users heading south may be affected by development in this location. A 200 m buffer is in place from the edge of the landfill cell to the boundary fence around the entire site.
- 2 At the entrance to the Buronga facility. Development of the FERF along the entrance may be imposing to road users heading north along Arumpo Road.
- 3 At the closet residences which is over 800 m from the gate and further from the proposed development. This resident is the receptor most likely to be affected by the proposed development in the shorter and longer term
- 4 At an elevated location at the edge of the Buronga residential area. To the north of this location the elevation decreases and the Buronga landfill is screened by native vegetation. A number of locations were investigated in this area but the landfill was only marginally visible from one location.

These locations are shown in Figure 13. An additional two photo locations were discarded as no visual impact was observable due to their elevation. A bright green colour was used to represent the rehabilitated dunes as using a more natural green colour resulted in no observable difference between the renders. Also, the effect of vegetation growing on the rehabilitated face of the existing landfill was

not included, which would have further screened the proposed development stages, particularly Stage 1, to present a worst-case visual impact.

As can be seen in the rendered images, the Buronga Landfill is barely visible in the photos. The largest potential impact is for drivers heading south along Arumpo Road where the final landform may be visible above the tree line (Figure 14). It is noted that only a small section of the landform will be visible and hence the potential impact will be limited to a relatively short timeframe.

The second most obvious impact is at the site entrance (Figure 15). The FERF will be visible from the roadway but the set back distance from the road has limited the impact and passing road user are unlikely to observe the new buildings. No other aspects of the proposed development can be observed from the road.

The closest resident was the receptor most likely to be affected by operations over a longer timeframe; however, the rendered image suggests that the impact is not significant (Figure 16). The Stage 1 development is screened by the existing landfill development and the FERF, RRA and other buildings are not visible from this location. It should also be noted that the photo location was taken on the northern side of the machinery shed which screens the house to the north so the visual impact is further reduced from that shown in Figure 16.

As the Buronga township expands, development to the north is at a lower elevation than the location of Render #4 and during the site visit, the current landfill operations were only visible from this location (Figure 17). The landfill expansion is barely visible in the distance and Stage 1 will be mainly screened by the current landfill stages; Stage 2 is the only section of the proposed development which may be visible as it extends further east than the existing landfill stages. The location of the photo was at ground level so two-storey houses in this location may have a larger view of the landfill but given the distance is over 4 km this change will be negligible.

Overall, the proposed development may have some visual impact on road users along Arumpo Road, though the duration and impact are likely to be small. The visual impact to residents, both as neighbours and within the township, may have a longer duration but the proposed buildings are not visible and the landfill landform is predominantly screened by the existing landfill stages. The visual impact of the development remains as assessed in the EIS.

• Explanation of the north-south orientation of the Stage 2 cells being at right angles to the east-west orientation of the Stage 1 cells which are said to be sympathetic to other regional landforms (EIS pp. 51 & 68-69)

The final landform has been developed with east-west ridges to be sympathetic to the regional landscape. The orientation of the landfill cells, which has been designed to be south to north as this operationally efficient, does not dictate the final landform, it only impacts the staging of the landfill cells. Waste filling in each cell will progress until the final surface levels are reached to create the east-west final landform.

Figure 13 Photo Locations for Sight Lines



Figure 14 Render #1 Arumpo Road from North Western Boundary with views as Current (left) and Following Proposed Development (right)



Figure 15 Render #2 Front Entrance of Buronga Facility with views as Current (left) and Following Proposed Development (right)



Figure 16 Render #3 Nearest Resident on Arumpo Road Looking North to Buronga Landfill with views as Current (left) and Following Proposed Development (right)



Figure 17 Render #4 From Elevated Location within Township Looking North to Buronga Landfill with views as Current (left) and Following Proposed Development (right)

# 9 Updated Project Justification

The Buronga Landfill is appropriately located and designed, meeting the EPA siting and design criteria detailed in the EPA Landfill Guidelines. It has been used as a waste facility for 80 years and is zoned as for use as a waste facility. Its development approval is based upon existing use with its long history associated with appropriate use and few complaints.

The surrounding local government areas do not have facilities that are as large and have as much potential as the Buronga Landfill; many are nearing capacity. There is support for WSC to develop Buronga as a regional waste facility. The Regional Waste Strategy prepared by RAMROC (now RAMJO) identified the need to rationalise the landfills (Action 7.5) and develop subregional facilities. At the time the Strategy was prepared, the Buronga facility was not specifically identified; however given the location of the site on the main arterial roads in Western NSW it provides a relatively central location with good connections to larger recycling operations in Adelaide and Melbourne than other towns in this region. The Mildura Rural City Council Waste Strategy also identifies WSC as key stakeholder in developing expanded resource recovery facilities.

The quantity of waste materials will increase in the future as the population increases. Mildura and Wentworth are the two main LGAs likely to experience population growth in the region and hence it is logical to place a regional waste facility in this locality. For many of the neighbouring Councils, it is prudent to continue to manage their recycling activities as there is potential for the generation of local jobs, savings in transport and generate money from these materials to offset the broader costs of waste management.

The Buronga Landfill currently receives around 33,000 tpa which makes it a medium sized landfill. By increasing the maximum tonnages to 100,000 tpa, the facility will remain a medium sized facility. Over time it is expected that improved site facilities and practices, technology and education will reduce the proportion of waste going to landfill and increase the amount of recycling.

Education is a key to reducing the amount of waste going to landfill and there are ambitious targets to reduce waste to landfill to zero; however these targets will require a paradigm shift for producers and consumers to modify their behaviours. The waste industry does not generate waste, it receives it. By having a waste facility available, this does not encourage producer to make non-recyclable products, nor does it encourage householders to not recycle. The gate fees and charges are levied to discourage waste for disposal compared to recycling. The upgraded resource recovery facilities are part of this development to maximise the potential for waste to be recycled efficiently and economically. The Front End Recycling Facility is a free drop-off for wastes with a value or that can be repurposed. This is encouraging separation and recycling of waste that would otherwise go to landfill. The Resource Recovery Area, including the existing CRC, will further maximise the probability that site users will recycle wastes. Having a price differential for sorted wastes, particularly for C&I and C&D wastes, which are a large proportion of the waste disposed to landfill will assist in increasing recycling rates locally.

It is noteworthy that all submissions were received from government departments and no submission were received from the public, even though WSC emailed the community stakeholders contacted during the EIS preparation and provided them the link to the EIS on the planning portal.

The Buronga Landfill site has the room to accommodate enhanced facilities or new technologies, should these become economical in the future. By gaining approval for a waste management facility with a long future, WSC can guarantee waste management facilities for its ratepayers and it neighbours. By keeping this facility in the NSW Western region it is also keeping jobs in the locality and minimising logistical and transport impacts to a minimum.

The design and operation of the facility is controlled by an Environment Protection Licence (EPL). The EPL specifies the approved operating procedures and monitoring requirements for the landfill. This includes requirements to record and control wastes being accepted at the site and establishes limits on

the quantity of wastes, particularly flammable wastes, which may be stored on-site at any one time. The design requirements not only extend to the landfill but also to the proposed resource recovery facilities as well. During the detailed design of the site infrastructure as well as the cells and capping, the EPA has guidelines which identify best management practices which consider:

- fire protection
- traffic access, conflicts and movements
- protection of the environment from waste, leachate and landfill gas through best practice engineering design
- stormwater management
- buffer distances from sensitive receptors, including groundwater and surface water
- construction practices, including construction environment management plans (CEMPs) which detail erosion and sediment control, noise management and mitigation, traffic, etc.
- appropriate rehabilitation and after care which considers the final use of the landfill in developing the final landform and vegetation selection.

WSC is developing a whole of life financial model to plan the funding required to develop and maintain a best practice facility in the region in the longer term. Part of this includes setting aside provisions within the balance sheet for rehabilitation of the site in the future. For landfills, this is undertaken in a progressive manner as cells are completed. The whole of life model assists in predicting when these funds may be required enabling better planning by WSC.

The outstanding issues related to land owner consent and land use conflict risk assessment has demonstrated that the proposed development is compatible with the current uses in this area. The initial evaluation identified the only risk above ranking 10 as for noise associated with crushing and grinding; however once additional mitigation measures were applied, the risk reduced to acceptable levels. This is further evidenced by the lack of public comments during the exhibition period. There are very few complaints for the existing facility since it has been operated by Council which provides evidence that the landfill can be managed to minimise impacts.

Further assessment undertaken on the economic, environmental and social impacts found the proposed project can comply with acceptable criteria when assessed conservatively using worst case scenarios.

- Air quality assessment still concluded that the proposed development meets the required criteria and air quality should not be considered a constraint to the development. No additional management of mitigation measures were recommended
- Traffic assessment found a negligible increase in traffic. The recommendations to widen Arumpo Road and to improve the intersection at the entrance to the facility and Arumpo Road remain unchanged
- Groundwater will not be impacted for the proposed development with detailed design to ensure a 2 m separation distance is maintained between the cell liner and the groundwater and no WaterNSW groundwater wells will be impacted by the development; the nearest construction is over 100 m from the well
- Potential hazards are not present in the current or proposed development. The additional information supplied, clearly demonstrates that the current and proposed development are not a potentially hazardous industry with the quantities of potentially dangerous or hazardous goods stored on site significantly below thresholds. The current and proposed development is a potentially offensive industry but as demonstrated in the EIS, all potential impacts can be managed to result in no offence
- Biodiversity remains impacted by the project due to the clearing of native vegetation. There were no additional significant impacts identified with the introduction of weeds and impact on adjacent vegetation remaining the moderate risks related to the proposed development. The management and mitigation measures remain the same as presented in the EIS.
- Cultural heritage remains unchanged with the addition of the contingency in the event of finding an artefact. It is noted that a Heritage Management Plan is to be prepared prior to construction and this has been added to the mitigation measures but has not changed any of the risks related to the project.

- Noise assessments found that there is potentially an additional impact which requires additional mitigation. Processing of waste streams, specifically green waste, C&D and tyres) may exceed the noise limit criteria under the worst case scenario if these activities are undertaken concurrently. As Council uses the one contractor to undertake these activities it is unlikely that they would be undertaken at the same time; however, this will be a required management measure to ensure noise levels remain within acceptable limits. No other additional scenarios modelled exceeded the acceptable criteria.
- Social impacts have been expanded to include a broader range of impacts. Buronga Landfills location meets the requirements of EPA Landfill guidelines which include consideration of impact to surrounding receptors and hence it is not unexpected that the proposed development has few disadvantages and those identified are short term or short duration. Overall, the project remains positive on balance.
- Visual amenity sightlines show little or no impact to the nearest neighbour, road users or the Buronga township. By rehabilitating the existing southern batter slope, the proposed development is screen from most neighbours. The impact to road users is likely to be short duration as the landfill development expands and rehabilitates in stages.

Overall, the Buronga Landfill is well-positioned to fill a regional need for a centralised waste management facility that incorporates resource recovery areas to increase recycling rates, in line with State and regional policy. The development is supported by RAMJO and MRCC with no objections from local residents. The EIS has demonstrated that detrimental impacts can be managed by typical operating procedures for landfills which are described in the EPL and LEMP for the site. By clearly establishing a waste management facility in this location for the future, it will allow surety in planning for WSC and its neighbouring LGAs and keep jobs within the local community. It is recommended that the development is approved.

**Appendix A – Updated Project Figures** 

**Appendix B – Submission Register** 

**Appendix C - Updated Mitigations Measures** 

Appendix D – Title Plans and DA15/134 Council Approval and Assessment Forms

**Appendix E – Letters of Support** 

**Appendix F – LFG Typical Details** 

**Appendix G – CIV** 

**Appendix H – Crown Consent** 

**Appendix I – LUCRA** 

**Appendix J- MinView Plan and Mining Liaison** 

**Appendix K – Additional Stakeholder Communication** 

**Appendix L – Air Quality** 

# **Appendix M – Traffic Plans**

**Appendix N – Well Locations** 

**Appendix O – Updated BDAR** 

**Appendix P – Heritage Site Record** 

Appendix Q – Noise

# **Buronga Landfill Expansion**

Amendment Report

Appendix A – Updated Project Figures

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07





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# BURONGA LANDFILL EXPANSION

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BURONGA LANDFILL EXPANSION FIGURE 10

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## BURONGA LANDFILL EXPANSION FIGURE 18

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## **Buronga Landfill Expansion**

Amendment Report

Appendix B – Submission Register

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
1.01	Public Authorities	DPIE	Justification	Historical	<ul> <li>History of use of the site</li> <li>Prior to approving any expansion, the Department must ascertain that the existing landfill has been operating consistently with the planning controls applicable during its history of operation. In this regard, the following information is required: <ul> <li>A complete history of the zoning of the site and permissible use of the land for waste management</li> <li>A copy of the Council approval and assessment report for the borrow pits (DA15/54)</li> </ul> </li> </ul>	Section 5.1; Appendix D
1.021	Public Authorities	DPIE	Justification	Demand	<ul> <li>Demand for regional waste facility</li> <li>The Department seeks additional information on how the size of the landfill and the 120-year timeline has been determined and whether the scale of the landfill is justifiable. Furthermore, the EIS needs to respond to the potential need to progressively increase the capacity of the community recycling facility relative to the capacity of the landfill having regard to the anticipated increase in diversion of waste from landfill during the proposed life of the landfill. In this regard, please submit the following information:</li> <li>Detailed projections showing how the waste disposal amount of 100,000 tpa has been determined</li> <li>Evidence demonstrating the demand for a regional waste facility (e.g. memorandum of understanding or letter of support from neighbouring councils)</li> <li>Justification for the size of the recycling facility relative to the size of the landfill having regard to the waste hierarchy that seeks to reduce, reuse, recover and use landfill as last resort</li> <li>Consideration of the Regional Waste Strategy 2017-2021 prepared by RAMROC of which Wentworth Shire Council is a member</li> <li>Update / correction of the Direction numbers in the Far West Regional Plan 2036</li> </ul>	Section 5.2; EIS Table 3.4; Appendix E; EIS Section 2.4.1
1.022	Public Authorities	DPE Western Region	Justification	Demand	<ul> <li>Updated Far West Regional Plan 2036 numbering errors</li> <li>Request additional information on justifying the demand for regional scale facility and 100,000 tonnes/year limit, including: <ul> <li>Include further details on waste from Murray River and Renmark Paringa</li> <li>include support from neighbouring Councils</li> <li>Refer to RAMROC Regional Waste Strategy 2017-2021</li> <li>Correlate the 100,000 tonnes/year increase requested - concern that waste will come from further afield having impact on regional road and freight networks</li> </ul> </li> </ul>	Section 5.2; EIS Table 3.4; Appendix E; EIS Section 2.4.1
2.01	Public Authorities	DPIE	Project	General	<ul> <li>Development description - general</li> <li>It is currently unclear from the EIS what portion of the total waste (100,000 tonnes per annum (tpa)) would be received directly at the recycling facility versus what would be sent directly to the landfill. We therefore require confirmation of the proportion or ratio of recyclable versus landfill waste anticipated over the proposed life of the landfill.</li> <li>Also, clarification is required of whether residuals (non-recyclables) from the recycling facility would be sent to the landfill. If so, please provide details of expected amounts of waste in tpa.</li> <li>Please ensure that the EIS and appendices are all based on a total of 100,000 tpa waste receival, being the maximum annual waste receival (worst-case scenario). Please include an explanation of all assumptions used in the modelling and assessment of the development's impacts.</li> <li>A clear description is required of the current operations of, and proposed changes to, the community recycling facility. This should include the existing and proposed capacity in tpa and how this facility would accommodate future increases in the proportion of waste diverted from landfill over time in line with government policies and strategies.</li> </ul>	Section 6.1; EIS Figure 3; EIS Figure 5

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues
						addressed
2.02	Public Authorities	Fire & Rescue	Project	FERF and RRC Design	Following a review of the EIS report FRNSW provides the following recommendations for your consideration: 1. FRNSW recommend that Consent authorities issue as a condition on the development consent that the requirements of Clause E1.10 and E2.3 of the NCC be complied with to the satisfaction of FRNSW and NSW Department of Planning, Industry and Environment, achieved through either providing an acceptable solution or through direct consultation with FRNSW. a. The waste facility is to provide safe, efficient and effective access for emergency vehicles as detailed in FRNSW guideline - Access for fire brigade vehicles and firefighters . Aerial appliance access is to be provided if the facility is located within a fire district covered by an aerial appliance. b. The waste facility is to have a fire hydrant system installed appropriate to the risks and hazards for the facility. FRNSW recommends a fire hydrant system designed and installed to Australian Standard AS 2419.1-2017 and have an enhanced standard of performance appropriate to special hazards. c. The waste facility is to have a nutomatic fire sprinkler system installed if the building has a floor area greater than 1000 m <sup>2</sup> or contains 200 m <sup>3</sup> or more of combustible waste material. FRNSW recommends the fire sprinkler system be installed to Australian Standard AS 2118.1- 2017. d. The waste facility is to have a fire detection and alarm system installed appropriate to the risks and hazards identified for each area of the facility. FRNSW recommends a fire detection, warning, control and intercom systems – system design, installation and commissioning. e. Buildings containing combustible waste material are to have an automatic smoke hazard management system appropriate to the potential fire load and smoke production rate installed within the building. f. The waste facility is to have effective and automatic means of containing fire water run-off, with primary containment having a net capacity not less than the total hydraulic discharge of the	Section 6.2
2.031	Public Authorities	DPIE	Project	Landfill Design	<ul> <li>Development description – landfill</li> <li>Area(s) subject to land clearing in square metres or hectares</li> <li>Clarification of the extent of the historic unlined landfill proposed to be overlaid/'piggybacked' by the new lined landfill cells, the likelihood of disturbing any existing contaminated land, and details of how the interface between existing and proposed cells would be treated</li> <li>Existing, Stage 1 and Stage 2 landfill capacity in cubic metres</li> <li>Detailed description of construction phases – in particular: - Initial construction activities (e.g. land clearing, demolition or relocation of structures, earthworks, construction of internal roads, ponds) and timeframe for each activity - Ongoing construction activities (e.g. capping, rehabilitation, progressive landfill cell creation, extension of roads and drainage infrastructure, additional ponds, etc) and timeframe for each activity</li> <li>Maximum gradients of side batter slopes as a %</li> <li>Intended ultimate land use upon closure of landfill</li> </ul>	Section 6.3.1
2.032	Public Authorities	DPI – Agriculture	Project	Landfill Design	<ul> <li>Land Stewardship</li> <li>Describe the final proposed land use and land form.</li> <li>Detail the proposed rehabilitation and decommissioning/closure measures to achieve this land use including the expected timeline for the rehabilitation program.</li> <li>Outline the monitoring and mitigation measures to be adopted for rehabilitation remedial actions.</li> </ul>	Section 6.3.1; EIS Section 3.9.1; EIS Section 3.8; EIS Section 3.9

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
2.04	Public Authorities	DPIE	Project	Landfill Design	<ul> <li>Leachate management and drainage</li> <li>The Department seeks clarification of leachate management and drainage system, including:</li> <li>Details of the surface and stormwater management system and assessment of potential surface water impacts for the landfill and community recycling facility</li> <li>Amended drainage plan showing drainage lines consistent with the north-south orientation of Stage 2 landfill cells</li> <li>Details of how the new landfill cells in Stage 1 would connect to the existing leachate pond, which would be used until such time as the new leachate pond and service alignment are constructed</li> <li>Details of the capacity of the existing leachate pond, including approximate service life remaining and likely timing of the construction and use of the proposed new leachate pond and service connections</li> </ul>	Section 6.3.2
2.05	Public Authorities	DPE Water	Project	Landfill Design	Groundwater: Recommendation – Post Approval : If during the detailed design phase, the proponent determines that the construction of the landfill cells would intercept and take groundwater during construction of the lined cells, the proponent should: o Undertake an assessment according to the requirements of the Aquifer Interference Policy 2012. o Account for any groundwater take and obtain a water licence as required.	Section 6.3.3
2.061	Public Authorities	DPIE	Project	Operations	Operational details         The Department seeks clarification and/or additional information on the following operational aspects of the development:         • Hours of operation are to be consistent between the EIS and consultants' reports (e.g. EIS page 24 and the air quality impact assessment page 9 currently have inconsistent hours of operation)         • Details of management and interim measures for the continued operation of the community recycling facility and active landfill cell during initial and progressive expansion works         • Information demonstrating that the existing gas monitoring system is adequate to address the risks associated with LFG emissions as identified in the hazard assessment, and explanation of the 'economic levels' trigger for the implementation of the LFG (flare) management system         • Information on the gas flare system (new and existing, if any) in particular, maximum line sizes (piping diameters) and maximum operating pressures, fuel source         • Details of how acceptance of flammable wastes (e.g. oils, paints, tyres) would be limited and the proposed maximum volume of stockpiles of flammable waste         • Information on any water licensing requirements under the Water Act 1912 or Water Management Act 2000 in Section 4.4.1 of the EIS and indication of whether the project requires water licensing(Section 6.3.4)         • Details of operational water supply and usage (in addition to the information provided on water supply for firefighting)         • Details of operational water supply and usage (in addition to take into account the proposed soil and vegetation characteristics of the rehabilitated landfill cells         • Funding mechanism for rehabilitation of the landfill <td>Section 6.4.1; EIS Appendix B; EIS Table 3.4; EIS Section 3.9.3; EIS Section 6.9.2</td>	Section 6.4.1; EIS Appendix B; EIS Table 3.4; EIS Section 3.9.3; EIS Section 6.9.2
2.064	Public Authorities	DPI – Agriculture	Project	Operations	<ul> <li>Suitable and secure water supply</li> <li>Detail the estimated water demand and water availability and the source of water and any sanitisation methods proposed.</li> </ul>	Section 6.4.1
					•Outline any impacts to water use for agriculture and measures to mitigate against these impacts.	

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
2.062	Public Authorities	ΕΡΑ	Project	Operations	<ul> <li>The EPA recommends the following conditions (or conditions with similar wording) are incorporated into any approval of the proposed expansion.</li> <li>1. A maximum of 100,000 tonnes can be received at the premises in any EPL reporting year.</li> <li>2. New landfill cells must be constructed consistent with best practice detailed in the EPA's 'Environmental Guideline – Solid waste landfills – Second edition, 2016'.</li> <li>3. The premises must have the same configuration and operate as described in the Environmental Impact Statement titled 'Buronga Landfill Expansion' prepared by Tonkin</li> <li>Consulting Pty Ltd and dated 25 January 2022.</li> <li>4. Prior to the commencement of any expansion operations, the proponent must update the site's landfill environmental management plan to include the mitigation measures detailed at Table 7.1 of the EIS.</li> </ul>	Section 6.4.1
2.063	Public Authorities	Fire & Rescue	Project	Operations	<ol> <li>To ensure that the fire prevention, detection, protection and firefighting measures are appropriate to the specific fire hazards and adequate to meet the extent of potential fires, a comprehensive Fire Safety Study (FSS) is recommended to be undertaken.</li> <li>That the FSS is developed in accordance with the requirements of Hazardous Industry Planning Advisory Paper No.2 (HIPAP No.2).</li> <li>That the FSS is required to be developed in consultation with FRNSW and to the satisfaction of the operational requirements of FRNSW.</li> <li>FRNSW recommend that the development of a FSS be a condition of consent.</li> <li>That the development of the FSS considers the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence.</li> <li>FRNSW preference is to review the Preliminary Hazards Analysis (PHA) report as this will determine the approach and design of the recommended fire safety study.</li> <li>That a comprehensive ERP is developed for the site.</li> <li>That the ERP specifically addresses foreseeable on-site and off-site fire events and other emergency incidents, (e.g. fires involving solar panel arrays, bushfires in the immediate vicinity or potential hazard incidents).</li> <li>That the ERP pecifically addresses foreseeable on-site that would need to be implemented in order to safely mitigate potential risks to the health and safety of firefighters and other first responders (including electrical hazards). Such measures would include the level of personal protective clothing required to be worn, the minimum level of respiratory protection required, decontamination procedures, minimum evacuation zone distances and a safe method of shutting down and isolating the photovoltaic system (either in its entirety or partially, as determined by risk assessment).</li> <li>Other risk control measures that may need to be implemented in a prominent 'Emergency Information Cabinet' whi</li></ol>	Section 6.4.2; EIS Appendix L

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
2.071	Public Authorities	DPIE	Project	Drawing and layouts	<ul> <li>Civil drawings and layouts</li> <li>The Department requests additional drawings that show the relationship between existing and proposed structures, roads and other site infrastructure, and that illustrate how the progressive expansion of the landfill would work in relation to the continued operation of the community recycling facility and the active landfill cell. The additional drawings should include:</li> <li>Site plan(s) showing existing and proposed structures, site entrance, onsite road network (sealed and unsealed), car park and connections between structures, hardstand areas and roads with relevant dimensions, separations, setbacks and site boundaries shown</li> <li>Plans showing proposed upgrades to Arumpo Road at the entrance to the site</li> <li>Plans showing progressive construction / opening of internal roads to the active landfill cell. Access to the tipping face of the landfill over time appears unclear</li> <li>Location and details of the existing 45,000L static water supply, proposed additional water supply, draw off points and new emergency access road from Arumpo Road to the water supply</li> <li>Elevations and sections of relocated and proposed new structures</li> <li>Cross sections showing the historic unlined landfill proposed to be overlaid/'piggybacked' by the proposed lined landfill cells</li> <li>Signage strategy including at entry and onsite directional signage</li> <li>Plans showing sediment and erosion control measures for initial works to relocate or construct buildings, hardstands, basins and internal roadways, and ongoing/progressive extension of roads and landfill cell and basins construction</li> </ul>	Section 6.5; Appendix A
2.072	Public Authorities	DPE Water	Project	Drawing and layouts	Sediment & Erosion Control: Recommendation – Post Approval : The proponent must prepare a Soil and Water Management Plan to address stormwater management and sediment and erosion control. The plan is to address the requirements of the guideline Managing Urban Stormwater: Soils and Construction (Landcom 2004) and the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018)	Section 6.5
2.08	Public Authorities	DPIE	Project	CIV	<ul> <li>CIV</li> <li>Justification for:</li> <li>excluding cell staging (or otherwise confirm the allowances are adequate to account for the cost of works when split into stages)</li> <li>excluding dust control, water infrastructure and gas management, which are considered to be key establishment costs</li> <li>excluding escalation costs, even though the project timeline and expected life of each cell for both Stage 1 and Stage 2 are described in Table 3.5 and p.60 of the EIS</li> <li>limiting rehabilitation plantings to shrubs only, with no allowance for trees</li> </ul>	Section 6.6; Appendix G
3.011	Public Authorities	DPIE	Procedural	Statutory	<ul> <li>Landowner's consent</li> <li>Landowner's consent is required from Crown Lands.</li> <li>The request for Crown consent would need to address the following:</li> <li>Subject Lots 197 and 212 in DP 7569460 which are Crown land (reserved for the purpose of a rubbish depot)</li> <li>Arumpo Road and the east-west road on the southern boundary of the site which are identified as Crown land. The proposal requires upgrades to Arumpo Road and part of the front end recycling facility building appears to encroach onto the east-west road.</li> <li>The request for Crown consent may be lodged through cl.western.region@crownland.nsw.gov.au</li> </ul>	Section 7.1; Appendix H
3.012	Public Authorities	Crown Lands	Procedural	Statutory	No Crown waterways are contained within the project footprint, however, two Crown road lots adjoin the project footprint, LOT 1 DP 1037845. If the proposal requires the use of these Crown roads in order to implement the Buronga Landfill Expansion proposal, the land will need to be acquired under the Land Acquisition (Just Terms Compensation) Act 1991 (LAJTC Act).	Section 7.1; Appendix H

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
3.021	Public Authorities	DPIE	Procedural	SEARS	<ul> <li>Potential land use conflicts</li> <li>The EIS needs to identify potential conflicts with cultural, agricultural, mining and Crown interests within or in the vicinity of the site and outline how the development addresses these conflicts. The following additional information is required:</li> <li>Address the undetermined Aboriginal Land Claim (ALC 22090) on Lots 197 and 212 DP 7569460 which may limit use of the existing landfill lots</li> <li>Confirmation that two Crown road lots adjoining the project footprint will not be impacted, or otherwise provide Crown consent or details of any proposed acquisition of Crown land</li> <li>A Land Use Conflict Risk Assessment (LUCRA) to address potential conflicts with surrounding agricultural uses, prepared in consultation with the Department of Primary Industries – Agriculture, including but not limited to consideration of suitable water supply and impacts on agricultural resources and land and any travelling stock routes</li> <li>Map and information on existing mining lease titles from the Department of Regional NSW – Mining, Exploration &amp; Geoscience's MinView website in Figure 21 of the EIS in place of or in addition to Council map</li> <li>Details of consultation with current mining lease title holders in the area (i.e. Larmon Pty Ltd, Mallee Quarries Pty Ltd and Morello Earthmoving Pty Ltd) and in particular include consultation by letter with Morello Earthmoving as required by Department of Regional NSW – Mining, Exploration &amp; Geoscience in their advice on SEARs</li> <li>Confirmation that no biodiversity offset areas are proposed within the site that would result in a reduction in access to prospective land for mineral exploration or potential sterilisation of mineral or extractive resources</li> </ul>	Section 7.1 and 7.2; Appendix H; Appendix I; EIS Section 3.6.3, EIS Appendix G and O; EIS Section 6; Appendix J
3.022	Public Authorities	Crown Lands	Procedural	SEARS	It is also noted that Lot 197 DP 756946 and Lot 212 DP 756946 are currently the subject of an undetermined Aboriginal Land Claim (ALC22090), which may limit how the land can be used. However, whilst we acknowledge this claim is undetermined the recommendations provided by Aboriginal Land Claim Assessment Team suggest this claim be refused (LBN21/890).	Section 7.2.1
3.023	Public Authorities	DPI – Agriculture	Procedural	SEARS	<ul> <li>Site Suitability:</li> <li>Include a Land Use Conflict Risk Assessment (LUCRA) to identify potential land use conflict with sensitive receptors including surrounding agricultural land uses. The LUCRA is to address separation distances and management practices to minimise odour, dust and noise impacts. A LUCRA is described in the DPI Land Use Conflict Risk Assessment Guide.</li> <li>Include a map to scale showing the above operational and infrastructure details including separation distances from sensitive receptors including agricultural land uses.</li> </ul>	Section 7.2; Appendix H; Appendix I; EIS Section 3.6.3, EIS Appendix G and O; EIS Section 6
3.024	Public Authorities	DPI – Agriculture	Procedural	SEARS	<ul> <li>Consideration of impacts on agricultural resources and land:</li> <li>Describe the soil, slope, land capability, agricultural productivity, land characteristics and the history of agricultural land uses on the proposed development site.</li> <li>Describe the current and historical agricultural land uses on surrounding land in the locality including the land capability and agricultural productivity of the surrounding land</li> <li>Detail the potential impacts from the proposed development on agricultural land and agricultural land uses on the site and in the locality.</li> <li>Detail the location and areas of land to be temporarily removed from agricultural use, and those areas which are to be returned to agricultural use on completion of the development.</li> <li>Consider possible cumulative impacts on surrounding agricultural enterprises and landholders.</li> <li>Assess impacts on agricultural support services, processing and value adding industries.</li> <li>Demonstrate that all significant impacts on current and potential agricultural developments and resources can be reasonably avoided or adequately mitigated.</li> <li>Detail the expected life span of the proposed development.</li> </ul>	Section 7.2; Appendix H; Appendix I; EIS Section 3.6.3, EIS Appendix G and O; EIS Section 6

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
3.025	Public Authorities	MEG	Procedural	SEARS	<ul> <li>MEG requests the following project-specific requiremens to be addressed in the EIS:</li> <li>The Environmental Impact Statement (EIS) must include a dated mineral, coal and petroleum titles and applications search through the MEG MinView application, with results shown on a map(s) including the location and extent of the project site. Current mining and exploration titles and applications can be viewed at: https://minview.geoscience.nsw.gov.au/</li> <li>The proponent must consult with Morello Earthmoving Pty Ltd. This should include a letter of notification of the proposal to the title holder including a map indicating the Buronga Landfill Expansion proposal area in relation to the exploration title boundary.</li> <li>The proponent must consult with all affected title holders. This should include a letter of notification of the proposal to the title holders including a map indicating the Landfill Expansion proposal area in relation to the title boundaries.</li> <li>MEG specifically requires the proponent to check for new mineral and energy titles that may be granted in the vicinity of the subject site during all decision-making stages of the project to ensure that other stakeholders (such as title holders) with interest in the area are aware of the proposed landfill expansion project.</li> <li>MEG requests to be consulted in relation to the proposed location of any biodiversity offset areas (both on and off site) or any supplementary biodiversity measures to ensure there is no consequent reduction in access to prospective land for mineral exploration, or potential for sterilisation of mineral or extractive resources</li> </ul>	Section 7.2.1, Appendix J
3.03	Public Authorities	DPIE	Procedural	SEARS	<ul> <li>Landscaping The Department requests the submission of landscape plans as specified in the SEARs: <ul> <li>Landscape plans should include:</li> <li>trees to be removed / land clearing areas</li> <li>location of proposed plantings</li> <li>schedules showing the number and species of plantings throughout the site and including rehabilitation plantings that are representative of endemic vegetation sympathetic to the surrounding environment </li> </ul></li></ul>	Section 7.2.2
3.051	Public Authorities	DPIE	Procedural	Engagement	Consultation         The following consultation information is required, with reference to the SEARs:         • Evidence of consultation with:         • Environment Protection Authority         • Environment and Heritage of DPE (formerly Environment, Energy and Science)         • Water Group of DPE         • Fire and Rescue         • NSW Rural Fire Service         • WaterNSW         • Consolidation of Applicant's responses to the key issues raised by all agencies and Council in Section 5.2 of the EIS	Section 7.3; Appendix K
3.052	Public Authorities	DPI – Agriculture	Procedural	Engagement	<ul> <li>Community Consultation</li> <li>Consult with the owners / managers of affected and adjoining neighbours and agricultural operations in a timely and appropriate manner about; the proposal, the likely impacts and suitable mitigation measures or compensation.</li> </ul>	EIS Section 5, EIS Appendix F
4.01	Public Authorities	DPIE	Economic, Environmental & Social	Air quality	<ul> <li>Air quality assessment</li> <li>The Department seeks the following clarifications and additional information in relation to air quality impacts: <ul> <li>Assessment to be based on the hours of operation as indicated in the EIS</li> <li>Additional modelling of PM2.5 and PM10 with a view to attaining no incremental increase from the proposal, as required in the EPA's Approved Methods</li> <li>Clarification if actual data has been used in the modelling, and if not, provide justification</li> <li>Assessment of the impacts of the LFG flare</li> </ul> </li> </ul>	Section 8.1, Appendix L

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
4.021	Public Authorities	DPIE	Economic, Environmental & Social	Traffic	<ul> <li>Traffic and access</li> <li>The Department seeks an amended traffic impact assessment that uses appropriate methodology for the full extent of the capacity and timeline of the landfill and that includes an assessment of the proposed internal road network, including the following:</li> <li>Assessment of traffic generation based on a landfill capacity of 100,000 tpa being the proposed maximum capacity of the landfill (rather than 60,000 tpa)</li> <li>Confirmation that assessment is based on Arumpo Road being a classified regional road</li> <li>Written confirmation from Transport for NSW (TfNSW) that the methodology used, being an alternative to SIDRA modelling, is satisfactory</li> <li>Justification for assuming the 'current AADT' (Annual Average Daily Traffic) for each of the affected roadways and whether any adjustments are warranted having regard to the 70-year life of Stage 1 and 50-year life of Stage 2</li> <li>Separate assessments for the initial construction/establishment phase, and the operational and ongoing progressive construction phases of the development</li> <li>Assessment of internal road network, including but not limited to the following matters:</li> <li>swept paths for heavy vehicles</li> <li>potential conflicts between light and heavy vehicles</li> <li>progressive extension of road network to the active landfill face</li> <li>queuing management for the community facility and landfill active face</li> <li>Additional information on peak traffic generation, including assessment of operational peaks for light and heavy vehicles relative to AM and PM peaks and how this may affect RMS operating capacity of the road network</li> </ul>	Seection 8.2, Appendix M, Appendix A
4.022	Public Authorities	Transport for New South Wales (TfNSW)	Economic, Environmental & Social	Traffic	<ul> <li>Pursuant to clause 2.121 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 TfNSW provides the following advice for your consideration:</li> <li>TfNSW supports the assessment for the proposed Rural Basic Right (BAR) turn and a Rural Basic Left (BAL) turn treatments in accordance with Figure 3.25: Warrants for turn treatments on major roads at unsignalised intersections at the site intersection with Arumpo Road as per the TIA.</li> <li>It is noted that Arumpo Road is a road train approved route and the design of the intersection to the site has stipulated B-double as the design vehicle within the swept path analysis. The intersection treatments need to be designed to allow for the through movements of the AB-triple road train, demonstrated in a swept path analysis.</li> <li>The intersection treatments of a BAR/BAL proposed at the Arumpo Road/site access are proposed to be delayed until the Buronga Landfill reaches its expanded capacity, which is assumed to be the peak traffic generation of 261 vehicles per day during construction plus operation. Given the deficiency in the existing width of the seal, the current road train access on Arumpo Road and the present turning volumes warranting a BAR/BAL at the intersection, it is recommended that the completion of the BAR/BAL intersection treatment occurs prior to the commencement of the construction work associated with the Buronga Landfill Expansion.</li> <li>The facility is to be limited to waste volumes of 100,000 tonnes per annum</li> </ul>	Seection 8.2, Appendix M, Appendix A
4.023	Public Authorities	Transport for New South Wales (TfNSW)	Economic, Environmental & Social	Traffic	<ul> <li>TfNSW provides the following requirements that will be subject to a future concurrence as a part of a section 138 Roads Act application to the Roads Authority (Wentworth Shire Council):</li> <li>The proposed intersection treatments and access to the site are required to comply with the Safe Intersection Sight Distance in accordance with Austroads Guide to Road Design.</li> <li>A Rural Basic Left (BAL see figure 8.2 within Attachment 1) and a Rural Basic Right (BAR see figure A6 with Attachment 2) turn treatments are required to be constructed at the intersection of Arumpo Road and the site access prior to the commencement of construction works associated with this project. The intersection treatments are to be designed in accordance with Austroads Guide to Road Design.</li> <li>A swept path analysis is to accompany the section 138 Roads Act application to Wentworth Shire Council and demonstrate that the B-double design vehicle can ingress and egress within the correct lane to and from Arumpo Road and include swept path analysis identifying how the AB-triple road trains will be able to simultaneously pass within the passing lane.</li> <li>Any ancillary aspects such as road signage, utilities or vegetation are to be identified within the scope of works for the intersection treatments.</li> </ul>	Seection 8.2, Appendix M, Appendix A

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
4.024	Public Authorities	DPI – Agriculture	Economic, Environmental & Social	Traffic	Traffic Movements Detail the volume and route of traffic movements for the proposed development and how potential impacts on surrounding agricultural land uses are proposed to be mitigated (eg noise, dust, volume of traffic). This should include consideration of Travelling Stock Reserves (TSR) and the movement of livestock or farm vehicles along / across the affected roads.	Seection 8.2, Appendix M, Appendix A
4.031	Public Authorities	DPIE	Economic, Environmental & Social	Soil and Groundwater	<ul> <li>Groundwater</li> <li>The Department seeks clarification of the potential impacts of the proposal on groundwater, including: <ul> <li>Details of protection measures for Water NSW's monitoring borehole and how access to the borehole would be maintained</li> <li>Details of potential groundwater impacts on any licensed water users or other landholder rights</li> <li>Clarification about the maximum extent of excavation/cut, noting the EIS (p.37) indicates the landfill cells will extend to approximately 5-8m below ground level to achieve a 2m separation from groundwater, however, the Geotechnical Report (p.8) indicates groundwater has been detected at 5.9-9.7m below ground level, which would suggest a maximum excavation of 3.9m (rather than 5m) would be required to achieve the 2m groundwater separation</li> </ul> </li> </ul>	Section 8.3, Appendix N, EIS Appendix I, EIS Appendix J
4.032	Public Authorities	WaterNSW	Economic, Environmental & Social	Soil and Groundwater	<ul> <li>The impact on the existing groundwater monitoring bore (GW087083) located onsite is not considered in the EIS. This includes impact to the monitoring site itself from the landfill expansion and impact to access from changed conditions onsite.</li> <li>It is unclear from the assessment whether the proposed new stormwater detention pond, north of Area 7 (EIS figure 10) will impact on the GW087083 monitoring bore.</li> <li>WaterNSW supports the recommendation made in the EIS (section 6.3.4) to install groundwater monitoring wells to monitor groundwater and water quality data prior to construction and during operation. It is noted that the mitigation measures contained in section 6.3.4 are not all included in table 7.1 under groundwater.</li> </ul>	Section 8.3, Appendix N, EIS Appendix I, EIS Appendix J
4.04	Public Authorities	DPIE	Economic, Environmental & Social	Hazards	<ul> <li>Hazard analysis</li> <li>The Department is unable to complete its hazards assessment until the following information is provided: <ul> <li>A preliminary risk screening in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 and the Department's Applying SEPP 33 as required in the SEARs</li> <li>Locations and quantities of dangerous or potentially hazardous goods (e.g. tyres, batteries, drums, waste oil, contaminated soil) which may be stored on-site or transported to and from the site</li> <li>Verification the Preliminary Hazard Analysis (PHA) is appropriate for the development with consideration of the gas flare system and its fuel source</li> </ul> </li> </ul>	Section 8.4, EIS Setion 6.4.3, Section 5.4.1, EIS Section 6.4.2.3, EIS Appendix K
4.05	Public Authorities	NSW RFS	Economic, Environmental & Social	Bushfire	The NSW RFS has considered the information submitted and raises no objection to the proposed Landfill Extension subject to development consent including a condition to ensure compliance with the bush fire mitigation measures listed in part 6.5.4 of the Environmental Impact Statement prepared by Tonkin dated 25 January 2022	Section 8.5
4.052	Public Authorities	DPI – Agriculture	Economic, Environmental & Social	Bushfire	<b>Emergency Management</b> The proposal is to detail contingency plans to enable the operation to deal with emergency situations. The proposal is to detail Emergency Management procedures and responsibilities for responding to bushfire threats and possible mass mortality events which might result from extreme climatic conditions, routine or emergency animal disease outbreaks.	Section 8.5, EIS Section 6
4.061	Public Authorities	DPIE	Economic, Environmental & Social	Biodiversity	<ul> <li>Biodiversity</li> <li>The Biodiversity Assessment Report (BDAR) has been reviewed by the Department's Biodiversity and Conservation Division (BCD) and found to be inadequate. Please submit: <ul> <li>Revised Biodiversity Assessment Report (BDAR) to address SEARs requirements including but not be limited to the identification of regrowth native vegetation in the vegetation zones assessment and details of measures to mitigate, monitor and manage impacts at specific locations – refer to advice of the Biodiversity and Conservation Division in letter dated 17 March 2022 for details which can be found on the portal https://www.planningportal.nsw.gov.au/major-projects/projects/buronga_landfill-expansion</li> </ul> </li> </ul>	Section 8.6, Appendix O

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues addressed
4.062	Public Authorities	DPE BCD	Economic, Environmental & Social	Biodiversity	<ol> <li>1) the BDAR requires some rearranging of report sections to adequately address the requirements of the BAM and improve readability.Recommended action:</li> <li>1.1 Update the BDAR to ensure each section addresses the chapters of the BAM including Stage 1 then Stage 2 and ensure the BDAR addressers the minimum requirements in Appendix K (Table 24 and 25) of the BAM (2020).</li> <li>2) the construction and operational footprint of the proposal is unclear, and some ancillary facilities are not identified in the BDAR.Recommended action:</li> <li>2.1 Update Figure 1 of the BDAR or prepare a new map to outline the construction and operational footprint in stages.</li> <li>2.2 Update the subject land and vegetation zones to ensure all ancillary facilities are included in the BDAR.</li> <li>3) Only one landscape assessment has been prepared for the two related cases in BOAMS.</li> <li>The landscape assessment features require further detail in the assessment and some landscape features are not mapped.Recommended action:</li> <li>3.1 Update the landscape assessment section of the BDAR to include calculations and maps for each related case in BOAMS.</li> <li>2.2 Update the landscape assessment map to include all landscape features outlined in Table 1.</li> <li>4.) definition of Category 1 land and regrowth requires further clarification.</li> <li>PCT selection require further justification. Vegetation zones require darification.</li> <li>Path size has not been addressed in the BDAR. Recommended action:</li> <li>4.1 Allocate a new vegetation zone for 'regrowth' native vegetation and update with VI plot data as required within BOAMS and the BDAR.</li> <li>4.2 Update the landscape assessment non-native vegetation and update with VI plot data as required within BOAMS and the BDAR.</li> <li>4.3 Additional information should be provided in Table S 2 to 6 of the BDAR to justify the allocation of each PCT.</li> <li>4.4 Update section 3.1 and Figure 6 to sho</li></ol>	Section 8.6, Appendix O
4.063	Public Authorities Public	DPI – Agriculture Heritage NSW	Economic, Environmental & Social Economic.	Biodiversity Heritage	<ul> <li>Biosecurity</li> <li>Include a biosecurity (pests, weeds and disease) risk assessment outlining the likely plant, animal and community risks. The relevant weed or pest animals for a region are addressed in the regional plans or strategies issued by NSW Local Lands Services.</li> <li>Include details of how the proposal will deal with identified biosecurity risks as well as contingency plans for any failures. Include monitoring and mitigation measures for weed and pest management.</li> <li>Detail the design of fencing and its adequacy to keep livestock out</li> </ul>	Section 8.6, Appendix O Section 8.7 Appendix
	Authorities		Environmental & Social		<ul> <li>under AHIP C0002579 / 4081. Recommended actions / options:</li> <li>If site 46-3-0192 was harmed under AHIP C0002579, the AHIP holder Wentworth Shire Council or their consultant Landskape on their behalf will need to complete and submit an Aboriginal Site Impact Recording Form to AHIMS, which will switch the site to destroyed.</li> <li>If site 46-3-0192 has not been destroyed under AHIP C0002579, it will need to be managed under the current EIS.</li> <li>We request the applicant respond to this item and any actions taken in the response to submissions</li> </ul>	P
.072	Public Authorities	Heritage NSW	Economic, Environmental & Social	Heritage	<ul> <li>Notification of Aboriginal objects Recommended action:</li> <li>Regarding recommendation dot point 2 on page 41 of the ACHAR, in addition to what is specified in this recommendation, if previously unknown Aboriginal objects are identified during works, Heritage NSW must be notified via a record submitted to AHIMS in accordance with s89A of the National Parks and Wildlife Act 1974.</li> </ul>	Section 8.7
.073	Public Authorities	Heritage NSW	Economic, Environmental & Social	Heritage	Prepare a Heritage Management Plan to the satisfaction of DPE, prior to construction. Include consultation Heritage NSW and Registered Aboriginal Parties	Section 8.7

No	Group	Name	Category	Subcategory	Key Issues/Recommendations	Section where issues
						addressed
4.08	Public	DPIE	Economic,	Noise	Noise and vibration impact assessment	Section 8.8, Appendix
	Authorities		Environmental		The Department requests clarification and additional information on noise and vibration impacts, including:	Q
			& Social		<ul> <li>Assessment to be based on the hours of operation as indicated in the EIS</li> </ul>	
					Clarification as to whether the assessment includes:	
					- noise generated during the initial construction phase of the new/relocated structures, basins, roadways and other on-site infrastructure	
					- noise from the general public using the recycling facilities	
					- noise from monthly shredding of green waste and C&D waste, and the shredding of tyres to maintain a 3m stockpile height	
					- differentiation of noise from light rigid, heavy rigid and articulated vehicles	
					- noise associated with final capping and rehabilitation of each cell as it reaches completion	
					Assessment to include:	
					- assessment of annoying noise characteristics for the hours of operation up to 1900 Monday to Sunday (in addition to daytime	
					measurements provided)	
					- LA10 measurements (in addition to the LA90, Leq, and Lmax measurements provided)	
					- justification for the use of 'default noise-enhancing meteorological conditions' and the exclusion of any noise-enhancing weather or worst-	
					case sound propagation conditions in line with Fact Sheet D of the NPfI	
					Noise contours	
4.09	Public	DPIE	Economic,	Social	Social impact assessment	Section 8.9
	Authorities		Environmental		The EIS appears to focus on positive social impacts of the development, however, does not identify or address any potential adverse social	
			& Social		impacts of the development. The Department requests the following:	
					• Revised information (EIS Section 6.9) to include an assessment of any negative and cumulative impacts and issues such as way of life,	
					health and wellbeing and aesthetic values	
4.1	Public	DPIE	Economic,	Visual	Visual impact	Section 8.10
	Authorities		Environmental		The Department requests the following information to ascertain how the completed landfill cells would appear in the relatively flat	
			& Social		landscape:	
					• Visual assessment from key sightlines with diagrammatic representation of views to proposed structures and Stage 1 and Stage 2	
					rehabilitated dunes	
					• Explanation of the north-south orientation of the Stage 2 cells being at right angles to the east-west orientation of the Stage 1 cells which	
					are said to be sympathetic to other regional landforms (EIS pp. 51 & 68-69)	

## **Buronga Landfill Expansion**

Amendment Report

Appendix C - Updated Mitigations Measures

**Wentworth Shire Council** 

SSD-10096818 8 February 2023 Ref: 202597R07



## Updated Mitigation Measures

Impact	Mitigation Measure
Community concern	WSC will undertake further discussion with the specific parties in relation to their interests that were expressed through the consultation Ensuring that all near neighbours have a contact name and number for a person in WSC who can address any operational concerns on site or incidents such as illegal dumping. Information should be provided to the agricultural community but available to all stakeholders about the operations and controls. This is to reassure those with concerns about the impact on local activities including food production.
Air – dust	Watering and windbreaks for the active landfill cell Revegetation of inactive cells Watering of sealed roads Limiting on-site vehicle speeds on unsealed roads to 50 km/hr
Air - odour	Limit active tip face to < 600 m <sup>2</sup> ; Place 150 mm daily cover over the tip face by the close of business Place interim cap on finished areas Construct final cap and revegetate within 2 years of completion, where feasible
Air - greenhouse	Construct a LFG passive or active management system Repair and/or construct interim or final capping Rehabilitate thin or cracked areas Apply surface mulch or compost where additional capping is not feasible
Traffic	Construct basic right turn from Arumpo Road into the Buronga Landfill and Basic left turn into Arumpo Road from the Buronga Landfill. Concept designs are provided in the TIA (EIS Appendix H); Consult with TfNSW and residents to determine appropriate treatment for Arumpo Road. Advise transporters, including staff of requirement to use Arumpo Road to access site and not Mourquong Road Ensure sign-posting on Mourquong Road advises of weight limit



Impact	Mitigation Measure
Soil - quality	Ensure vehicles/ machinery are used and maintained according to the manufacturer's instructions for use. Conduct any inspections, maintenance or refuelling on hardstand areas and ensure a spill kit is available on hand. Stockpile capping materials in dedicated areas away from main haul routes Retain upper 0.15 m of soil for final capping
Soil - erosion	Sandy topsoils, which are prone to erosion, are dominant onsite. However, the low annual rainfall (250-300 mm/yr) and flat topography greatly lower the risk of net erosion. Implementation of adequate stormwater and erosion control infrastructure (e.g. drains, stormwater detention basins, sediment fences) – as described in <i>Managing Urban Stormwater: Soils and construction - Volume 2B: Waste Landfills</i>
Groundwater	Cells constructed in accordance with best management practices as per the Landfill Guideline and maintain a minimum 2 m separation to groundwater Groundwater monitoring wells are installed up and down hydraulic gradient of the site to enable temporal groundwater data and water quality data to be monitored prior to construction and during operation of the site
Hazards	Site operated in accordance with POEO Licence and Landfill Guideline
Fire	Maintain 16 m asset protection zone; Construct office buildings with non-combustible cladding Provide an additional 45,000 L static water supply to the north of the site Construct roads able to be traversed by fire-fighting appliances Provide and additional emergency exit in the north-west corner
Flora and Fauna	Monitor retained native vegetation for new and emerging weeds and high priority weeds Provide poster of priority weeds in lunchrooms and other communal areas for references purposes and monitor the stockpile area quarterly for weeds. Clearly identify the extent of the subject land/construction footprint adjacent to native vegetation Enforce site speed limit of 10 kph Implement leachate and stormwater management , monitoring and mitigation measures

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Impact	Mitigation Measure
	Engage a suitably qualified ecologist prior to clearing to identify habitat trees with logs/hollows for relocation and to relocate native fauna which may be displaced
	Inspect trenches left open overnight for entrapped wildlife and contact suitably qualified fauna relocation services, if trapped animals are found
	Inspect pipes and conduit for fauna prior to placement.
	Seal pipe ends overnight to prevent fauna entrapment
	Identify suitably qualified fauna re-location services
	Prevent illegal collection of firewood through fencing and signage
	Include endemic vegetation in landfill rehabilitation.
	Maintain 200 m buffer to provide wildlife corridors and refuges and reduce visual amenity impact
	Plan construction activities for January to April to facilitate revegetation in May (optimal time). Avoid clearing in Spring when breeding most likely to occur.
	Clearly identify extent of disturbance using on-ground markers
	Locate waste management infrastructure in already disturbed areas to the extent practical
	Relocate cleared logs and hollows in buffer zone or rehabilitated areas
	Construct a temporary fence between construction area and buffer zone for cell adjacent to buffer.
	New tracks to be established outside the drip line of trees
	Progressive develop and rehabilitate substages and cells
	Undertake rehabilitation as soon as practical.
	Maintain temporary fence between cell and buffer zone for cells adjacent to the buffer zone
	Maintain perimeter fencing to prevent illegal dumping of rubbish outside of operational hours and prevent stock access.
	Maintain fire breaks to limit spread of wildfire



Impact	Mitigation Measure
Aboriginal Heritage	Construct a permanent protective barrier fence around the known artefacts Train staff in all requirements, including no access to fenced area except for land management practices (e.g. weed control) Continue to liaise with RAPs as needed Develop a contingency procedure for unexpected finds. If previously unknown Aboriginal objects are identified during works, Heritage NSW must be notified via a record submitted to AHIMS in accordance with s89A of the National Parks and Wildlife Act 1974. Prepare a Heritage Management Plan to the satisfaction of DPE, prior to construction. Include consultation Heritage NSW and Registered Aboriginal Parties
Noise	Access to the site by the general public and receival of commercial waste does not occur outside of the hours of 7:00 am to 6:00 pm Monday to Saturday, or 8:00 am to 6:00 pm Sundays and public holidays (i.e. consistent with the 'day' period as defined by the NPfI) Ensure that no more than one periodic waste processing activity (i.e. monthly shredding of green waste, C&D waste or tyres to maintain stockpile heights) occurs at any one time. Any one of these activities can occur concurrently with all other typical daytime operations at the site (i.e. operation of the general public facilities and receival and placing of commercial waste) Ensure that limited activities only occur after 6pm, comprising waste management and dust suppression.
Visual Amenity	Maintain vegetated 200 m buffer along Arumpo Road Structures to be non-reflective and subdued colours, e.g. pale eucalypt colorbond steel; Maximum height of structures is 5 m; Where structures or the landfill are easily visible, additional planting within the buffer areas will be undertaken to assist with screening and soften the visual impact; Staged construction to commence in the south-west to provide screening to future landfill operations. Rehabilitate existing and future operations by planting endemic vegetation as soon as practicable.

## **Buronga Landfill Expansion**

Amendment Report

Appendix D – Title Plans and DA15/134 Council Approval and Assessment Forms

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07







### **CERTIFICATE ORDER SUMMARY**

### **Transaction Details**

Date: 07/06/2022 14:46 Order No. 74668596 Certificate No: 112332956 Your Reference: 21-102 Certificate Ordered: NSW LRS - Copy of Plan or Plan Documents - Crown Plan 1052-1820 Available: Y Size (KB): 245 Number of Pages: 1 Scan Date and Time: 30/05/2013 08:19

Req:R954042 /Doc:CP 01052-1820 P /Rev:30-May-2013 /NSW LRS /Prt:07-Jun-2022 14:46 /Seq:1 of 1 © Office of the Registrar-General /Src:DyeDurham /Ref:



NO ADDITIONS OB AMENDMENTS TO BE MADE

CAT. NO. W. 1052-1820

DEFG 179'28' G.I. Pipe 5.0 197 on post A THE SET ON peg Ø RD 17 on peg Ø 359'28' G.I. Pipe 4.3 359°28' 179°26'40" Spike Iron Bolt 1.32 10.0 Ø Note No. WE3547 marked in error. he oblighterated AZIMUTH TAKEN FROM XY FIELD BOOK LD. 6245 PAGES 6 to 9 I Donald Alexander Pedler of Mildura... a Surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and the special requirements of the Department of Lands and was campleted on <u>29-1-1969</u>. Signature Sonald A Pedlar 

only. use office for This space

PAPER NO. WLC 66-305 NOTATION PLAN





### **CERTIFICATE ORDER SUMMARY**

### **Transaction Details**

Date: 07/06/2022 14:53 Order No. 74668776 Certificate No: 112333169 Your Reference: 21-102 Certificate Ordered: NSW LRS - Copy of Plan or Plan Documents - Crown Plan 1088-1820 Available: Y Size (KB): 179 Number of Pages: 1 Scan Date and Time: 26/11/2012 17:16





Order number: 74668525 Your Reference: 21-102 07/06/22 14:44



### NSW LRS - Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 197/756946

\_\_\_\_

SEARCH DATE	TIME	EDITION NO	DATE
7/6/2022	2:44 PM	-	_

## LAND

LOT 197 IN DEPOSITED PLAN 756946 AT BURONGA LOCAL GOVERNMENT AREA WENTWORTH PARISH OF GOL GOL COUNTY OF WENTWORTH (FORMERLY KNOWN AS PORTION 197) TITLE DIAGRAM CROWN PLAN 1052.1820

FIRST SCHEDULE

\_\_\_\_\_

THE STATE OF NEW SOUTH WALES

(CA144032)

SECOND SCHEDULE (2 NOTIFICATIONS)

- \* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- \* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

\_\_\_\_\_

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*



Order number: 74668750 Your Reference: 21-102 07/06/22 14:49



### NSW LRS - Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 212/756946

\_\_\_\_

SEARCH DATE	TIME	EDITION NO	DATE
7/6/2022	2:49 PM	-	_

## LAND

LOT 212 IN DEPOSITED PLAN 756946 AT BURONGA LOCAL GOVERNMENT AREA WENTWORTH PARISH OF GOL GOL COUNTY OF WENTWORTH (FORMERLY KNOWN AS PORTION 212) TITLE DIAGRAM CROWN PLAN 1088.1820

FIRST SCHEDULE

\_\_\_\_\_

THE STATE OF NEW SOUTH WALES

(CA141605)

SECOND SCHEDULE (2 NOTIFICATIONS)

- \* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- \* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

\_\_\_\_\_

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*



Order number: 74667947 Your Reference: 21-102 07/06/22 14:31



### NSW LRS - Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1037845

\_\_\_\_

SEARCH DATE	TIME	EDITION NO	DATE
7/6/2022	2:31 PM	1	28/3/2007

## LAND

LOT 1 IN DEPOSITED PLAN 1037845 AT BURONGA LOCAL GOVERNMENT AREA WENTWORTH PARISH OF GOL GOL COUNTY OF WENTWORTH TITLE DIAGRAM DP1037845

FIRST SCHEDULE

WENTWORTH SHIRE COUNCIL

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SECOND SCHEDULE (3 NOTIFICATIONS)
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- 1 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989) AS REGARDS THE PART FORMERLY COMPRISED IN LOT 2 IN DP634293
- 2 S700000C LAND EXCLUDES MINERALS AS REGARDS THE PART FOMERLY COMPRISED IN LOT 4 IN DP802730
- 3 AC875875 LAND EXCLUDES MINERALS

NOTATIONS

\_\_\_\_\_

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

PRINTED ON 7/6/2022



26-28 Adelaide Street WENTWORTH NSW 2648 PO Box 81 WENTWORTH NSW 2648 Our Reference: HH:DOC/17/1166 Your Reference: DA15/134 Contact: Health & Planning Division Phone: 03 5027 5027 Date: 24 January 2017

Mr Peter Kozlowski Wentworth Shire Council PO Box 81 WENTWORTH NSW 2648

Email: <a href="mailto:council@wentworth.nsw.gov.au">council@wentworth.nsw.gov.au</a>

Dear Peter

### DA15/134 BURONGA LANDFILL BORROW PIT / PITS ARUMPO ROAD LOT 1 DP 1037845 WENTWORTH

I refer to your development application regarding the above mentioned property. Development consent has now been granted subject to conditions. Please read the attached notice of determination and conditions contained within schedule 1 carefully to ensure your obligations in regard to this consent are adhered to.

If you require any further information please contact the Health & Planning Division on Tel: (03) 5027 5027.

Yours faithfully

KEN ROSS DIRECTOR HEALTH & PLANNING ATTACHMENT
WENTWORTH SHIRE COUNCIL	Health & Planning Division 26- 28 Adelaide Street Po Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027 <u>council@wentworth.nsw.gov.au</u>	Notice of Determination of a Development Application issued under the Environmental Planning and Assessment Act 1979 Section 81(1)(a)
Our Ref:		DOC/17/1166
Development	application no:	DA15/134
Applicant nam	e:	Wentworth Shire Council
Applicant add	ress:	PO Box 81 WENTWORTH NSW 2648
Owner name:		Wentworth Shire Council
Owner addres	s:	PO Box 81 WENTWORTH NSW 2648
Land to be developed:		Arumpo Road Lot 1 DP 1037845 Wentworth
Type of approv	ved development:	Buronga Landfill Borrow Pits
Determination	:	In accordance with Section 80 of the EP&A Act 1979 your application has been granted subject to conditions.
Conditions of g reasons	granting consent and	The conditions imposed on the consent in accordance with Section 80A of the EP&A Act 1979 and the reason for imposition of those conditions are attached as Schedule 1.
Review of dete	ermination	Section 82A of the EP&A Act 1979 provides that the applicant may request Council review a condition(s) of the development consent. Any such request for a review of the determination by Council must be lodged with Council within six (6) months (as provided by Sec 97 of the Act)
Right of appea	l of determination:	<ul> <li>An applicant who is dissatisfied which the determination of their development application (including a determination on a review under Section 82A) may appeal to the Land and Environment Court within 6 months after;</li> <li>a) the date on which the applicant receives this notice of determination or review, or</li> <li>b) the date on which the application is taken to have been determined.</li> <li>(refer to Sec 97 of the EP&amp;A Act).</li> </ul>
Date of detern	nination:	24 January 2017
Date from which consent operates:		24 January 2017 Note - If granted subject to a condition that the consent is not to operate until the applicant satisfies a consent authority with respect to a particular condition then the date from which the determination operates must not be endorsed on the application until that condition

has been satisfied.

Date on which consent lapses:	23/01/2022 at midnight (refer to Sec 95 and 95A of the EP&A Act)
Building Code of Australia building classification	Nil
Details of any review by Planning Assessment Commission	N/A
<b>Integrated development</b> approval bodies that have given general terms of approval in relation to the development as per section 93 of the EP&A Act	N/A
Rights of appeal of objectors	N/A
<b>Other approvals</b> List Local Government Act 1993 approvals granted under S 78A(5)	N/A

Signed	KEN ROSS DIRECTOR HEALTH & PLANNING under delegation on behalf of the Shire of Wentworth	
Date	24 January 2017	
Note 1	If there is any discrepancy between the approved plan attached to this determination and th conditions in Schedule No 1 to this determination, then the conditions override the plan. A conditions listed in Schedule No 1 must be complied with to comply with this consent	
Note 2	Schedule 2 contains advisory notes which assists in compliance with conditions listed on Schedule 1.	
Note 3	This approval relates to development consent only and before any building, demolition or subdivision works are carried out a construction certificate must be obtained.	

# DA15/134 BURONGA LANDFILL BORROW PIT / PITS ARUMPO ROAD LOT 1 DP 1037845 WENTWORTH

## SCHEDULE 1

# PRESCRIBED CONDITIONS

1.	The Proponent shall comply with the prescribed conditions of approval under Clause 98 of the Environmental Planning and Assessment Regulation 2000, in relation to the requirements of the Building Code of Australia.
2.	<ul> <li>A sign must be erected in a prominent position on any site on which building work, subdivision work or demolition work is being carried out:</li> <li>(i) Showing the name, address and telephone number of the principal certifying authority for the work, and</li> <li>(ii) Showing the name of principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and</li> <li>(iii) Stating that unauthorized entry to the work site is prohibited.</li> </ul>

## **GENERAL CONDITIONS**

3.	<ul> <li>The development hereby authorised shall be carried out strictly in accordance with the conditions of this approval and stamped approved documents listed below</li> <li>Locality &amp; Zoning Map by Aurecon</li> <li>Conceptual Site Plan by Geolyse 214455 01C_E01 Dated 14 July 2015</li> <li>Review of Environmental Factors - Vegetation Removal Map by Ece Tunali Page 14 of 17</li> <li>Statement of Environmental Effects by Greenedge Environmental W1602 Dated 23 June 2016</li> <li>NOTE: Where there is inconsistency between the Environmental Impact Statement and these conditions, the conditions of this approval shall apply.</li> </ul>
4.	Approval is for the quarrying and extraction of material for landfill covering.
5.	Without the further consent of the Wentworth Shire Council, in writing, this permit shall lapse and have no force or effect unless the use or development hereby permitted is substantially commenced within 5 years of the date of this permit.
6.	To ensure Aboriginal objects identified in the Aboriginal Cultural Heritage Assessment are not harmed during the construction of the proposal, an Aboriginal Heritage Impact Permit (AHIP) in accordance with Part 6 of the National Parks and Wildlife Act 1974 will need to be obtained from the Office of Environment and Heritage. Works must not commence until the AHIP is sought and granted. The AHIP application must be accompanied by appropriate documentation and mapping as outlined on page 6 of Applying for an Aboriginal Heritage Impact Permit, Guide for Applicants (OEH 2011). Consultation with the Aboriginal community undertaken as part of an AHIP application must be in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010. All works undertaken must be in accordance with the conditions of the AHIP.
7.	If any Aboriginal object is discovered and/or harmed in, on or under the land, the proponent must:

	<ul> <li>a) not further harm the Aboriginal object</li> <li>b) immediately cease all work at the particular location</li> <li>c) secure the area so as to avoid further harm to the Aboriginal object</li> <li>d) notify the Office of Environment and Heritage (OEH) as soon as practicable on 131555, providing any details of the Aboriginal object and its location, and</li> <li>e) not recommence any work at the particular location unless authorised in writing by OEH.</li> </ul>
8.	No removal of gravel and fill or disturbance of vegetation outside of the designated work area will be permitted without the written approval of the Wentworth Shire Council.
9.	Operations within the worksite shall be carried out in accordance with the requirements of the NSW Workcover Code of Practice for excavation work.
10.	Quarrying and ancillary activities must be carried out in a manner that will minimise emissions of dust from the site.
11.	<ul> <li>The beneficiary of this consent must ensure that any plant and equipment used on site, or in connection with the project is:</li> <li>a) Maintained in a proper and efficient condition; and</li> <li>b) Operated in a proper and efficient manner.</li> </ul>
12.	<ol> <li>A sign must be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is being carried out:         <ul> <li>a) Stating that unauthorised entry into the work site is prohibited;</li> <li>b) Showing the name of the principal contractor (or person in charge of work site), and a telephone number at which that person may be contacted at any time for business purposes and outside working hours; and</li> <li>c) Showing the name, address and telephone number of the Principal Certifying Authority for the work.</li> </ul> </li> <li>Any sign must be maintained while building work or demolition work is being carried out, but must be removed when the work has been completed.</li> </ol>
13.	The work undertaken must satisfy applicable occupational health and safety and construction safety regulations, including any WorkCover Authority requirements to prepare a health and safety plan. Site fencing must be installed sufficient to exclude the public from the site. Safety signs must be erected that; warm the public to keep out of the site, and provide a contact telephone number for enquiries. Further information and details regarding occupational health and safety requirements for construction sites can be obtained from the internet at www.workcover.nsw.gov.au
14.	The beneficiary of this consent must ensure that all necessary licences, permits and approvals are obtained and kept up-to-date as required throughout the life of the project. No condition of this approval removes the obligation for the beneficiary of this consent to obtain, renew or comply with such licences, permits or approvals.

15.	In addition to meeting the specific performance criteria established under this approval,
	the beneficiary of this consent must implement all reasonable and feasible measures to
	prevent and /or minimise any harm to the environment that may result from the
	construction, operation or decommissioning of the project.

#### CONDITIONS FROM AGENCIES

Office of Environment & Heritage - have provided advisory notes. These are attached in their entirety and therefore form part of this determination.

#### **REASONS FOR CONDITIONS**

- a) To ensure compliance with the terms of the Environmental Planning and Assessment Act.
- b) To ensure work is sustainable and that an appropriate level of provision of amenities and services occurs within the Shire and to occupants of lots.
- c) To minimise environmental impact and impact on public assets, degradation of natural resources and to enhance amenity.
- d) To provide for a quality environment, safe and efficient movement of people and to ensure public safety and interest.

Health & Planning Division 26-28 Adelaide Street PO Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027	Application for Development made under the Environmental Planning and Assessment Act 1979
Council@wentworth.nsw.gov.au	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
FEES & CHARGES	
DA No. Assessment No.	Receipt No. Date
Lodgement Fee \$30.00 Plan	Reform Fee 140.80 Advertising Fee
Would you like a copy of the receipt?	No: 9915-5910 Job No: 1410-1050
PART A - APPLICANT'S DETAILS	
Name/s Peter Kozlowski	
Company Name (if applicable) Wentwort	h Shire Council
Postal Address PO Box 81 Wentwort	h, NSW 2648
Contact No. 03-5027 5027	Alternate No.
Email peter.kozlowski@wentworth	.nsw.gov.au
I apply for approval to carry out the development as o	lescribed in this application. I declare that all the information in this application and
Signature/s	77/6/16
Signature/s	
PART B - PROPERTY DETAILS	
Lot/ Section / DP Numbers can be found on the Rates property adjacent to the proposed site.	Notice or Certificate of Title for the land. In relation to mooring sites, Part B relates to the
Street No. Street Name	Arumpo Road
Town/Locality Buronga	Postcode 2739
Lot No/s LOt 1 Secti	on DP No/s 1037845
Swimming Pool       Use of Land/ building       Other – Please specify	Demolition     Additions / Alterations to Dwelling       Deferred Commencement     Mooring Site
Detailed description of development	
The proposed area will be used as bo to use as daily cover material to bury t	rrow pits to provide soil to Buronga Landfill's waste operations the waste, disposed and also interim and final cover material.
<b>Existing development / use</b> – e.g. existing dwe	Iling, vacant land
Total estimated cost (inclusive GST) \$220	0,000

PART D - OWNER'S DETAILS		
Details are the same as Part A – Applic	ant's Details (Note: All ov	wners are still required to sign the form)
Name/s		
Company Name (if applicable)		
Postal Address		
Contact No		a No
	Alternate	- NO.
As owner/s of the land to which this application relate	e via email?	NO     the development described in this application. Use also
authorise:	ty for the nurnese of site inspec	tione:
<ul> <li>Council to make copies of all the documents proposal</li> </ul>	for the purpose of determining	g the application or to people who may be affected by the
Note: If more than one owner every owner must a	ian	
<ul> <li>If you are signing on the owner's behalf as t</li> </ul>	heir legal representative, you m	nust state the nature of your legal authority and attach
<ul> <li>documentary evidence (e.g. power of attorn</li> <li>If the owner is a company, a current ASIC ex</li> </ul>	vey, executor, trustee, company (tract must be supplied as docul)	/ director) mentary evidence and application must be signed by 2
directors.      If the land is Crown Land, consent will be re	nuired from NSW Trade & Inves	stment – Crown lands. Please refer to senarate attachment
Landowner's Consent: Landowner's consen	t application.	The I want to I have
<sub>Name</sub> Peter Kozlowski	Signature	Date 27/6/6
Name	Signature	Date
If more than two signatures are required pl	ease attach a separate do	ocument.
PART E - SUBDIVISION		
No. of Lots: Existing		Proposed
Are you proposing to install a new road/s?	🗌 Yes 🔳 No	If yes, how many?
Will this be a staged development?	🗌 Yes 🔳 No	If yes, how many?
Description of stages		
PART F - OTHER APPROVALS		
I require consideration as Integrated Develo	pment 🗌 Yes 📗	No If yes, include Attachment A
I require consideration as a Mooring Site	Yes	No If yes, include Attachment B
I require a Construction Certificate (CC) to be Construction Certificate Application Form.	e lodged at the same time	as the development application. If yes, include No

PART G -	ENVIRONMENTAL IMPACT	

One of the following must be completed for all applications

or

Statement of Environmental Effects (SEE) – refer Attachment C

Environmental Impact Statement (EIS) - Designated Development Only

Is your proposal on land, that is, or part of critical habitat? Or is your proposal likely to have a significant effect on threatened species, populations, ecological communities or their habitats?

Yes – Please attach a Species Impact Statement

No – Please explain in the Statement of Environmental Effects

#### PART H - DISCLOSURE OF POLITICAL DONATIONS AND GIFTS

Under Section 147 of the Environmental Planning and Assessment Act 1979, any reportable political donations to a councillor and / or any gift to a Councillor or Council Employee within a two (2) year period before the date of this application must be publicly disclosed.

Are you aware of any person with a financial interest in this application who made a reportable donation or gift within the last two (2) years?

Yes – Please complete the Political Donations and Gifts Disclosure Statement and lodge it with this application (available from the Council website)

No – In signing this application | undertake to advise the Council in writing if I become aware of any person with a financial interest in this application who has made a political donation or has given a gift in the period from the date of lodgement of this application and the date of determination.

NOTE: Failure to disclose relevant information is an offence under the Act. It also an offence to make a false disclosure statement.

#### PART I - SUPPORTING INFORMATION

To enable assessment of your application, Council requires the following supporting information. Please note, if the information is not provided this may lead to your application being rejected or delayed.

3 x A3 copies of each of the following plans for approval

- o Floor Plan
- o Site Plan
- o Elevation Plan
- 3 copies of the BASIX Certificate

Completed Statement of Environmental Effects (refer Part G above)

NOTE: If both the applicant and owner are happy to receive all correspondence via email, only 1 set of plans needs to be submitted with application. However if hard copies are required, submit 3 copies.

#### Privacy and Personal Information Protection Notice

The personal information provided on this form is collected by Wentworth Shire Council for the purposes of processing this application by Council Employees and other authorised persons. This form will be stored within Council's record management system and may be available for public access and/or disclosure under various NSW Government legislation.



Health & Planning Division 26- 28 Adelaide Street Po Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027

council@wentworth.nsw.gov.au

# **Development Application**

Notes for completing a Development Application

#### FEES & CHARGES

There are two fees that are payable on lodgement of this application. These are:

- Lodgement Fee This is a fee charged by Council that is set by the NSW Government, which is aimed at covering a portion of Council's costs for the processing of the application.
- Advertising Fee Charged in accordance with NSW Legislation for Designated and Integrated Developments.

A schedule of fees are available on the Wentworth Shire website under the Council Business Tab. Alternatively you can call Council's Health & Planning Division on 03 5027 5027.

#### PART A - APPLICANT'S DETAILS

Anyone can apply for approval; it does not necessarily have to be the owner of the land; however the owner will still need to provide consent in Part D – Owner's Details. Please complete the details of the person who is applying for this consent.

NOTE: It is the applicant's responsibility to provide Council with any additional details that may be requested.

#### PART B ~ PROPERTY DETAILS

This section asks you to provide details on the land where the development / building work is to be situated. These details are available on your rates notice or a Certificate of Title.

NOTE: Not all properties have a section number.

#### **PART C - DEVELOPMENT DETAILS**

Select from the list the most appropriate description of your development. Note: you can select more than one option.

Provide a detailed description of your proposal including any details such as building works, earthworks and any demolition work to be carried out. If there is not enough room, please attach a separate document.

The cost of the project should include but not limited to building construction, building materials, landscaping, drainage, fencing, labour and drainage but not include the cost of the land.

#### PART D ~ OWNER'S DETAILS

The owner of the land is generally the people/ company listed on the Title to the Land. All owners listed on the title must sign the application form giving consent to the proposed development / building works. If there is not enough room, please attach a separate document.

If the owner is a Company/ partnership etc, then evidence of role of signatories is to be supplied in the form of an Company Extract from the ASIC website.

#### PART E ~ SUBDIVISION

Only complete this section if your development is a subdivision.

#### PART F - OTHER APPROVALS

You can apply for other approvals at the same time as lodging your Development Application. If you require on of these approvals, please complete the appropriate paperwork and submit with your DA.

Note: Additional fees may apply for the relevant approval. Contact Council's Health & planning Division on 03 5027 5027 if you are unsure.

#### PART G -- ENVIRONMENTAL IMPACT

Environmental Impact is an important part of the application and must be completed in order for you development application to be assessed. Council has developed a Statement of Environmental Effects to assist you in preparing this *information*.

#### PART H - DISCLOSURE OF POLITICAL DONATIONS & GIFTS

This section must be completed by applicant and owners. If you selected yes, you will need to fill out the Political Donations and Gifts Disclosure Statement and lodge it with this application.

#### PART I -- SUPPORTING INFORMATION

Most applications will require a Site Plan, Floor Plan and Elevations. Below is a guide to assist in what information is required to be submitted with your development application.

Site Plan	A site plan is a birds-eye view of the existing and proposed development on the site and its position in relation to boundaries and pejabhouring developments.				
	North point and scale				
	Street name and number				
	Name and contact details of who prenared the plans				
	Incrition of				
	o property boundaries and				
	<ul> <li>any existing physical and natural features e.g. building, vegetation, driveways</li> </ul>				
	etc				
	<ul> <li>Existing easements and/or utility services e.g. water, sewer, stormwater</li> </ul>				
	drains, discharge points etc				
	<ul> <li>Existing and proposed structure/s and/or additions</li> </ul>				
	<ul> <li>Vehicle access and car parking</li> </ul>				
	<ul> <li>New vehicle crossings</li> </ul>				
	<ul> <li>Site dimensions (length, width and site area)</li> <li>Relative location of adjoining buildings</li> <li>Existing and proposed site ground levels and floor levels</li> <li>Contour lines of site and spot levels at all corners of the building</li> <li>Extent of ant cut and fill to be carried out</li> </ul>				
					<ul> <li>Swimming Pools must show pool fencing, gates, reduced height levels (RLs) reduced to existing/proposed levels, location of filters/pumps and backwash connections.</li> </ul>
				Floor Plans	<ul> <li>A floor plan is a birds-eye view of your existing and/or proposed layout of rooms within the development.</li> <li>Existing Internal layout (required for alterations and additions)</li> <li>Proposed internal layout</li> <li>The above plans should include: <ul> <li>Room uses, wall/partitions, areas and dimensions</li> <li>Location of stairs and essential fire safety measures (if any)</li> <li>Floor levels and steps in floor levels (RLs)</li> <li>Wall structure type and thickness</li> <li>Calculations of all existing and proposed floor areas</li> </ul> </li> </ul>
Elevation Plans	<ul> <li>Elevation plans are a side on view of your proposal that shows all 4 sides (north, south, east and west).</li> <li>Height of existing and proposed structure/s and/or additions</li> <li>Existing and proposed surface finishes e.g. brick wall, tile, colourbond roof</li> </ul>				
	Location and heights of windows				
	<ul> <li>Levels for roof ridge, floor and ceiling (expressed as Reduced Levels (RLs) or levels to AHD</li> </ul>				

Roof Pitch

PART I – SUPPORTING INFORMATION CONTINUED		
BASIX Certificate	<ul> <li>A BASIX Certificate is required for:         <ul> <li>all new habitable buildings</li> <li>alterations and additions over \$50,000</li> <li>swimming pools and spas with a capacity of 40,000 litres or more</li> </ul> </li> <li>For further information or to apply visit: <u>www.basix.nsw.gov.au</u></li> </ul>	
Statement of Environmental Effects	• A template version is available to be filled out, refer to Part G Environmental Impact	
NOTE:		

- All plans are to be drawn to scale and provided in A3 size (where possible).
- If both the applicant and owner are happy to receive all correspondence via email, only 1 set of plans needs to be submitted with the application. However if hard copies are required, submit 3 copies.

# Statement of Environmental Effects: Borrow pits for Buronga Landfill Cover





Buronga Landfill For Wentworth Shire Council

# greenedge

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# **Executive Summary**

The Buronga Landfill is located on Arumpo Road, approximately 28km east of Wentworth. Access to the proposed site is via the sealed Arumpo Road and service road into the landfill (refer to Appendix A).

The proposed project site is for the development of borrow pits to provide landfill cover for the existing landfill and then be converted to landfill cells for future use. The proposal will allow for the continued operations and management of the existing facility. It is expected based on the current level of demand that the cells will be used for landfill until the year 2053. The site is located in the municipality of Wentworth, and referred to as Lot 1 DP1037845. The land is freehold owned by the Wentworth Shire Council (WSC).

The objective of this proposal is to develop soil borrow pits to be used at the adjacent landfill site as landfill cover, to adhere to the Environmental Protection Licence conditions. The borrow pits created would be converted to landfill cells for future expansion of the landfill site.

The proposed location of the borrowing is in previously disturbed area, with black oak, mallee and hopbush requiring removal. The groundcover species, cannonball, poverty bush and common heliotrope and agricultural weeds dominate the site. The operation will be undertaken in various stages over the lifespan of the project.

Site preparation will involve removing trees and shrubs by mechanical grubbing. Topsoil (where applicable) will be windrowed for re-spreading across the top of the landfill site when it is full. During the borrowing process, the read loam soil will be ripped by a Cat D6 dozer and a front end loader (938) will load the soil directly onto a tip truck and trailer. No crushing or processing is required. Minimal stockpiling will occur, and only as required.

The following table summarises the potential impact of the project, following a thorough on-site assessment and various database searches on threatened species and cultural heritage. Overall, the level of impact is expected to be low and this is further reduced through the implementation of mitigation measures summarised in Section 4.

Section	Potential Impact	Summary of Impacts
4.1	Natural resource use	Removal of borrow material
4.2	Hydrology and geomorphology	No impact
4.3	Erosion and sedimentation	No impact
4.4	Surface water	No impact
4.5	Groundwater	No impact
4.6	Soils	Removal and stockpile of topsoil for respreading, borrow material for landfill cover
4.7	Matters of NES	No impact
4.8	Flora	Removal of vegetation, no impact on threatened species

#### Summary of potential impacts

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4.9	Fauna	No impact on critical habitat for threatened species
4.10	Weeds and pests	No impact
4.11	Heritage	Unlikely impacts to unknown sites and objects based on desktop and on site assessment. AHIP will be gained for the open site located as part of the due diligence process.
4.12	Air quality	Some vehicle emissions and dust from borrowing activity, will not cause problems due to low population density
4.13	Socio and economic	No adverse impacts
4.14	Transport	No public roads to be used for carting activities
4.15	Noise and vibration	Use of machinery to extract, load and cart borrow material
4.16	Bushfire hazards	No impacts
4.17	Chemical and Hazardous Substance	No impacts, none stored on site, oils, grease, fuel
4.18	Waste Minimisation	No impacts
4.19	Stormwater Management	No off-site impacts

The cumulative environmental impacts from the proposal will be minimal. As stated throughout Section 4 of this Statement of Environmental Effects, each identified impact has been assessed for its potential threat to the environment. Mitigation measures will help minimise the impact the proposal will have on the study area as well as off-site impacts.

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# 1.0 The proposal

# 1.1 Locality

The Buronga Landfill is located on Arumpo Road, approximately 28km east of Wentworth. Access to the proposed site is via the sealed Arumpo Road and service road into the landfill (refer to Appendix A).

The proposed project site is for the development of borrow pits to provide landfill cover for the existing landfill and then be converted to landfill cells for future use. The proposal will allow for the continued operations and management of the existing facility. It is expected based on the current level of demand that the cells will be used for landfill until the year 2053. The site is located in the municipality of Wentworth, and referred to as Lot 1 DP1037845. The land is freehold and owned by the Wentworth Shire Council (WSC).

# 1.2 Objective of the proposal

The objective of this proposal is to develop soil borrow pits (extraction of soil) to be used at the adjacent landfill site as landfill cover, to adhere to the Environmental Protection Licence conditions. The borrow pits created would be converted to landfill cells for future expansion of the landfill site. Up to five additional borrow/cells are proposed, covering an area of 43.82ha (Appendix A).

Table 1 outlines the proposed project characteristics.

Cell no	Cell area (ha)	Estimated commencement	Operational period	Comments
Опе	8.73	2015/2016	To June 2020	Part of existing landfill
Two	7.21	2019/20	July 2020to June 2026	Staged development as landfill cover for existing landfill.
Three	7.22	2025/26	July 2026 to June 2032	Cover material for cell one (existing landfill)
Four	6.22	2031/32	July 2032 to June 2040	Staged development as landfill cover for existing landfill.
Five	8.19	2039/40	July 2040 to June 2048	Staged development as landfill cover for existing landfill.
Six	6.25	2047/48	July 2048 to June 2053	Staged development as landfill cover for existing landfill.

Table 1:	Characteristics	of the	proposed	project

# 1.3 Estimated costs and commencement

The project will cost in the order of \$220,000 (ex GST) and cell three to be used as landfill cover is proposed to commence in mid-2016.

# **1.4** Description of borrow operations

The proposed location of the borrow pits is in a previously disturbed area, with black oak, mallee and hopbush requiring removal. The groundcover species, cannonball, poverty bush and common heliotrope and agricultural weeds dominate the site. The operation will be undertaken in various stages over the lifespan of the project.

Site preparation will involve removing trees and shrubs by mechanical grubbing. Topsoil (where applicable) will be windrowed for re-spreading across the top of the landfill site when it is full. During the borrowing process, the red loam soil will be ripped by a Cat D6 dozer and a front end loader (938) will load the soil directly onto a tip truck and trailer. No crushing or processing is required. Minimal stockpiling will occur, and only as required.

The soil will be progressively removed in small sections, working in an orderly pattern. The site will be dug down to between 5 and 9m deep.

## 1.5 Site lay out plans

The site layout is presented in Appendix A along with coordinates for each corner of the proposed cells. All mapping coordinates are GDA 1994, MGA Zone 54.

## 1.6 Site preparation

Site preparation for the proposed development will consist of:

- formally marking the proposed development area (including `no go' zones) using flagging or bunting
- marking trees to be retained outside of proposal area
- grubbing trees and shrubs that will not be retained in the proposal area, staged to ensure no soil erosion occurs
- stripping and windrowing of topsoil as required for each stage
- installing 'truck entering' signs and general safety signs.

# **1.7** Infrastructure considerations

No permanent infrastructure will be required on site.

#### 1.8 Rehabilitation

Other than ensuring erosion does not occur to the cell wall, and a safe and gentle slope (1:2 batters) is achieved, no rehabilitation is proposed as the borrow pits will become landfill cells.

# **1.9** Previous and existing operations

The site has been subject to historical grazing, wood cutting and quarrying activity. These activities no longer occur and the area has been fenced (security and six-strand stock fence).

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## **1.10** Consideration of the alternatives and justification

All viable alternatives have been considered, including:

- trucking in borrow material from other areas
- using old soil quarries from other properties
- finding new sites in new locations and importing to Buronga landfill.

All above options have been considered and costed. The preferred option is presented in this SEE. The option relevant to this proposal is favoured, as it:

- has a good supply of borrow material
- will have minimal impact on the immediate and surrounding environment
- will not cause impacts to threatened flora or fauna
- will enable soil to be extracted and used near to where it is required and allow for future landfill expansion
- the site adheres to the siting restrictions of the Environmental Guidelines: Solid Waste Landfills, Second edition 2016 (EPA, 2016)

No other existing or likely future uses or activities on or near the site would be disadvantaged by this proposal. The land is zoned for the purpose of waste disposal. The land was purchased by the WSC for this purpose. The proposal will not affect any world heritage properties, national heritage places, wetlands of international importance (Ramsar sites) or Commonwealth marine areas.

# 2.0 Planning context

# 2.1 Purpose of this report

This Statement of Environmental Effects (SEE) has been prepared by Green Edge Environmental on behalf of WSC, which is the proponent and the consent authority under the Wentworth Local Environmental Plan 2011 (Reg 1.6) and Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of the SEE is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail protective measures to be implemented.

The description of the proposed works and associated environmental impacts have been undertaken in context of the Environmental Planning and Assessment Regulation 2000, the *Threatened Species Conservation Act 1995* (TSC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This SEE helps to fulfil the requirements of Section 79C of the EP&A Act that WSC examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

# 2.2 Legislation and approvals required

The WSC is the consent authority to which this SEE will be lodged. The proposed location is in south-western New South Wales.

The overarching state legislation in relation to this activity is the *Environmental Planning and Assessment Act 1979 (EP&A Act)* and Environmental Planning and Assessment Regulation 2000. The activity is required for the operation and management of the existing licenced waste facility and is not listed under schedule 3 of the Environmental Planning and Assessment Regulation 2000, therefore not designated development.

The *Mining Act 1992* does not apply to this proposal as under the Mining Regulations (2012), schedule 1, soil is not a listed mineral.

An EPA licence under the protection of the *Environment Operations Act 1997*, is currently in place (EPL 20209).

The *Native Vegetation Act 2003* (NV Act) regulates the clearing of native vegetation in NSW. All clearing of remnant native vegetation or protected regrowth requires landholders to seek approval by obtaining a Property Vegetation Plan (PVP) from Local Land Services. WSC will work with the Western Local Lands Service to ensure appropriate offsets are in place utilising their existing offset area.

The development complies with the requirements of the *Fisheries Management Act 1994*, including the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A.

The *Threatened Species Conservation Act 1995* (TSC Act) lists a number of factors to consider when deciding whether there will be a significant impact on threatened species, populations or ecological communities and their habitats.

A Species Impact Statement (SIS) is required when the level of determined significance is 'likely'. As stated in Section 4, the proposal is not likely to significantly impact on a

threatened species, population or ecological community. Therefore, the proposal does not require approval under the TSC Act, or the completion of a SIS.

The National Parks and Wildlife Act 1974 (NPW Act), administered by the Office of Environment and Heritage (OEH), is the primary legislation for the protection of some aspects of Aboriginal cultural heritage in New South Wales.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. There are a number of defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place. One of the defences is that the harm was carried out under an Aboriginal Heritage Impact Permit (AHIP).

This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely, but as an isolated scatter was found a cultural heritage assessment adhering to the *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* and an AHIP is required (refer to section 4.11).

Under the Federally administered *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions which are likely to have a significant impact on matters of National Environmental Significance (NES) require approval from the Commonwealth Minister for Environment and Heritage. Matters of NES include:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

No matters of NES will be impacted upon by the proposed project.

The objectives of the *Water Management Act (2000)* are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations. One key aim is to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna. This act will not be triggered as the water will be extracted through existing water licences.

# 2.3 Relevant policies

The State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) aims to assist in the effective delivery of public infrastructure across the NSW. This is achieved by improving certainty and regulatory efficiency through a consistent planning assessment and approvals regime for public infrastructure and services, and through the clear definition of environmental assessment and approval processes for public infrastructure and services facilities.

The Infrastructure SEPP 2007 is applicable as the projects will assist in maintaining public infrastructure:

Under Clause 121 Development without consent-general states

(3) Development for the purpose of the recycling of construction and demolition material, or the disposal of virgin excavated natural material (as defined by the *Protection of the Environment Operations Act 1997*) or clean fill, may be carried out by any person with consent on land on which development for the purpose of industries, extractive industries or mining may be carried out with consent under any environmental planning instrument.

# 2.4 Local environmental plans

#### Wentworth Local Environmental Plan (LEP) 2011

The site is located within the Wentworth local government area and as such the Wentworth LEP 2011 applies. Under the LEP, WSC is the determining authority. Applicable sections of the LEP include:

#### Cultural Heritage Conservation

Clause 5.10 of the LEP specifies the requirements of the consent authority in relation to impacts on areas of cultural and heritage significance. This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely (refer to section 4.11).

#### **Biodiversity Conservation**

Clause 7.4 of the LEP specifies the consent authority must consider any adverse impacts from the proposal on the following:

- the condition, ecological value and significance of the fauna and flora on the land
- the importance of the vegetation on the land to the habitat and survival of native fauna
- any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land
- any likely adverse impact on the habitat elements providing connectivity on the land.

An assessment of the likely impacts of the proposal is located in Section 4.

#### **Draft Western Local Strategic Plan**

The State Strategic Plan and the Western Local Strategic Plan (in draft) will assist Local Land Services achieve its vision of resilient communities in productive healthy landscapes. To achieve this vision, Local Land Services needs to align all of its work with its mission of being a customer-focused business that enables improved primary production and better management of natural resources. The goals of the Plan include:

- Self-reliant, adaptive and prepared communities
- Productive, biosecure and sustainable primary industries operating in resilient landscapes
- Effective, efficient and integrated service delivery underpinned by collaboration, adaptive management and local decision making

The strategies that underpin these goals are around supporting land managers capacity to improve land management and enterprise viability, collaborate with industry and government to adapt to climate change, involve local people in decision making to drive continuous improvement in the services, policies and projects and an adaptive approach to planning, implementation and service delivery Other than the implementation of the NV Act, the Local Lands Service has no regulatory authority on this project.

# 2.5 Relevant guidelines

A number of guidelines were consulted during the preparation of this SEE including:

- Environmental Guidelines: Solid Waste Landfills, Second edition, NSW EPA (2016)
- Agricultural Issues for Extractive Industries Development Factsheet (Department of Primary Industries)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft, 2004, Department of Environmental and Conservation)
- Threatened Species Assessment of Significance Guidelines (DEH, undated) http://www.environment.nsw.gov.au/threatenedspecies/tsaguide.htm

# 2.6 Zoning

Under the Wentworth LEP, the proposed project area is zoned Special Purpose Zone - Infrastructure (SP2). Under this zone, 'waste or resource management facility' means a waste or resource transfer station, a resource recovery facility or a waste disposal facility.

# 2.7 Determining authority

Under the Wentworth Local Environmental Plan 2011 - Reg 1.6, the determining authority is the WSC.

# 2.8 Stakeholder consultation

The following relevant stakeholders have been consulted on the proposal and their recommendations and requirements have contributed to the development of the SEE, where applicable, including:

- NSW Office of Environment and Heritage
- Local Lands Service Western
- Wentworth Shire Council

# 3.0 Location

# 3.1 Site description

The proposed project area is located on land that has been historically used for grazing, wood cutting and quarrying. The area is located to the east of the Arumpo Road, approximately 2.5km north of the Silver City Highway.

Two vegetation types occur on site which meet the Plant Community Type criteria, including:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116)

These PCT's are mapped in Appendix A.

# 3.2 Land systems and geology

The proposed project is located within the Murray Basin Geological province. Quaternary material covers almost all of the area. Quaternary alluvial deposits comprise the riverine plain. Scattered aeolian (windblown) deposits also occur throughout (Cunningham *et al* 1992).

The Murray Basin is a shallow depression filled with marine and terrestrial sediments to a maximum depth of 600m over the last 50-60 million years. Shallow seas have moved back and forth across the plains several times, leaving traces of parallel beach ridges and limestone sediments under the dunefields. At one stage, the coast reached as far inland as Balranald (OEH, 2011).

Sandy surface sediments have been extensively reworked into dunes and sandplains that have blown onto the Cobar peneplain. Some dunes have consistent east-west linear patterns, others are parabolic, suggesting differences in vegetation cover, sand supply or age. The Darling River and streams in the Riverina have cut through the sands and constructed numerous overflow lakes such as the Sayers Lake system and the abandoned pleistocene channels and basins of the Willandra Lakes complex (OEH, 2011).

Saline groundwaters have formed salt basins in many places where the sandplain or dune topography intersects the water table. All lakes and swamps have well-formed lunettes on their eastern margins that record evidence of climate change and human occupation. A few bedrock ridges rise above the sandplains as isolated ranges (OEH, 2011).

The proposed project area is gently undulating with a gentle slope towards the east. The site is on a slight north-south ridge and the elevation across the site is between 37 and 44m Australian Height Datum (AHD).

# 3.3 Hydrology and geomorphology

No creeks, streams or waterways run through the proposed site. The proposed activity will not impact on the hydrogeology and geomorphology of the site.

# 3.4 Soil

Soils in the depositional basin are deep red sands with variable sandy profiles under dunes, and gradational profiles in the sandplains. Most soils have a moderate to high level of calcium carbonate in the profile (ANRA, 2009).

Sandplains contain deep calcareous loams to loamy sands. These are associated with sandy red-brown duplex soils. Limestone nodules are exposed in some areas (ANRA, 2009).

Soils and vegetation differ according to the landform. On the dunefields red, brown and yellow calcareous sands occur with more clayey materials in the swales. On sandplains the soil tends to be heavier with brown gradational or texture contrast profiles, and mallee is found only on sandy rises (OEH, 2011).

Vegetation communities on site are linked to soil type. The deep red loams support the Black oak community and the heavier loam over clay soil support the mallee communities. To the east, outside of the project area, is a Black box community on silty sand over riverine clay.

# 3.5 Climate

The annual average minimum temperature is 10.3 °C, monthly values varying from 4.3°C during July (the lowest on record is -4.4°C) to 16.5°C during January. There are four nights per annum when the temperature falls below 0°C. The annual average maximum temperature is 23.6°C - monthly values vary from 15.2°C in July to 31.9°C in January (the highest on record is 50.8°C). There are, on average, 77 days per annum when the temperature exceeds 30°C, including 30 hot days when the temperature rises above 35°C (BOM, 2012).

The mean annual rainfall for the Wentworth area is 292mm (refer to Table 2). The lowest rainfall on record is 113mm and the highest on record is 705mm. Rainfall reliability in the area is generally very low (BOM, 2015).

	Jan	Feb	Mar	Apr	Ма	Jun	Jul	Au	Sep	Oct	Nov	Dec
Mean monthly rainfall (mm)	21.1	20.3	18	18.5	25.6	22.9	26.4	26.7	27.8	30.6	24	23.4
Highest monthly rainfall (mm)	92.2	100.9	128.2	120.4	86.3	82.2	59.4	74.8	88.3	120.6	129.9	181.2
Lowest monthly rainfall (mm)	0	0	0	0	0	0	0.6	1.2	3	0	0	0
Highest daily rain (mm)	3.6	3.1	3.4	4.2	6.8	7.9	9.3	9	7.6	7.1	5.5	4.3

#### Table 2: Mildura Airport Rainfall Data

# 4.0 Environmental impacts and management

This section outlines the environmental impacts of extracting soil for landfill, covering the existing landfill and converting the borrow areas to landfill cells for future use.

## 4.1 Natural resource use

The natural resource to be won is soil, which is required to be used for cover on the nearby existing landfill. Under the EPL held by WSC, the landfill is to be covered each night. The borrow areas will then be converted to landfill cells for future use.

#### 4.1.1 Mitigation measures

- Borrow pit sites to be marked out using permanent markers indicating 'no go zones'
- The development will be staged, removal of trees and stripping of topsoil will only occur as required based on the demand level for cover material
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Staff trained in best practice management in earthworks to minimise impacts on non-target natural resources

# 4.2 Hydrology and geomorphology

No creeks, streams or waterways run through the proposed project site. The nearest permanent natural water supply is the Gol Gol Creek, which is approximately 2km south east, and the Murray River, approximately 4.2km to the south west of the site. Due to the distances from these water sources and the shallow depth over which earthworks will occur, no impacts to the hydrology and geomorphology of the surrounding environment are expected.

#### 4.2.1 Mitigation measures

- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)
- Adhere to the Environmental Protection Licence (20209) conditions and reporting requirements.

# 4.3 Erosion and sedimentation

The proposal is unlikely to cause erosion down slope, due to the gentle slope in topography of the surrounding land. To minimise erosion, topsoil will only be stripped as required to develop the borrow pits. During borrowing, controls such as sediment fences will be employed as required. Borrow pit walls will be developed so a safe and gentle slope (1:2 batters) is achieved

The existing access track will be maintained by spreading gravel (if required) to protect the soil during carting activity to minimise fugitive dust.

#### 4.3.1 Mitigation measures

Borrow pit sites to be marked using permanent markers indicating 'no go zones'

- Temporary sediment control structures shall be maintained at all times during borrowing and checked, repaired, replaced or cleaned out after any significant rainfall event
- Staff trained in best practice management in erosion and sedimentation control
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)

# 4.4 Surface water

No creeks, streams or waterways run through the proposed project site. The proposal will not impact on any Ramsar listed wetlands.

No hazardous materials will be stored on site and no sewerage facilities will be established that could impact on surface water flows, should they occur.

The water to be used on site for dust suppression and earthworks will come from existing WSC water licence supplies.

Most plant and equipment will be serviced either at the WSC depot off site, or at another designated location. Contingency plans adhering to relevant Australian standards and guidelines will be developed to deal with any spills that may occur. Machinery will be checked daily to ensure that there are no leakages of oil, fuel or other liquids.

#### 4.4.1 Mitigation measures

- Daily pre-start machinery checks will be made for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian standards and guidelines and conforming to leading practice
- All vehicles to be serviced off-site
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)

# 4.5 Groundwater

The site is situated within the Murray Geological Basin, which is located within the Murray-Darling surface water drainage basin. The Murray Geological Basin comprises up to 600 m of Cenozoic sedimentary deposits with basin contours showing dominant north east trending troughs and ridges.

The main depositional centre is known as the Renmark Trough bounded to the west by the Hamley Fault, separating it from a smaller depression to the west. The Neckarboo Ridge is a basement high located east of the Darling River. The site is situated on the eastern flank of the Renmark Trough, west of the Neckerboo Ridge (in GHD, 2012).

The site is underlain by the Lower Remark Group aquifer hosted by fluvio-lacustrine sediments comprising fine to medium grained quartz sand and carbonaceous silt and clay. The regional groundwater flow direction in the vicinity of the site is expected to be in a south westerly direction towards the Murray River. Recharge to the aquifer is typically from the basin margins, with groundwater flow being towards the basin depocentre in the vicinity of Renmark (in GHD, 2012).

Aquifer yields are generally high and commonly exceed 5 L/s. This reflects significant thicknesses of interbedded fine to medium-grained micaceous quartz sands in the fluvial sequences. A search of the NSW groundwater database identified aquifer yields only over 50 L/s are estimated for the central basin, due to partial filling of the troughs by medium to coarse quartz sands of the Warina Sand basal deposit (GHD, 2012).

Groundwater in the Lower Renmark Group is suitable for stock use only, with typical salinities between 11,000 and 13,000 mg/L total dissolved solids (TDS). In this area, recharge is mostly via bed leakage from the Darling River further to the north (in GHD, 2012).

A search of the NSW Natural Resource Atlas database was conducted identifying groundwater bores within 2 km of the site (by GHD on 1 December 2009) and is presented in Table 3. A total of five boreholes were listed within 1 km, and a further 20 bores 1 - 2 km from the site. Based on the information available, a total of nine boreholes were considered, details of which are summarised in Table 3.

Number	Approx RL.	BH Depth (mbgl)	Water level (mbgl)	Water level (RL)		
GW088479	40.5	61	7.37	33.13		
GW087083	39	39 20 9.29		29.71		
GW088168	168 40 10.5		N088168 40 10.5 nd		nd	na
GW087039	40	40 11		na		
GW087074	40	14	nd	na		
GW087038	40	11	nd	na		
GW087328	40	16	nd	na		
GW087325	45	14	nd	па		
GW088305	35	21	1.54	33.46		

#### Table 3: Groundwater Well Data

All boreholes considered within the vicinity of the site were registered as monitoring wells, suggesting that they are not used for groundwater abstraction to any significant degree. These boreholes vary in depth from 10.5 to 61.0 metres below ground level (mbgl). Information on water levels was only available for three of the boreholes and varied from 1.5 to 7.4 mbgl (RL29.71 to RL33.46). Note that the majority of the borehole RLs (and hence the RLs of the water levels) are based on limited topographical information and are only accurate to +/- 5 m (GHD, 2012).

Geolyse (2015) undertook a hydrogeological assessment based on the data provided in GHD (2012) of the Buronga landfill and made the following conclusions:

Based on Geolyse's review of existing hydrogeological assessments and available groundwater monitoring data for the Buronga Landfill, this assessment finds that sufficient information exists to demonstrate that groundwater impacts have not yet been detected, and can be managed such that any future impact can be minimised. Conclusions from the GHD Geotechnical Investigation demonstrate that during groundwater monitoring in 2010 and 2012 there was no indication of existing leachate migration into the off-site groundwater. In addition, the GHD Engineering Report identifies a thick, low permeability clay layer (undisturbed, 3.3 x 10-10 m/s) that forms an effective aquitard beneath the landfill. It is also noted material can and will be sourced on-site to provide a capping layer that will meet EPA's criteria of 1 x 10-8 m/s).

Further, the comparison of groundwater data obtained by GHD to data reported in the 2013-14 Annual Return (for EPL 20209) indicates that changes observed in groundwater quality parameters are likely due to natural fluctuations in regional groundwater quality, as opposed to existing leachate migration into off-site groundwater.

Appropriate leachate minimisation and management measures are already identified in the Buronga Landfill LEMP; these measures are implemented at the Buronga Landfill to mitigate the risk of leachate contaminating groundwater aquifers below the site, and to manage any groundwater contamination should it occur.

Based on the above conclusions, this assessment adequately addresses the requirements of condition U5.1 of EPL 20209 as:

• No adverse impacts to groundwater have been identified in this assessment and given that the site has been operating as a landfill for several years (since 1934), it is unlikely that leachate is emanating from the existing unlined Buronga Landfill and adversely impacting on groundwater; and

• There are adequate leachate minimisation and management measures implemented at the landfill to mitigate the risk of adverse impacts to groundwater, and to manage any groundwater contamination.

Based on Geolyse (2015) review no groundwater impacts are expected.

#### 4.5.1 Mitigation measures

- Daily pre-start machinery checks for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian Standards and Guidelines and conforming to leading practice
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.6 Soils

All of the proposed project area has been disturbed due to continuous grazing by livestock, rabbits, and timber removal to facilitate grazing and for fencing materials. More recently, quarrying activity in the north-eastern section has occurred. The material to be won consists of suitable borrow material required to adhere to the EPL.

The topsoil will be managed to ensure that on completion of borrowing, topsoil can be re-spread on the landfill capping and rapid germination of the seed store can occur. Regularly servicing machinery off-site, adhering to the WSC's refuelling policy and

ensuring a spill kit is on-site at all times will ensure that existing soil retained on site will be free from contamination.

#### 4.6.1 Contamination

The existing soil is not known to be contaminated and no new contamination is expected as a result of undertaking the proposed activity.

#### 4.6.2 Acid sulphate soils

There are no areas that are subjected to periods of sustained inundation followed by drying which can lead to the production of acid sulphate soils. When potential acid sulphate soils are disturbed or exposed to oxygen, the iron sulphides are oxidised to sulfuric acid and the soil becomes strongly acidic (usually below pH 4). These soils are then called actual acid sulphate soils and they have a pH of less than 4.0 (Department of Environmental Resources Management, 2009).

#### 4.6.3 Mitigation measures

- Staff to be trained in best practice management in soil conservation and management
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- A spill kit will be permanently attached to the portable fuel cart, which is brought on to site each day
- All machinery to be serviced off site
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Borrow material will only be extracted and used as required
- Borrowing will only occur during suitable conditions e.g not on days of rain, high wind or flooding.

# 4.7 Matters of National Environmental Significance

An Environmental Protection and Biodiversity Conservation (EPBC) Act Protected Matters Search Tool report was generated for the study area on a 5km buffer. The report indicated:

- no World Heritage Areas near the proposed site
- no items of National Heritage Places near the proposed site
- the study site is located upstream from three (3) wetlands of international importance
- no Commonwealth Marine areas near the proposed site
- potential for two (2) threatened ecological communities to exist within the proposed site
- potential for sixteen (16) threatened species to occur in the vicinity of the proposed site
- potential for eight (8) migratory species to occur within the vicinity of the proposed site.

Further assessments undertaken as part of this project revealed that no matters of national significance will be impacted upon, and therefore, no referral under the EPBC Act is required.

## 4.8 Flora

#### 4.8.1 Bioregion and PCT type

The proposed project site is located in the Murray Darling Depression Bioregion of the Lower Murray-Darling Catchment.

According to the NSW Native Vegetation Classification and Assessment Project (NSWVCA), two vegetation communities occur on-site:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116).

Details of this PCT are shown in Table 4.

РСТ	Dominant canopy spp	Main associated spp	Landscape position	Characteristic mid-storey spp	Characteristic groundcover spp	Other diagnostic features
LM108	Black Oak (Casuarina pauper), Western Rosewood (Alectryon oleifolius subsp. canescens)	Sugarwood (Myoporum platycarpum subsp. platycarpum), Pittosporum angustifolium	On level to undulating sandplains, sandy rises and interdune swales.	Wilga ( <i>Geijera</i> <i>parviflora</i> ), Silver Cassia (Senna form taxon 'artemisioides'), <i>Senna</i> <i>eremophila,</i> <i>Exocarpos</i> <i>aphyllus</i> , Thorny Saltbush ( <i>Rhagodia</i> <i>spinescens</i> ), Black Bluebush ( <i>Maireana</i> <i>pyramidata</i> ), <i>Maireana</i> <i>brevifolia</i>	Sclerolaena diacantha, Austrostipa nitida, Speargrass (Austrostipa scabra subsp. scabra), Zygophyllum apiculatum, Polycalymma stuartii, Tetragonia moorei, Salsola tragus,	Mid-high (about 7 m high) low open woodland or isolated clumps of trees. Occurs on calcareous earths (pH >7) of red to red-brown loam, sand and texture contrast soils. Widely distributed in the far south- western NSW mainly in the Murray Darling Depression Bioregion.
LM116	White Mallee (Eucalyptus dumosa), Glossy- leaved Red Mallee (Eucalyptus oleosa), Snap and Rattle (Eucalyptus gracilis), Red Mallee (Eucalyptus socialis), Narrow- leaved Red Mallee	White Cypress Pine ( <i>Callitris</i> <i>glaucophylla</i> ), Slender Cypress Pine ( <i>Callitris</i> <i>gracilis</i> subsp. <i>murrayensis</i> ), Western Rosewood ( <i>Alectryon</i> <i>oleifolius</i> <i>subsp.</i> <i>canescens</i> ), Bulloak ( <i>Allocasuarina</i> <i>luehmannii</i> ), Black Oak	On aeolian sandplains or in inter- dune plains or swales.	Chenopodium curvispicatum, Pearl Bluebush (Maireana sedifolia), Maireana georgei, Black Bluebush (Maireana pyramidata), Maireana pentatropis, Maireana brevifolia, Maireana erioclada, Sugarwood (Myoporum platycarpum	Ruby Saltbush (Enchylaena tomentosa), Atriplex stipitata, Zygophyllum apiculatum, Zygophyllum aurantiacum, Dissocarpus paradoxus, Chenopodium desertorum subsp. desertorum	Bull mailee woodland or open mailee shrubland most usually about 8 m tall. Occurs on calcareous red- brown, sandy- loam or loamy clay soils, sometimes containing limestone nodules.

#### Table 4: PCT characteristics

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(Eucalyptus	(Casuarina	subsp.	
leptophylla)	pauper)	platycarpum),	
		Acacia	
		microcarpa,	
		Silver Cassia	
		(Senna form	
		taxon	
		'artemisioides'),	

#### 4.8.2 Threatened species

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed project site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife (refer to Appendix B)
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report (refer to Appendix B).

No threatened flora species were identified from a 5km<sup>2</sup> radius database search.

#### 4.8.3 Threatened communities

The above-mentioned databases were also searched for threatened communities. Four threatened communities were listed, including:

- Acacia loderi shrublands
- Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions
- Bulloak Woodlands of the Riverina and Murray-Darling Bioregions

None of these communities occur at the proposed project site or will be impacted upon by the proposal.

#### 4.8.4 Flora site assessment

A general flora assessment was conducted across the proposed project site and the surrounding area on 18 February 2016 by Chris Alderton (B App Sci). The half-day assessment, adhering to Table 5.1 Survey Effort (DEC, 2004), focused on areas of likely higher vegetation values and active searches of likely habitat for reptiles and small mammals. Weather conditions were a clear sky, maximum temperature of 30°C and no wind.

According to the DEC field survey methods (DEC, 2004), the study area was 'random stratified' assessment based on vegetation type, aerial imagery information and the site assessment. The survey method undertaken is described as a 'stratified ramble assessment', where the whole site was assessed, with particular focus on areas of higher quality habitat (older trees with potential for nests and hollows, better quality

vegetation) that could be potentially impacted upon. Two vegetation types occur within the study site. The stratification units included (refer to Appendix A):

- Chenopod sandplain mallee woodland
- Black oak western rosewood open woodland
- Black box open woodland

The study area does form part of a corridor linking the black box woodlands to the Mallee between the Gol Gol Lake and The Mourquong Swamp. There are other connections between these landscape features so the connectivity value is lower than if there were no other linkages. Hollow and nest bearing trees were observed within the study area and mitigation activities prior to removal should be adhered to (Section 4.8.5). The vegetation condition on-site was observed as 'low' according to DEC (2004).

The flora assessment revealed no vegetation species; populations or communities, which are of local, regional or state conservation significance (refer to Table 5).

Scientific name	Common name	Threatened/Status
Acacia homalphylla	Yarran	No
Acacia oswaldi	Umbrella wattle	No
Acacia victoriae	Prickly acacia	No
Alectryon oleifolius	Western rosewood	No
Allocasuarina pauper	Black oak	No
Atriplex stipitata	Bitter saltbush	No
Callitris glaucophylla	White Cypress-pine	No
Chenopodium melanocarpum	Black Crumbweed	No
Dissocarpus parodoxa	Cannon ball	No
Eucalyptus largiflorens	Black box	No
E. socialis	Pointed Mallee	No
Enchylaena tomentosa	Ruby saltbush	No
E. gracilis	Yorrell	No
Lysiana exocarpi ssp. exocarpi	Harlequin mistletoe	No
Marieana brevifolia	Yanga Bush	No
Marieana sedifolia	Peal bluebush	No
Myporum patycarpum	Sugarwood	No
Nicotiana glauca	Native Tobacco	No

#### Table 5: Flora Species recorded on-site

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Scientific name	Common name	Threatened/Status
Pittosporum angustifolium	Native apricot	No
Rhagodia spinescens	Hedge saltbush	No
Sclerolaena diacantha	Grey copperburr	Νο
Solanum esuriale	Quena	No
Zygophyllum apiculatum	Common Twin leaf	No

# Denotes introduced species

#### 4.8.5 Mitigation measures

- Borrowing site to be marked out using permanent markers indicating `no go zones'
- Species profiles to be kept on-site of threatened species that have potential to inhabitat the site
- Prior to removal of vegetation, trees shall be checked for fauna that may be present and if found, individuals shall be relocated by suitably trained and accredited persons.

#### 4.9 Fauna

#### 4.9.1 Threatened species

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed project site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife (refer to Appendix B)
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report (refer to Appendix B).

None of these species were recorded during site assessments on 18 February 2016.

Table 6 lists the fauna species with state and national conservation significance that have the potential to occur within the study area. The column in Table 6 headed 'comment', identifies the suitability of the site for the particular species, such as for habitat utilisation, nesting/burrowing requirements, food and water requirements and the vegetation type preferred by the species. Five of those species have 'potential habitat' so have been assessed for significance, as per the Threatened Species Assessment Guidelines (DECC, 2007) (Appendix B).
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Class	Common name	Species name	State	National	Comment
Aves	Freckled Duck	Stictonetta naevosa	V		No potential habitat, prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree.
Aves	Spotted Harrier	Circus assimilis	v		Potential habitat
Aves	Little Eagle	Hieraaetus morphnoides	v		Potential habitat
Aves	Square tailed-kite	Lophoictinia isura	v		Potential habitat
Aves	Curlew Sandpiper	Curlew Sandpiper	E	CE	No potential habitat, it generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts
Aves	Major Mitchell's Cockatoo	Lophochroa leadbeateri	V		Potential habitat
Aves	Purple-crowned Lorikeet	Glossopsitta porphyrocephala	V		Potential habitat
Aves	Black-chinned Honeyeater	Melithreptus gularis gularis	v		Predicted to occur at this location, unlikely habitat requirements on site. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark ( <i>Eucalyptus</i> <i>sideroxylon</i> ), White Box ( <i>E. albens</i> ), Inland Grey Box ( <i>E.</i> <i>microcarpa</i> ), Yellow Box ( <i>E. melliodora</i> ), Blakely's Red Gum ( <i>E. blakelyi</i> ) and Forest Red Gum ( <i>E. tereticornis</i> ).
Aves	Gilbert's whistler	Pachycephala inornata	V		Unlikely habitat, the Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer.
Aves	Australian Painted Snipe	Rostratula australis	E	E	No potential habitat prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses,

#### Table 6: Listed Fauna Species

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Class	Common name	Species name	State	National	Comment
					lignum/low scrub.
Mammal	Spotted-tailed Quoll	Dasyurus maculatus	v	E	No potential habitat and not known from this region.
Amphibia	Southern Bell-frog	Litoria raniformis	E	v	No potential habitat

#### 4.9.2 Fauna site assessment

A general fauna assessment was conducted across the proposed area, including nearby areas of intact vegetation, by Chris Alderton (B App Sci). The assessment also focused on the access to the site and surrounding habitats. It was noted that nests and hollows exit with in the area proposed to be removed. To minimise impacts a staged approach to vegetation clearing will be undertaken, that is only vegetation required to be removed is and not all cells at once. The three-step process as outlined in Section 4.9.3 shall be used at all times to minimise disturbance to birds and other hollow dwelling species.

The fauna assessment revealed no species; population or communities, which are of local, regional or state conservation significance (refer to Table 7). The number of species recorded on site was average for the timing of the assessment, weather conditions, quality of habitat foraging areas, food and water sources.

Scientific name	Common name	Threatened
Columba livia domestica	Pigeon	No
Corvus bennetti	Little Crow	No
Eolophus roseicapilla	Galah	No
Gymnorhina tibicen	Australian Magpie	No
Manorina melanocephala	Noisy Miner	Νο
Ocyphaps lophotes	Crested Pigeon	No
Psephotus varius	Mulga Parrot	Νο
Ctenotus sp.	Stripped Skink	No

	Table	<b>7:</b> 1	Fauna	species	recorded	on	site
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#### 4.9.3 Mitigation measures

- Borrow pits and stockpiles are to be examined prior to work starting each day to remove any reptiles or other fauna that may be within the work site
- Profiles of threatened species that have potential to inhabit the site will be kept on site.
- A three step tree removal process should be undertaken where:
  - 1. the tree is hit with a hard object (ie sledge hammer or excavator bucket), five minutes before the tree is brought to the ground
  - 2. The tree is felled and left to remain in place overnight to allow any animals to escape
  - 3. The felled tree is removed to the stockpile location for rehabilitation at a later date.

#### 4.10 Weeds and pests

Weed and pest animal assessments were conducted within the proposed borrow area on 18 February 2016, recording weed and pest attributes by Chris Alderton (B App Sci). Twelve weed species were observed and three introduced fauna species refer to Table 8 which also lists the species status.

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Scientific name	Common name	Status
Carrichtera annua	Wards Weed	
Centaurea calcitrapa	Star thistle	
Cucumis myriocarpus	Paddy melon	
Datura Spp.	Downy thorn-apple	
Heliotropium europaeum	Common heliotrope	
Lycium ferocissimum	African Boxthorn	Class 4 - Locally controlled, WoNS
Marrubium vulgare	Horehound	Class 4 – Locally controlled
Nothoscordum inodorum	Onion weed	
Psilocaulon tenure	Match-head Plant	
Salvia verbenaca	Wild Sage	
Schinus sp.	Peppercorn	
Tribulus terrestris	Caltrop	
Columba livia domestica	Pigeon	
Oryctolagus cuniculus	European Rabbit	
Bos sp.	Cattle	

#### Table 8: Weed and pest observed

#### 4.10.1 Mitigation measures

- Machinery will be washed down off-site prior to entering the proposed borrow areas to ensure it is weed free
- The WSC weeds officer to monitor the area regularly.

#### 4.11 Heritage

A site inspection was conducted 18 April 2016 by Sarah Watts from Sunset Archaeological Services who holds a Bachelor of Archaeology with Honours. The site inspection included participation by Noel Johnston and Rodney Lawson of the Barkindji community.

The site inspection involves a pedestrian survey which progressed on north to south transects from the western side of the project area to the eastern side. Participants were spaced between 1.5 to 4 meters apart during the physical survey providing a detailed survey of approximately 80% of the project area. Visibility during the survey varied between 50 to 80 % with the poorer areas of visibility being those around the existing trees due to leaf litter and denser low lying vegetation while the open cleared land (western side) provided great visibility with the only hindrance being small patches of grasses and ground vegetation.

The western side of the project area appears to have only been disturbed by grazing animals and rabbits during warren preparation. While the eastern side of the project area has been significantly disturbed during loam extraction and later motor bike riders. It was noted there was significant amount of rubbish on the ground surface and eroding out of the soil on the eastern side suggesting repetitive ground disturbances. There are mature trees throughout the project area but none of these trees showed any signs of Aboriginal cultural scarring.

At the conclusion of the onsite inspection only one site was discovered, Buronga Landfill Artefact Scatter 1, at co-ordinates E610565 N 6223164 Zone 54 and consisted of a sandstone core split in two. A site card was lodged with NSW Office of Environment and Heritage and an AHIP should be gained for this site.

The assessment did not reveal any other areas where conservation activities to protect cultural heritage material are required. Historical quarrying in the north-east corner of the project area provides an indication of subsurface conditions.

The Murray River is located approximately 4.2km south west of the project site, which would have provided a permanent water supply and the Gol Gol Creek and lakes would have filled intermittently only during times of a high river and emptied back to the river on flood recession. The proposed borrow area did not contain features that the Aboriginal monitors believed warranted further investigation.

An Aboriginal Heritage Information Management System (AHIMS) database search was undertaken of the lot and DP, with a 1km buffer (refer Appendix C). Two Aboriginal sites were recorded north of the proposed borrow area, both open sites.

The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010) was reviewed to determine if an Aboriginal Heritage Impact Permit (AHIP) is required. Section 8 of this document provides a flow chart of the due diligence process.

This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely, but as an isolated scatter was found, therefore, a cultural heritage assessment adhering to the Code of Practice for Archaeological Investigation of Aboriginal objects in NSW and an AHIP is required.

As outlined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, a number of assessments and tests have been undertaken to ensure no harm is caused to places of Aboriginal significance.

This code sets out the reasonable and practicable steps that individuals and organisations need to take in order to:

- 1. identify whether or not Aboriginal objects are, or are likely to be, present in an area.
- 2. determine whether or not their activities are likely to harm Aboriginal objects (if present).
- 3. determine whether an AHIP application is required.

In following the generic due diligence process, the following processes have occurred (refer to Table 9)

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Step	Guide	Response
<i>1a. Will the proposed activity disturb the ground surface or any recorded culturally modified trees?</i>	Review project footprint in relation to the AHIMS search to determine whether the proposed activity will disturb the ground surface or involve vegetation clearance including lopping.	Yes - move to step 2a(i)
2a(i). Search the AHIMS database and determine whether any Aboriginal sites have been recorded in or within 1000 metres of the project area.	If not already undertaken, undertake 'basic' AHIMS search of the project area with a 1000 metre buffer of the project area Lot and DP. Append AHIMS basic search results	Two sites - <b>go to step 2a(ii)</b>
2a(ii). Obtain copies of AHIMS records	If not already undertaken from step 2, undertake 'extensive' AHIMS search of the project area with a 1000 metre buffer of the project area Lot and DP. Append AHIMS extensive search results ⊠ Map project area and all AHIMS results using GDA94 latitude and longitude data. If not already undertaken at step 2 above, map AHIMS results and append ⊠ Request and review copies of all site cards within the searched area. Append all site cards ⊠	Number of Aboriginal objects in the searched area: Two Aboriginal Sites In all instances, go to step 2a(iii)
<i>2a(iii). Review other sources of information to determine whether Aboriginal objects are likely to be present in the project area?</i>	If you are aware of other sources of information, you need to use these to identify whether or not Aboriginal objects are likely to be present in the project area. Previous studies Previous reports Previous archaeological surveys Review relevant Local Environmental Plan, notably Schedule 5 and maps Other Append results	As a result of step 2a(iii), are there likely to be additional Aboriginal objects or areas of Aboriginal cultural heritage sensitivity present in the project area? Yes - describe nature, extent and significance below. Go to step 2b An Aboriginal Cultural Heritage Assessment (ACHA) was undertaken in around 2000 and a second in 2010 at a Gypsum Mine nearby at the Mourquong Lake which did not locate any cultural heritage assets. An ACHA was undertaken in 2008 at the Australian Vintage Winery waste water expansion site which also did not located are areas of CH significance.

#### Table 9: Due diligencce process

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		An ACHA was conducted in 1992 for National Parks and Wildlife by J.L. Craib. The study included the area between Wentworth and Gol Gol with part of the study focusing on Lake Mourquong. During the survey along the eastern lunette of Lake Mourquong only two pieces of chipped stone were discovered, a silcrete core and a quartz flake. No cultural heritage was discovered within the survey areas on the western margins of the lake.
		Describe the expected nature, extent and significance of the Aboriginal objects and/or areas of Aboriginal cultural heritage sensitivity.
		As previous studies concluded the higher frequency of cultural heritage sites are likely to be found within one kilometre from a fresh water source. As the activity area is 1.7 kilometres from the Gol Gol Lake and 500 meters from Lake Mourquong there is a possibility of finding Aboriginal cultural heritage. The cultural heritage most likely to be found include hearths, lithic scatter, scarred trees, shell deposits and ancestral burials.
2b. Having regard to landscape features, are Aboriginal objects likely to be present in the project area?	Is any part of the proposed activity on land that is not disturbed land <u>and</u> : Within 200 metres of waters?	No boxes checked and reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the project area - no further due diligence
	On a ridge top, ridge line or	required. Proceed with caution There are no features present
	headland? 🔲 Within 200 metres below or above a cliff face? 🔲	within the project area which are likely to contain Aboriginal Cultural heritage.
	Within 20 metres of, or in a cave, rock shelter, or a cave mouth?	
	Append mapped results	
3. Can you avoid harm to the object or disturbance of the landscape feature?	Where, as a result of step 2a(i, ii, iii) you think it is likely that there are Aboriginal objects present in the project area, describe whether you can avoid harm to those objects.	Due diligence site assessment recommended.
	Where you have checked any boxes in step 2b above, describe whether you can redesign the project area to avoid the landscape feature(s).	
	Append results 🗔	

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4. Engage heritage consultant to undertake visual inspection and desktop assessment for the purposes of due diligence.	Undertake a desktop assessment of Aboriginal heritage. This must consider the project area as a whole, not just the particular area(s) where Aboriginal object(s) have been recorded on AHIMS or where landscape features are located. At a minimum this should include existing knowledge of Aboriginal cultural heritage from previous reports or studies, including any reports from AHIMS. Append results of the desktop assessment Undertake a visual inspection of the project area to determine whether Aboriginal objects are present, or likely to be present in the project area. Ground truth recorded Aboriginal objects in and adjacent to the project area. The visual inspection must be undertaken by a person with expertise in locating and identifying Aboriginal objects, i.e., a consultant with appropriate qualifications, or an Aboriginal person or landholder with experience in locating and identifying Aboriginal objects. Append results of the visual inspection	No - no further due diligence required. Proceed with caution A site inspection was conducted 18 April 2016 by Sarah Watts from Sunset Archaeological Services who holds a Bachelor of Archaeology with Honours. The site inspection included participation by Noel Johnston and Rodney Lawson of the Barkindji community. The site inspection involves a pedestrian survey which progressed on north to south transects from the western side of the project area to the eastern side. Participants were spaced between 1.5 to 4 meters apart during the physical survey providing a detailed survey of approximately 80% of the project area. Visibility during the survey varied between 50 to 80 % with the poorer areas of visibility being those around the existing trees due to leaf litter and denser low lying vegetation while the open cleared land (western side) provided great visibility with the only hindrance being small patches of grasses and ground vegetation. The western side of the project area appears to have only been disturbed by grazing animals and rabbits during warren preparation. While the eastern side of the project area has been significantly disturbed during loam extraction and later motor bike riders. It was noted there was significant amount of rubbish on the ground surface and eroding out of the soil on the eastern side suggesting repetitive ground disturbances. There are mature trees throughout the project area but none of these trees showed any signs of Aboriginal cultural scarring. At the conclusion of the onsite inspection only one site was discovered, Buronga Landfill Artefact Scatter 1, at co-ordinates E610565 N 6223164 Zone 54 and consisted of a sandstone core split in two (refer Appendix D).
Step 5. Further investigations and impact assessment	Step 5 must be undertaken by a person with expertise in Aboriginal cultural heritage management.	A cultural heritage assessment adhering to the Code of Practice for Archaeological Investigation of Aboriginal objects in NSW and an AHIP is required.

#### 4.11.1 Other cultural heritage

The State Heritage Register (NSW Environment and Heritage) database was used to determine if any areas of historic value were located on or nearby the proposed project site. There are no other known cultural heritage sites within the proposed project area. This was to be expected due to the remoteness of the proposed project area and the lack of visible remnants located through the on site assessment.

#### 4.11.2 Mitigation measures

- Follow the contingency plan outlined in Appendix E
- If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:
  - 1. Not further harm the object
  - 2. Immediately cease all work at the particular location

3. Secure the area so as to avoid further harm to the Aboriginal object 4. Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location

5. Not recommence any work at the particular location unless authorised in writing by OEH.

#### 4.12 Air quality

The nearest residence and receptor is located more than 1.2km south-west of the borrow site and the nearest public road is approximately 200m west. Given the remoteness from any residence or public road, there will be no impact from the expected minor raised dust that may occur from time to time during heavy vehicle movements and plant operation.

The key performance indicator will be no complaints or raised dust received at the residences over 1.2km away. Ongoing monitoring will occur visually by dust observed around the residences. Records of increased dust will be kept and recorded with the property's rainfall records. The response mechanism will be to stop activity causing dust if possible or to mitigate using sprayed water. Compliance will be enforced by the onsite WSC team leader.

Practices associated with earthworks that could affect air quality include bush fire, exhaust emissions from vehicles and plant and windblown dust during operational periods. To mitigate dust, rock will be applied to the road between the borrow pit and the landfill as required to minimise raised dust from transport activities.

Where dust becomes an issue, despite the laying of crushed rock, water may be sprayed over the tracks.

#### 4.12.1 Mitigation measures

- No burning of timber or other combustible materials will occur on-site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in firefighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions will be kept within manufacturers standards
- Roads between the borrow pit and landfill will be maintained to the WSC quality standards allowing efficient and safe operation

• Borrowing/carting operations will cease if severe wind conditions are present.

#### 4.13 Socio and economic

The objective of this proposal is to secure a source of cover material to allow the landfill to operate within its licence conditions. This borrow material will allow local residences to continue to use the landfill. The beneficiaries of this proposal will be local residents and businesses as they will able to continue to dispose of their rubbish and recycle products to ensure that there is as little harm to the environment as possible.

#### 4.13.1 Economic

The expected cost of the development is approximately \$220,000 by the time the borrow pits are operational. Additional costs include the maintenance of plant and equipment required for borrowing and carting cover material.

The operation will employ local drivers and operators throughout the life of the landfill. The economic returns to the local economy will be by way of income through employment. The flow-on effects are important to the Wentworth, Dareton and Buronga areas.

#### 4.13.2 Social

The proposal will not disadvantage any individuals or communities, and consultation with all known affected groups has been undertaken.

As required by any construction site in NSW, appropriate signage will be placed around the borrow area, including truck turn in, PPE and general safety signs. Due to the shallow depth of the borrow pit, no safety fencing will be required.

#### 4.13.3 Impact on the community

Although the character of the area would be slightly affected, by minimising the extent of the impact and undertaking rehabilitation, there would be minimal long-term impacts.

#### 4.13.4 Visual impact

The proposed borrow areas will have low visual impact due to the screening of native vegetation between the Arumpo Road and the project area. The Borrow areas will be converted in to landfill cells and repurposed. Ongoing rehabilitation of the existing landfill will occur once it is full.

#### 4.13.5 Mitigation measures

- Appropriate signage as required under legislation and adherence with best practice management
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.14 Transport

The proposed project will utilise existing tracks from the Arumpo Road to the borrow site. No trucks will be required to use the Arumpo Road (or any other road network) for carting borrow material between the borrow site and the landfill.

A bulldozer, front end loader, two tip trucks and up to two light vehicles will be required.

This project will be undertaken with adherence to relevant legislation and best practice management.

It is expected that a contractor and/or WSC staff will travel to the site each day (up to two light vehicles) between 6.30am and 7.30am. There may be up to 25 truck movements per day and the contractor/WSC staff will leave the site between 4pm and 6pm each evening. The impact of these additional short-term vehicle movements will not impact the existing traffic mix, consisting of local landholders, travellers and stock carting transport.

#### 4.14.1 Mitigation measures

- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.15 Noise and vibration

The main source of noise may arise from the use of heavy machinery to extract and load borrow material; and trucks to cart the material between sites. Considering the distance of the project area from the nearest residence (receptor) is over 1km away; and the hours of operation (7am to 6pm Monday to Friday and 8am to 12noon Saturday), any noise created will not cause a significant detrimental impact on the surrounding land users.

Table 10 is adapted from Bassett Acoustics (2007) in the Northern Expressway Noise and Vibration Technical Paper, which predicts noise levels without mitigation in urban environments. In rural environments, 50dB is acceptable. Noise decreases with distance, so with the nearest receptor 1km away the predicted dB will be well below acceptable limits.

Plant type	7m	25m	50m	100m	200m
Front end loader	88	77	71	65	59
Large Bulldozer	92	81	75	69	63
Road truck	83	72	66	60	54
Crushing plant	91	80	74	68	62

Table	<b>10: Predicted</b>	dB(A)	noise	levels	at vari	ious dis	tances
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Major sources of ground vibration include bulldozers (ripping), front end loaders and truck movements during work. Vibrations generated from construction and earthmoving activities are expected to be similar in magnitude as those generated from the operation of similar equipment to be used.

Ground vibration impacts at specific levels of magnitude may either:

- disturb occupants of buildings
- disturb contents of buildings by rattling, shaking or movements

• affect structural integrity of a building.

Table 11 indicates the approximate vibration levels that may be expected for various vibration sources (Bassett Acoustics, 2007). Due to the nearest receptor being over 1km away, no vibration is expected due to the large distance between activity and receptor.

# Table 11: Approximate generated ground vibration levels (mm/s) for various sources

Activity	Typical levels of ground vibration
Hydraulic rock breakers	4.5mm/s @5m
	1.30mm/s @10m
	0.4mm/s @20m
	0.10mm/s @50m
Bulldozer	1-2mm/s @5m (approx.)
	2mm/s @15m
	>0.3mm/s@<30m
Truck traffic (irregular surfaces)	0.1-2.0mm/s at footings of buildings 10-20m from a road way

#### 4.15.1 Mitigation measures

- Plant and equipment serviced and using manufacturers specified mufflers
- Borrowing operations to occur on site only during business hours (7am-6pm Monday to Friday and 8am -12pm Saturday).

#### 4.16 Bushfire hazards

Due to the nature of the proposal and the composition of vegetation species at the site, it is highly unlikely that the vegetation would carry a fire. The wide spacing of individual trees and the limited amount of dry matter of grass species present (due to the arid climate and grazing) would not be conducive to the spread of fire.

No bushfires are known to have spread through the area in the last 25 years.

#### 4.16.1 Mitigation measures

- No burning of timber or other combustible materials will occur on site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in firefighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions to be kept within manufacturers standards
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.17 Chemical and hazardous substance management

No hazardous substances will be stored on site. Limited hazardous substances will be brought on site, in particular fuels and lubricants, eg. oil, grease and distillate, as the fuel for heavy equipment will be transported as required on utility, trailer or fuel truck. Best management practices will be followed when these substances are transferred and in use as stipulated by WSC work practices. Empty containers will be taken off the site and suitably disposed of to landfill or for recycling.

#### 4.17.1 Mitigation measures

- Staff trained in best practice in chemical and hazardous substance management
- All vehicles and machinery to be regularly serviced, be in good working order and emissions to be kept within manufacturers standards
- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles serviced off-site
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- No fuels or lubricants to be stored on site
- In the event of unexpected breakdown of heavy machinery on the site, the spill kit will be used to prevent leakage of petroleum products to the soil - should soil contamination occur, soil will be removed to a licensed facility as per EPA guidelines
- Any discarded oils, worn machinery parts, damaged tyres, broken hoses or empty containers will be removed to a waste storage area on the day they are generated.

#### 4.18 Waste minimisation and management

The work site will operate in a tidy, rubbish-free state. Any wastes generated will be contained and removed from the site for recycling or safe disposal. No environmental problems are anticipated with the disposal of potential waste.

#### 4.18.1 Mitigation measures

Staff will be trained in best practice in all areas of earthworks.

#### 4.19 Stormwater management

The WSC has a stormwater management plan in place, which will be implemented throughout the life of the project. The aim of this plan is to ensure that all stormwater is retained on-site and there are no off-site impacts. The plan includes measures for maintaining current roads and borrow areas. Due to the porous nature of the loamy soil, stormwater infiltrates quickly through the soil profile and rarely causes a problem.

#### 4.19.1 Mitigation measures

- Maintain current stormwater management plan
- Install cut-off drains as required
- Install silt fences and erosion control as required
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.20 Cumulative environmental impacts

The cumulative environmental impacts of the proposal will be minimal. As stated throughout Section 4, each identified impact has been assessed for its potential threat to the environment. Mitigation measures will help minimise the impact on the proposed project area, as well as off-site impacts.

#### 4.21 Summary of mitigation measures

A range of mitigation measures will be put in place to ensure the proposal has minimal impact on the environment, both on site and off site, including:

- Daily pre-start machinery checks for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian Standards and Guidelines and conforming to leading practice
- The development will be staged, removal of trees and stripping of topsoil will only occur as required based on the demand level for cover material
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)
- Staff to be trained in best practice management in soil conservation and management
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- A spill kit will be permanently attached to the portable fuel cart, which is brought on to site each day
- All machinery to be serviced off-site
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Borrow material will only be extracted and used as required
- Borrowing will only occur during suitable conditions e.g not on days of rain, high wind or flooding
- Borrowing site to be marked out using permanent markers indicating 'no go zones'
- Species profiles to be kept on-site of threatened species that have potential to inhabitat the site
- Prior to removal of vegetation, trees shall be checked for fauna that may be present and if found, individuals shall be relocated by suitably trained and accredited persons.
- Machinery will be washed down off-site prior to entering the proposed borrow areas to ensure it is weed free
- The WSC weeds officer to monitor the area regularly
- Borrow pits and stockpiles are to be examined prior to work starting each day to remove any reptiles or other fauna that may be within the work site
- Profiles of threatened species that have potential to inhabit the site will be kept on site.

- A three step tree removal process should be undertaken where:
  - 1. the tree is hit with a hard object (ie sledge hammer or excavator bucket), five minutes before the tree is brought to the ground
  - $\circ$   $\,$  2. The tree is felled and left to remain in place overnight to allow any animals to escape
  - 3. The felled tree is removed to the stockpile location for rehabilitation at a later date.
- Follow the contingency plan outlined in Appendix E
- If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:
  - 1. Not further harm the object
  - 2. Immediately cease all work at the particular location
  - 3. Secure the area so as to avoid further harm to the Aboriginal object
  - 4. Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location
  - 5. Not recommence any work at the particular location unless authorised in writing by OEH
- No burning of timber or other combustible materials will occur on-site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions will be kept within manufacturers standards
- Roads between the borrow pit and landfill will be maintained to the WSC quality standards allowing efficient and safe operation
- Borrowing/carting operations will cease if severe wind conditions are present.
- Appropriate signage as required under legislation and adherence with best practice management
- Plant and equipment serviced and using manufacturers specified mufflers
- Borrowing operations to occur on site only during business hours (7am-6pm Monday to Friday and 8am -12pm Saturday).
- Maintain current stormwater management plan
- Install cut-off drains as required
- Install silt fences and erosion control as required
- Staff trained in best practice in chemical and hazardous substance management
- No fuels or lubricants to be stored on site
- In the event of unexpected breakdown of heavy machinery on the site, the spill kit will be used to prevent leakage of petroleum products to the soil - should soil contamination occur, soil will be removed to a licensed facility as per EPA guidelines
- Any discarded oils, worn machinery parts, damaged tyres, broken hoses or empty containers will be removed to a waste storage area on the day they are generated.

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## 5.0 Risk Management

Table 12 provides an overview of the risks associated with the proposed project. The table should be read down the left hand side column to identify the issues at the site and then the activities, processes or facilities are listed across the top of the table.

The table has been completed using a risk assessment of low (L), medium (M) and high (H) and not applicable (n/a).

#### HPRM Ref: DOC/16/9975

W1602

	Weeds and pests	Fauna	Flora	Solis	Groundwater	Surface water	Erosion and sedimentation	Floodplain and riparian habitat	Hydrology and geomorphology	Natural resources use	Tssue
x	$\overline{r}$	e	3	3	r.	ē	r.	E	5	х	Land preparation, vegetation & topsoil
•	e	e	e.	x	e:	e	e	r	10	r:	All quarrying activities including earth moving
~	е.	-	3	z	e:	r.		e	÷	e	Mine development and mining, surface &
-	r	-	r	3	~	e	~	r	÷	r	Use/maintenance of roads, tracks and
ŗ.	r	٠	٣	-	•	r		۴	r	٠	Waste rock emplacement management
-	$\overline{\mathcal{D}}$	-	$\overline{\mathcal{T}}$	1	5	۲	1	ŝ	1	ŝ	Mineral processing facilities and operations
۴	7	Ŧ	÷.	r	e'	9	r	ñ	٣	٣	Dre/product stockpiling and handling
N.	n/a	n/a	n/a	n/a	n/a	ala	n/a	n/a	7/a	n/a	Tailings impoundment management
5	ŝ.	-	r	r.	r.	÷.		Ξ.	x	ž	water management of including storm event
17	5		e.,	æ	5	(F	<i></i>		5	e	Hazardous materials & Dig fuel, handling/spills
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sewerage
-	•		e		٣	e.	·r-			r	Other infrastructure use and operation
<del>+</del> -:	e.	-	ir.	-	r:	e	-	F		e	Rubbish disposal
r	5	÷.	e	÷	$\tilde{\mathcal{C}}^{i}$	(r	5	Ē.	x	5	Rehabilitation activities
٣	e.	٣	Ţ.	r	٣	e.	£	ŝ	٣	5	Rehabilitation maintenance, pending
٣	$\overline{\tau}$	٣	r.	r	7	ΞĒ.	~	Ē	-	r.	Rehabilitated land and

# Table 12: Environmental Risk Identification Matrix

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Legend	Stormwat	Waste mid	Chemical substance	Bushfire h	Noise and	Transport	Socio and	Air quality	Issue
- L=Low, M=med	er management	timisation and mgt	and hazardous management	uzards	vibration		economic		
lum, n/	15	Ē	e	c	r.	E.	r.	π	Land preparation, vegetation & topsoil
a not a	er.	e.,	æ	<i>.</i>	٣	E.	٣	<i>n</i>	All construction activities including earth moving
pplicabl	٣		r	e.	e.	5	ie.		Mine development and mining, surface &
ñ	٣	e		e	:r=-	e	÷	r	Use/maintenance of roads, tracks and
	-	ë	~	٠	e	F	r	×	Waste rock emplacement management
	٣	ē.	5	5	5	5	7	30	Mineral processing facilities and operations
	٣	5		(ŋ	Ϋ́,	Ĕ.	٣	Ċ	Ore/product stockplling and handling
	n/a	n/a	n/a	n/a	n/a	n/a	7/2	n/a	Tailings Impoundment management
	٣	ŕ	7	۲	٣	r.	٣	۴	water management including storm event
	Ē	r		r	r.	ē	e.	π.	Hazardous materials & fuel, handling/spills
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sewerage
	r	ĸ	r	. e	æ.	٣	*	e	Other infrastructure use and operation
	r	÷	-	r	<b>P</b> .	r	( <b>1</b> 7)	n	Rubbish disposal
	е.	٣	•	i re	*	r	۴	#	Rehabilitation activities
	٣	٣		ie.		r,	r	٣	Rehabilitation maintenance, pending
	٠	ŝ	÷	÷	F	ē.	e	5	Rehabilitated land and remaining features

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Activity, Process or Facility

HPRM Ref: DOC/16/9975

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## 6.0 Summary of impacts and conclusions

Table 13 summarises the potential impact of the project, following a thorough on site assessment and various database searches on threatened species and cultural heritage. Overall, the level of impact is expected to be low and this is further reduced through the implementation of mitigation measures summarised in Section 4.

Section	Potential Impact	Summary of Impacts
4.1	Natural resource use	Removal of borrow material
4.2	Hydrology and geomorphology	No impact
4.3	Erosion and sedimentation	No impact
4.4	Surface water	No impact
4.5	Groundwater	No impact
4.6	Soils	Removal and stockpile of topsoil for respreading, borrow material for landfill cover
4.7	Matters of NES	No impact
4.8	Flora	Removal of vegetation, no impact on threatened species
4.9	Fauna	No impact on critical habitat for threatened species
4.10	Weeds and pests	No impact
4.11	Heritage	Unlikely impacts to unknown sites and objects based on desktop and on site assessment. AHIP will be gained for the open site located as part of the due diligence process.
4.12	Air quality	Some vehicle emissions and dust from borrowing activity, will not cause problems due to low population density
4.13	Socio and economic	No adverse impacts
4.14	Transport	No public roads to be used for carting activities
4.15	Noise and vibration	Use of machinery to extract, load and cart borrow material
4.16	Bushfire hazards	No impacts
4.17	Chemical and Hazardous Substance	No impacts, none stored on site, oils, grease, fuel
4.18	Waste Minimisation	No impacts
4.19	Stormwater Management	No off-site impacts

Table 13: Summary of	potential impacts
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#### 7.0 References

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# Appendix B: Assessment of significance and threatened species searches

### Assessment of significance for borrow pit development adjacent to Buronga Landfill

#### Introduction

This assessment of significance is part of the review of environmental factors, 28km west of Wentworth, NSW. The proposed borrow pit location is located north of the existing licence landfill known as Buronga Landfill.

The objective of this proposal is to secure a source of borrow material (soil) to be used for daily cover as required under the landfills environmental protection licence. The proposal is to extract borrow material up to 13m deep across up to five (5) new cells. The proponent is the Wentworth Shire Council (WSC).

In respect to terrestrial biodiversity values, the area has been modified (grazing, vegetation clearing, and quarrying) and contains the species commonly found in such environments, including native grasses, rangeland groundcover and introduced species.

The proposed works occur within the WSC municipal area and within the Local Lands Service - Western. The proposed borrow site is located in the Murray Darling Depression Bioregion.

According to the NSW Native Vegetation Classification and Assessment Project (NSWVCA), the vegetation at the site is classified as:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116).

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed quarrying site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report

The following threatened species have potential to occupy the site and have triggered a seven part assessment of significance:

- Spotted Harrier (Circus assimilis)
- Little Eagle (*Hieraaetus morphnoides*)
- Square tailed-kite (Lophoictinia isura)
- Major Mitchell's Cockatoo
   (Lophochroa leadbeateri)
- Purple-crowned Lorikeet (Glossopsitta porphyrocephala)

#### Spotted Harrier (Circus assimilis) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Spotted Harrier is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – Spotted Harrier is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

(g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Little Eagle (Hieraaetus morphnoides) (Vulnerable - NSW))

(a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. The species occupies open eucalypt forest, woodland or open woodland. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Little Eagle is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Little Eagle is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

# (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Square tailed-kite (Lophoictinia isura) (Vulnerable- NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A - The Square tailed-kite is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Square tailed-kite is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

## (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Major Mitchell's Cockatoo (Lophochroa leadbeateri) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Major Mitchell's Cockatoo is found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the southwest Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Major Mitchell's Cockatoo is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Major Mitchell's Cockatoo is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

# (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

## (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Purple-crowned Lorikeet (Glossopsitta porphyrocephala) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the boxironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

# (b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Purple-crowned Lorikeet is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Purple-crowned Lorikeet is not considered an endangered ecological community, but a single species.

# (d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

# (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act 1995* Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Conclusions

The assessment of significance for:

- Spotted Harrier (Circus assimilis)
- Little Eagle (*Hieraaetus morphnoides*)
- Square tailed-kite (Lophoictinia isura)
- Major Mitchell's Cockatoo (Lophochroa leadbeateri)
- Purple-crowned Lorikeet (*Glossopsitta porphyrocephala*)

revealed that the potential impacts of the proposal on these threatened species are extremely unlikely and where there could be potential impacts they will be very low. Potential minor impacts resulting from the proposed quarry are not expected to increase the likelihood of a threatened or endangered species becoming extinct.

The assessment of significance for these threatened species does not trigger the requirement for a species impact statement (SIS). The proposal is deemed to be non-significant for the assessed

species. In determining the significance of the proposed works on threatened species, the following matters were taken into consideration:

- implementation of the proposed works, including pre construction, construction, operation and maintenance phases
- activities to be undertaken in the area following the proposed works
- all direct and indirect impacts, on and off site impacts through all phases
- the frequency and duration of each known or likely impact/action
- the total impact which can be attributed to that action over the entire geographic area affected initially and over time
- the sensitivity of the receiving environment
- the degree of confidence with which the impacts of the action are known and understood.

#### References

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Garnett S, Crowley G (Eds) (2000) 'The Action Plan for Australian Birds 2000'. (Environment Australia: Canberra)

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McAllan, I.A.W. 1987. Early records of the Thick-billed Grasswren Amytornis textilis and Striated Grasswren Amytornis striatus in New South Wales. Australian Birds 21: 33-43

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## EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 07/02/16 21:47:15

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates Buffer: 5.0Km

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#### Summary

#### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the <u>Administrative Guidelines on Significance</u>

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities;	2
Listed Threatened Species:	16
Listed Migratory Species:	8

#### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans;	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

#### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves.	None	
Regional Forest Agreements:	None	
Invasive Species:	24	
Nationally Important Wetlands:	None	
Key Ecological Features (Marine)	None	

#### Details

#### Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information ]
Name	Proximity
Banrock station wetland complex	150 - 200km upstream
Riverland	100 - 150km upstream
The coorong, and lakes alexandrina and albert wetland	200 - 300km upstream

#### Listed Threatened Ecological Communities

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans. State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
River Murray and associated wetlands, floodplains and groundwater systems, from the junction with the Darling River to the sea	Approval Disallowed	Community may occur within area
Listed Threatened Species		[Resource Information ]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Manorina melanotis		
Black-eared Miner [449]	Endangered	Species or species habitat may occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Extinct within area
Polytelis anthopeplus monarchoides		
Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Craterocephalus fluviatilis		

Murray Hardyhead [56791]

Endangered

Species or species habitat likely to occur within area

[Resource Information ]
Name	Status	Type of Presence
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Frogs		
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Phascelarctos cinereus (combined populations of Qld,	NSW and the ACT)	
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Plants		
Lepidium monopiocoldes Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area
Solanum karsense		
Menindee Nightshade [7776]	Vulnerable	Species or species habitat likely to occur within area
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species		[ Resource Information ]
* Species is listed under a different scientific name on t	he EPBC Act - Threatene	d Species list.
Manual	There is a part of the	Town of Decars
Name	Inreatened	Type of Presence
Name Migratory Marine Birds	Threatened	Type of Presence
Name Migratory Marine Birds Apus pacificus	Threatened	Type of Presence
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678]	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flaxa Yellow Wagtail [644] Migratory Wetlands Species	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
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Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874] Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Threatened	Type of Presence         Species or species habitat         likely to occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area         Species or species habitat         known to occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea ibis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874] Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] Tringa nebularia		Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area Species or species habitat likely to occur within area Species or species habitat likely to occur within area

Listed Marine Species		Resource information
<ul> <li>Species is listed under a different scientific nan</li> </ul>	ne on the EPBC Act - Threa	tened Species list.
Name	Threatened	Type of Presence
Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucodaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula henohalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

### Other Matters Protected by the EPBC Act

### Extra Information

#### Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris		
Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula		
Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris		
Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus		
Goat [2]		Species or species habitat likely to occur within area
Felis catus		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis		
Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus		
House Mouse [120]		Species or species habitat likely to occur within area
Orvetolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus		
Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sue serofa		
Pig [6]		Species or species habitat
		likely to occur within area
Vulpes vulpes		2
Red FOX, FOX [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides		
Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area

Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish

Species or species

Name Status	Type of Presence
Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Carrichtera annua	habitat may occur within area
Ward's Weed [9511]	Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera	
Boneseed [16905]	Species or species habitat likely to occur within area
Cylindropuntia spp.	
Prickly Pears [85131]	Species or species habitat likely to occur within area
Lycium ferocissimum	
African Boxthorn, Boxthorn [19235]	Species or species habitat likely to occur within area
Opuntia spp.	
Prickly Pears [82753]	Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii	
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]	Species or species habitat likely to occur within area

### Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties. Wetlands of International and National Importance. Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the gualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans. State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations: bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

### Coordinates

-34.12239 142.20254

### Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Parks and Wildlife Commission NT, Northern Territory Government -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbanum -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbanum -Australian National Herbarium, Atherton and Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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### Appendix E: Cultural Heritage Contingency Plan

HPRM Ref: DOC/16/9975

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### Appendix D: Artefact Scatter 1 – site card

### STILL BEING PROCESSED NOT YET AVAILABLE



#### AHIMS Web Services (AWS) Extensive search - Site list report

Your Rel/PC Number : Buringe Lendfil 2 Client Scivice (D: 220235

Siteff	SlicName	Datam	Zonc	Easting	Northing	Contest	Site Status	Sitefeatares	SiteTypes	Septerts
10-3-0022	Disconga Lisan Pir.1	SDA	34	611120	62231039	Open site	Valid	Artiefact: T		
	Contact Search	Recorders	Tini	Cipsile Er	irth			Periolis	2493	
96-3-6993	Barrings Louis Pit 2	GDA	54	611900	6723676	Opensite	Valid	Artelact 1		
	Contact Searly	Recordera	Time	e Caprale fia	cth			Ecculta	3495	

Report generated by AHMS Web Service on 12/04/2016 for Chris Alderton for the following area at Lot : 1, DP,DP1037045 with a Buffer of 1000 meters. Additional Infe: BEF, Number of Aboriginal Sites and Aboriginal objects found is 2. This internation is not paramined to be free from their error examine. Offer of December and December (9756) and its explores and low buffers for any or they are manifer and on the inferences and componences of area at the transmiss.

Netlati

#### If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of
  practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

#### Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are
  recorded as grid references and it is important to note that there may be errors or omissions in these
  recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



### AHIMS Web Services (AWS) Search Result

Purchase Order/Reference Buronga Landfill 2 Client Service ID : 220335

Chris Alderton

c/o Springton Post Office Springton South Australia 5235 Attention: Chris Alderton Email: chris\_alderton@hotmail.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot: 1, DP:DP1037845 with a Buffer of 1000 meters, conducted by Chris Alderton on 12 April 2016.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

2	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Date: 12 April 2016

greenedge

### Appendix C: AHIMS Database Search

NSW Endangered Ecological Communities

Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (\* rounded to 0.1Å\*; \*\* rounded to 0.01Å\*). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Public Report of all Valid Records of Communities in selected area [North: -34.05 West: 142.14 East: 142.24 South: -34.15] returned 0 records for 3 entities. Report generated on 9/02/2016 9:57 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	N5W status	Comm. status	Records	info
Community		1	Acacia Ioderi shrubland Acacia melvillei Shrubland in the Riverin			E3		P	i	
Community				Acacia metvillei Shrubland in the Riverina and Murray-Darling Depression bioregions		Acacia melvillei Shrubland in the Riverina and Murray- Darling Depression bioregions	E3		ĸ	i
Community				Sandhill Pine Woodland in the Riverina, Murray- Darling Depression and NSW South Western Slopes bioregions		Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	63		P	1

#### NSW threatened and endangered fauna

Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Å\*; \*^ rounded to 0.01Å\*). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Public Report of all Valid Records of Animals in selected area [North: -34.05 West: 142.14 East: 142.24 South: -34.15] returned a total of 1.096 records of 177 species. Report generated on 9/02/2016 9:54 PM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	
Animalia	Amphibia	Hylidae	3207	Litoria raniformis	Southern Bell Frog	E1,P	v	1	H
Animalia	Aves	Anatidae	0214	Stictonetta naevosa	Freckled Duck	V,P		1	
Animalia	Aves	Accipitridae	0218	Circus assimilis	Spotted Harrier	V,P		3	-
Animalia	Aves	Accipitridae	0225	Hieraaetus morphnoides	Little Eagle	V,P		2	1
Animalia	Aves	Accipitridae	0230	^^Lophoictinia isura	Square-tailed Kite	V,P,3		1	
Animalia	Aves	Rostratulidae	0170	Rostratula australis	Australian Painted Snipe	E1,P	E	4	-
Animalia	Aves	Scolopacidae	0163	Calidris acuminata	Sharp-tailed Sandpiper	p	C,J,K	1	
Animalia	Aves	Scolopacidae	0161	Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	1	
Animalia	Aves	Cacatuidae	0270	ALophochroa leadbeateri	Major Mitchell's Cockatoo	V,P,2		2	1
Animalia	Aves	Psittacidae	0259	^^Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V,P,3		1	i
Animalia	Aves	Meliphagidae	8303	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		8	i
Animalia	Aves	Pachycephalidae	0403	Pachycephala inornata	Gilbert's Whistler	V,P		5	
Animalia	Mammalia	Dasyuridae	1008	Dosyurus maculatus	Spotted-tailed Quoll	V,P	E	1	

## Contingency plan in the event of Aboriginal material being found

Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:

1. Not further harm the object;

2. Immediately cease all work at the particular location;

3. Secure the area so as to avoid further harm to the Aboriginal object;

 Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location; and

5. Not recommence any work at the particular location unless authorised in writing by OEH.

HPRM Ref: DOC/16/9975

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Appendix F: Site Photos



### **Buronga Landfill Expansion**

Amendment Report

Appendix E – Letters of Support

### **Wentworth Shire Council**

SSD-10096818 8 February 2023 Ref: 202597R07





ramjo.nsw.gov.au

1 February 2022	
Ken Ross	
General Manager	
Wentworth Shire Council	
26-28 Adelaide St	
Wentworth NSW 2648	

Kirstie Muntz
Resource Recovery Lead
RAMJO
533 Kiewa Street,
Albury NSW 2640

To whom it may concern,

## Re: Letter of support for Buronga Landfill development into a regional disposal and resource recovery facility

Wentworth Shire Council is part of RAMJO Murray Waste Group, a voluntary regional waste group formed to provide collaborative approaches to waste and resource management.

RAMJO is supportive of the development of the Buronga Landfill into a regional disposal and resource recovery facility. The management of residual material collected within our Member Council areas is seen as an important part of our social and operational responsibilities. The expansion of the Buronga Landfill has the potential to become a critically important part of the future strategic direction of some of our member council's as they continue to plan to ensure that they can effectively and efficiently manage the future waste needs of their communities.

The above-mentioned development fits well with Wentworth Shire Council's philosophy of reducing its impact on the environment by minimising waste.

RAMJO is excited to be part of this valuable development which will maximise recycling and recovery of available waste streams for Wentworth and surrounding councils in both New South Wales and Victoria, and strongly supports Wentworth Shire Council's proposed landfill expansion.

Please contact me on 0439 630 612 or at <u>kmuntz@alburycity.nsw.gov.au</u> if you require any further information.

Regards,

Kirstie Muntz RAMJO Resource Recovery Project Lead







FEDERATION











File: 17/04/03 21 October 2022

Ken Ross **General Manager** Wentworth Shire Council 26-28 Adelaide Street WENTWORTH NSW 2648

Dear Ken

### LETTER OF SUPPORT FOR EXPANSION OF BURONGA LANDFILL

Further to our discussions and your request for a letter of support on the expansion of the Buronga landfill, I can confirm that there have been multiple discussions between Wentworth Shire Council (WSC) and Mildura Regional City Council (MRCC) over many years and that MRCC supports WSC's application for the expansion of the site and its ability to receive additional waste volumes.

The most recent of these having taken place on 20 October 2022, however I am aware of numerous additional instances prior to this when representatives of the two Councils have met to go through waste issues and how management of collected materials could benefit through a co-ordinated approach between the two parties.

Our close proximity and intertwined communities dictate the need for a close working relationship in many areas with waste being just one of them. This is highlighted and exampled by our joint tendering activities in this area that have been undertaken on several occasions previously.

MRCC's existing waste disposal facility has a limited life and whilst we will be continuing to implement resource recovery initiatives and employ the principles of circularity in many Council practices, it is anticipated that landfill will have an ongoing role in our broader management of residual materials for many years to come.

With this in mind, MRCC believes it is important to ensure options exist for the disposal of this material in a safe and cost effective manner that can be called upon should the need arise.

This has been highlighted in our Waste and Resource Recovery Strategy, 2022-2026 which states:

T 03 5018 8100 E mrcc@mildura.vic.gov.au

Deakin Avenue Service Centre 76 Deakin Avenue, Mildura Madden Avenue Service Centre 108 Madden Avenue, Mildura Ouyen Service Centre 79 Oke Street, Ouyen

To: Ken Ross File: 17/04/03 21 October 2022 Page 2

### Working in Collaboration with other Councils

The Mildura Landfill has a limited airspace with Council ceasing landfilling by 2040 and Council will need to source another option to send waste going to landfill. Work undertaken by Blue Environment in 2020 Operational and Financial Assessment of Mildura Landfill for Future Closure identifies Buronga Landfill in Wentworth Shire Council as the closest and least-cost alternative option. Council is open to working in collaboration with other Council's such as Wentworth Shire Council to provide waste and recycling services for our region. As there is cross border flows of waste and recycling between the States, and to other regions in Victoria, we are open to working with other Council's on achieving resource recovery goals.

A copy of this document is attached for your reference.

We trust this addresses your need for relevant supporting information to meet the needs of the assessing authority for your application however if anything further is required, please don't hesitate to contact me.

Yours sincerely

With

MARTIN HAWSON CHIEF EXECUTIVE OFFICER

enc

MH/hj

**ABN** 42 498 937 037 **P** PO Box 105, Mildura, Victoria 3502 **DX** 50014, Mildura www.mildura.vic.gov.au T 03 5018 8100 F 03 5021 1899 E mrcc@mildura.vic.gov.au Deakin Avenue Service Centre 76 Deakin Avenue, Mildura Madden Avenue Service Centre 108 Madden Avenue, Mildura Ouyen Service Centre 79 Oke Street, Ouyen

### **Buronga Landfill Expansion**

Amendment Report

Appendix F – LFG Typical Details

### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07





LEGEND							
⊗ MWxx	WELL (NEW)						
⊗ MWxx	WELL (EXISTING)						
XX	WELLHEAD MANIFOLD						
	J-TRAP						
$\star$	BAROMETRIC TRAP						
×	FLARE						
$\bullet$	SURVEY DATUM						
	LEACHATE PIT						
$\bowtie$	VALVE PIT						
/	PERIMETER FENCE						
	EXTENT OF WASTE						
	LICENCE BOUNDARY						

## **BIOGAS SYSTEMS**

### GAS FIELD LAYOUT AND LEGEND

### BGSD-001

100mm ON ORIGINAL PRINT. DO NOT SCALE drawing file: BGSD-001\_Typical Gas Labels.dwg Plot Date: 12/8/2021 5:34 PM



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	06/21			PS				SHEET SIZE: A3 REV: 1	-
REV	DATE		DES	DRN	СНК	APPR	зузсень		k



drawing file: BGSD-017\_TYPICAL TRENCH DETAILS.dwg Plot Date: 12/8/2021 5:35 PM

## BGSD-017

### TYPICAL TRENCH DETAILS

## **BIOGAS SYSTEMS**

HAUNCHING AND INITIAL BACKFILL (PIPE OVERLAY) MATERIAL TO COMPLY WITH REQUIREMENTS OF BEDDING MATERIAL.

## WELL DIMENSIONS

WELL DEPTH (m)	<b>'A' (mm)</b> Clay plug	' <b>B' (mm)</b> BLUE METAL GRAVEL PACK	<b>'C' (mm)</b> 4x10mm HOLES @ 100mm CTS
6	2400	3600	2000
8	3000	5000	2000
10	3500	6500	2000
12	3500	8500	2000
15	4000	11000	5000
16	4000	12000	6000
18	4000	14000	8000
25	4000	21000	15000







## LMS GAS FLARE



The LMS Gas Flare provides Australia's most proven flare for the clean combustion of landfill biogas. LMS have engineered this technology by drawing on more than 35 years of biogas combustion experience. LMS flares have been purpose built for the landfill environment and their performance in terms of total carbon abated from Australian landfills is unmatched.

With a fleet of more than 100 LMS Gas Flares, they are proven for continuous reliable operation over many years and all environments. As the manufacturer LMS maintains a full inventory spare parts, such that in the unlikely event of a system failure, any service part that is required will be immediately available. This is backed by our local service capacity, with experienced and appropriately qualified service technicians based around Australia.

The LMS Gas Flare has the capability for high destruction efficiencies and a low noise to ensure compliance with environmental regulations.

These compact flares are designed for rapid deployment and are suitable for both mobile and permanent installations on natural ground or capped landfill.

#### Technology

The LMS Gas Flares are equipped to operate remotely and can be monitored through a user friendly PLC interface, providing continuous flame detection linked to advanced burner control hardware with automated dial out alarms.

#### Environment

Temperature maintenance and control of flue gas retention time is vital to ensure efficient destruction of pollutants. This is enhanced by multiple burner configurations, control of primary and secondary air, and thermal insulation within the combustion chamber that also reduces audible noise.

#### Safety

Anti-flash back considerations and liquid collection are required to ensure a safe and reliable system. The gas supply line is fitted with a slam shut solenoid valve and an in line flame arrestor. Constant flame fail detection, incorporating system shut down and isolation, safeguard against any unburnt gases emitting to the atmosphere.



# LMS Gas Flare Specifications

MODEL	LMS Standard Landfill Biogas Flare	
FLOW CAPACITY	Multi Stage – 50m³/hour – 1,000m³/hour (20:1 turndown)	
COMPLIANCE	Clean Energy Regulator (carbon credit generation) AS/NZS 5601 AS 3814 (Type B Gas Device) AS60079 IECEx (Hazardous zoning & electrical equipment) AS/NZS 3000:2018 (wiring) EPA (>98% destruction efficiency)	
COMBUSTION	Retention inspirators Combustible methane range 25% to 95% by volume Maximum energy combustion 19,000MJ/hour Combustion Temperature >760 C	
FLUE STACK	Insulated stainless steel (7 metres)	
TRANSPORT	Modularised on a 6 m shipping container platform	
INSTALLATION	Less than 1 Day	
MONITORING	Continuous with automated alarms and shut down Remote access for data and systems control and restarting Automated data to cloud	
GAS FEED	Centrifugal blower incorporating variable speed drive control 1,000m <sup>3</sup> /hour maximum delivery (dependent gas quality and volume available) Maximum suction pressure, minimum discharge pressure combined 15kPa Methane analyser with built in alarms In line gas flow meter	
FILTRATION	Stainless steel liquid knock out pot fitted with stainless steel demister pads and pre-gas entry filter.	
POWER SUPPLY	415v3 phase	
SAFETY ENGINEERING	Hazardous Area Dossier Automated slam shut and manual isolation valves Flame detection incorporating auto shut down Remote PLC automation Flame arrestor Schedule 10S stainless steel pipe work Gas isolation valves In line pressure transmitters and test points Condensate level indicator Flash back temperature sensor Self-contained and lockable Filter in intake manifold Lockable electrical control panel/cabinet	
DIMENSIONS	Length – 6 metres Width – 2.4 metres Total height at stack – 8 metres	

LMS ENERGY Pty Ltd 79 King William Rd, Unley SA 5061 T +61 (08) 8291 9000 www.lms.com.au info@lms.com.au © Copyright LMS 2021



## LMS Low-Cal Flare Specifications

MODEL	LMS Low-Cal Landfill Biogas Flare	
FLOW CAPACITY	Multi Stage – 25m3/hour – 250m3/hour (10:1 turndown)	
COMPLIANCE	Clean Energy Regulator (carbon credit generation) AS/NZS 5601 AS 3814 (Type B Gas Device) AS60079 IECEx (Hazardous zoning & electrical equipment) AS/NZS 3000:2018 (wiring) EPA (>98% destruction efficiency)	
COMBUSTION	Retention inspirators Combustible methane range 20% to 95% by volume Maximum energy combustion 4,900MJ/hour Combustion Temperature >760 C	
FLUE STACK	Insulated stainless steel (7.4 metres)	
TRANSPORT	Modularised on a 3.7 m x 1.4 m galvanised steel base frame	
INSTALLATION	Less than 1 Day	
MONITORING	Continuous with automated alarms and shut down Remote access for data and systems control and restarting Automated data to cloud	
GAS FEED	Centrifugal blower incorporating variable speed drive control 250m3/hour maximum delivery (dependent gas quality and volume available) Maximum suction pressure, minimum discharge pressure combined 10kPa Methane analyser with built in alarms In line gas flow meter	
FILTRATION	Stainless steel liquid knock out pot fitted with stainless steel demister pads and pre-gas entry filter.	
POWER SUPPLY	415v3 phase	
SAFETY ENGINEERING	Hazardous Area Dossier Automated slam shut and manual isolation valves Flame detection incorporating auto shut down Remote PLC automation Flame arrestor Schedule 10S stainless steel pipe work Gas isolation valves In line pressure transmitters and test points Condensate level indicator Flash back temperature sensor Lockable electrical control panel/cabinet Refractory lined combustion chamber	
DIMENSIONS	Length – 3.7 metres Width – 1.4 metres Total height at stack – 7.4 metres	



## LMS Dual Stack Flare Specifications

MODEL	LMS 7000 Series Dual Stack Landfill Biogas Flare
FLOW CAPACITY	Multi Stage – 50m3/hour – 2,000m3/hour (40:1 turndown)
COMPLIANCE	Clean Energy Regulator (carbon credit generation) AS/NZS 5601 AS 3814 (Type B Gas Device) AS60079 IECEx (Hazardous zoning & electrical equipment) AS/NZS 3000:2018 (wiring) EPA (>98% destruction efficiency)
COMBUSTION	Retention inspirators Combustible methane range 25% to 95% by volume Maximum energy combustion 38,000 MJ/hour Combustion Temperature >760 C
FLUE STACK	Insulated stainless steel (8.5 metres)
TRANSPORT	Modularised on a 6 m shipping container platform
INSTALLATION	3 Days
MONITORING	Continuous with automated alarms and shut down Remote access for data and systems control and restarting Automated data to cloud
GAS FEED	Via external delivery system with methane detection 2,000m3/hour maximum delivery (dependent gas quality and volume available Maximum supply pressure 35kPa In line gas flow meter
FILTRATION	Via external delivery system
POWER SUPPLY	240VAC
SAFETY ENGINEERING	Hazardous Area Dossier Automated slam shut and manual isolation valves Flame detection incorporating auto shut down Remote PLC automation Flame arrestor Schedule 10S stainless steel pipe work Gas isolation valves In line pressure transmitters and test point Flash back temperature sensor Self-contained and lockable (optional) Lockable electrical control panel/cabinet Refractory lined combustion chamber
DIMENSIONS	Length – 6 metres Width – 2.4 metres Total height at stack – 8.5 metres

### **Buronga Landfill Expansion**

Amendment Report

Appendix G – CIV

### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07





Project Name: Buronga Landfill Expansion

Report: Concept Design Estimate No. 2 (V5)



### Introduction

- A Capisce Qs has been requested by Tonkin to provide a Concept Design Estimate based upon current documentation for the Buronga Landfill Expansion Wentworth Shire Council, New South Wales.
- B Works comprise of the following:

#### Stage 1A to 1D

- Excavation and stockile of material materials to form landfill area
- Lining of landfill base in accordance with NSW guidelines (as advised)
- Incorporation of stormwater pond including swale drainage channels
- Forming leachate pond including pipework

Cell Cap (Stage 1A to 1D)

- 1000m subsoil / overburden
- 200mm topsoil
- Light vegetation covering

#### Additional Facilities

- 35m x 20m Front End Recycling Facility / Resource Recover area (rubble hardstand, 150m2 enclosure with 15m2 carport adjacent)

- 35m x 25m Community Transfer Area (concrete hardstand with 15m x 10m unenclosed open canopy)
- Relocation of transportable Administration Building (to alternate location within site)
- New Administration Building and Amenities (ATCO transportable or similar)
- 20m x 15m Maintenance Area (concrete hardstand with 150m2 unenclosed open canopy)
- 4,200m of unsealed haul road around perimeter of landfill
- 29m x 20m Residual Drop-Off Area (concrete hardstand)

### **Assumption**

- A Our estimate is based on a single construction utilising Lump Sum procurement approach and excludes GST;
- B We have priced the works based on current rates. We have not been informed when works will commence or to be completed therefore we have made no allowance for escalation costs;
- C We have excluded Stage 2 works from this Cost Estimate as advised;
- D We have allowed for an approximate site area of 193,400m2 (Stage 1A to Stage 1D) as measured on plan from the Proposed Cell Layout Drawing;
- E We assume a cell lining for the entire Stage 1 area is carried out concurrently (ie. no allowance for individual staged cell lining within Stage 1);
- F We assume there is sufficient area on site to stockpile excavated material;
- G We have included cut volumes of 1,544,650m3 as advised by Tonkin;
- We have included PC Sum allowance for the clearance of vegetation (trees / shrubs, etc.) within Stage 1 works pending investigation;
- We have assume a 1:3 batter (based on a 2m depth) to the perimeter of Stage 1 area;
- J We assume compacted engineered fill material is locally sourced pending investigation;
- K We have included a cell cap to the entirety of stages 1A to 1D. This does not take into consideration staging of capping works or escalation in costs to the date of capping completion (timeline or program of capping not defined). This is an indicative figure only in order to understand cost implications for capping;

### P0292 - Buronga Landfill Expansion Project: P0292 - Buronga Landfill Expansion Cost Plan: Concept Design Estimate No. 2 (V5)

Rev: Initial



**Basis of Estimate** 

- L We have included an allowance for dust management within each activity (Cell Formation and Cell Cap) based on a 6 month program. This allowance is indicative only and is subject to change once a project program is established;
- M We assume stormwater drainage will be in the form of open swales (no allowance for in-ground pipework and pits);
- N We have assumed thicknesses of pavements for the Additional Infrastructure areas as detailed within the Cost Estimate;
- O We have allowed for a 4200mm long unsealed haulage access road as advised. We assume a width of 8m for the unsealed haulage road;
- P We have included indicative cost estimates for the Landfill Gas Management System. We highlight that these indicative cost estimates are based on industry references and are subject to change pending further assessment of the Buronga site requirements;
- Q We have allowed for 85 No. Gas Wells including associated pipework as advised by Tonkin;
- R We have included a 14% contingency allowance for LFG Management Systems;
- S We have made no allowance for locality loading we assume all contractors will be locally based;
- T Escalation as requested, we have made allowance for escalation for the next 10 years (2032), we note that this escalation value is only an indicative figure it is subject to vary depending on the climate / industry conditions. The escalation value within the cost plan should be taken as a guide only;
- U We have made the following allowances for the project and they are:
- V 5% of construction cost for Design Development Contingency;
- W 8% of construction cost for Contractors Preliminaries and Supervision;
- X 3% of construction cost for Contractors Margin and Overheads;
- Y 5% of construction cost for construction contingency;
- Z Refer to estimate for detailed assumptions;

### **Exclusion**

- A Stage 2 Works as advised;
- B Professional fees;
- C Statutory fees;
- D Interest & Holding charges;
- E Escalation to commencement program TBA;
- F Land & Legal costs;
- G Latent conditions;
- H Hazardous and contaminated material removal (such as asbestos);
- I Contaminated material removal or rectification works;
- J De-watering / site drainage (construction drainage);
- K Gross pollutant traps / silt traps;
- L Soil stabilisation;
- M Filtering Stations;

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- N Processing Plants;
- O Weigh Stations.
- P Bridges and culverts;
- Q Kerbing and stormwater infrastructure to access roads;
- R Costs associated within services infrastructure such as electrical, communication, water, gas etc;
- S Temporary cell access roads;
- T Gas management / LFG Flare location as the gas generation rates are unknown, it is not possible to quantify required gas flares;
- U Removal or modification to Aboriginal Artifact Site;
- V Temporary cell access roads;
- W Cell cap to existing landfill area;
- X Locality Loading;
- Y After hours work;
- Z Goods & Services Taxation (GST);
- AA Refer to Estimate for other detailed exclusions;

### **Documents Used**

- A This estimate is based on the following documentation received:
- B 202597 011 Proposed Cell Layout
- C 202597 012 Proposed Top of Cap Contours
- D 202597 013 Stormwater Management Stage 1
- E 202597 017 Water Supply
- F 202597 019 Internal Road Expansion
- G Subsequent scope of works discussions with Tonkin;
- H 202597 010 Concept Design of Upgraded Recycling & Resources Recovery Areas;
- I 202597 015 FERF & RRS Details;
- J 202597 016 Office, Amenities & Residual Drop Off;
- K 202597 020 Concept Design of Upgraded Front End Access Roads.
## P0292 - Buronga Landfill Expansion Project: P0292 - Buronga Landfill Expansion Cost Plan: Concept Design Estimate No. 2 (V5) Rev: Initial



### **Project Summary**

Ref	Description	Quantity	Unit	Rate	Total
Ν	Basis of Estimate				0
1	Stage 1A to 1D - Cell Formation	1	Item		34,618,233
2	Stage 1A to 1D - Cell Cap	1	Item		10,043,500
3	Additional Infrastructure	1	Item		2,459,044
4	LFG Management System	1	Item		3,391,500
	Civil Works Sub-Total (Excl. GST)				50,512,277
5	Design Development Contingency	5	%	50,512,277	2,525,614
6	Contractors Preliminaries and Supervision	8	%	53,037,891	4,243,031
7	Contractors Margin and Overheads	3	%	57,280,922	1,718,428
	Civil Works Total (Excl. GST)				58,999,350
8	Construction Contingency	5	%	58,999,350	2,949,968
9	Professional Fees	1	Item	Excl.	Excl.
	Project Total (Excl. GST)				61,949,318
	Cost Range				
10	Cost Range +10%				69,000,000
11	Cost Range -10%				56,000,000
12	Escalation to late 2032 (10 years)	1	Item		19,830,000
	2032 Forecasted Project Total (Excl. GST)				81,779,318
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## P0292 - Buronga Landfill Expansion

## Project: P0292 - Buronga Landfill Expansion

## Cost Plan: Concept Design Estimate No. 2 (V5)

### **Rev: Initial**

Ref	Description	Quantity	Unit	Rate	Total		
1	Stage 1A to 1D - Cell Formation				34,618,233		
1.1	Site Preparation						
1.2	PC Sum allowance to clear site of vegetation (grubbing up trees / shrubs and stockpile as mulch)	1	Item	50,000.00	50,000		
1.3	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	193,400	m2	1.75	339,364		
1.4	Allowance to excavate / cut to form landfill area including stockpile on site (quantity as advised by Tonkin)	1,544,650	m3	7.50	11,584,875		
1.5	Allowance for fill (quantity as advised by Tonkin)	361	m3	10.00	3,610		
1.6	Allowance to form batter (assumed 1:3) to perimeter of Stage 1 area	1,800	m	20.00	36,006		
1.7	Cell Lining						
1.8	Level and grade subgrade ready to receive sub-base	199,500	m2	1.50	299,250		
1.9	Supply and place 300mm compacted engineered fill including trimming and compacting (assume material locally sourced)	199,500	m2	27.00	5,386,500		
1.10	Supply and place geosynthetic clay liner	199,500	m2	11.50	2,293,526		
1.11	Supply and place 2.0mm HDPE geomembrane	199,500	m2	9.00	1,795,500		
1.12	Supply and place cushion geotextile	199,500	m2	6.50	1,296,425		
1.13	Supply and place 300mm leachate drainage gravel	199,500	m2	29.00	5,785,500		
1.14	Supply and place separation geotextile	199,500	m2	6.50	1,296,425		
1.15	Allowance for leachate pipework to cells - assumes DN110 PN8 PE 100 pipe including excavation and backfill (quantity as advised by Tonkin + wastage)	9,400	m	120.00	1,128,000		
1.16	Allowance for dust management and monitoring (water cart, air monitoring, gate cleaning station, etc.) - based on 6 month program	1	Item	600,000.00	600,000		
1.17	Allowance for compaction testing	1	Item	60,000.00	60,000		
1.18	Allowance for site surveys	1	Item	30,000.00	30,000		
1.19	Allowance for independent HPDE testing	1	Item	60,000.00	60,000		
1.20	Allowance for supervision for testing being carried out	1	Item	70,000.00	70,000		
1.21	No allowance for temporary cell access roads - as advised	1	Item	Excl.	0.00		
1.22	<u>Drainage</u>						
1.23	No allowance for cap drain - included in Cell Cap to Entire Site	2,549	m	Incl.	0.00		
1.24	Allowance for stormwater drainage - assumed open swale	3,000	m	50.00	150,000		
1.25	Allowance for grassing to swales including topsoil (assumes swales 1500mm W)	3,000	m	27.00	81,000		
1.26	No allowance for AG drains / soakage pits (TBC)	1	Item	Excl.	0.00		
1.27	No allowance for junction boxes / pits (open swale)	1	Item	Excl.	0.00		
1.28	PC Sum allowance for pumping / de-watering - RISK ITEM - potential latent condition	1	Item	50,000.00	50,000		
1.29	Stormwater Pond						
1.30	Allowance for excavation / cut to form stormwater pond (assume 1.5m deep) including stockpile material on site	16,669	m3	7.50	125,018		
1.31	Allowance to form levee to perimeter of stormwater pond	770	m	40.00	30,800		
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### Detailed Breakdown

Rev: Initial

Ref	Description	Quantity	Unit	Rate	Total
1	Stage 1A to 1D - Cell Formation				34,618,233
1.32	Allowance for pond base (details unknown)	11,113	m2	40.00	444,520
1.33	No allowance for headwalls / pits (served by open swale	1	Item	Excl.	0.00
	drainage)				
1.34	Leachate Pond				
1.35	Allowance for excavation / cut to form leachate pond	27,428	m3	7.50	205,710
1.20	(assume 1.5m deep)	E4C		70.00	20.220
1.30	Trim and compact sub-grade ready for works	540 18 285	m m2	/0.00	38,220
1.38	Supply and place 300mm compacted engineered fill	18,285	m2	27.00	493.695
1.50	(assume material locally sourced)	10,200		2,100	1557655
1.39	Supply and place geosynthetic clay liner	18,285	m2	11.50	210,297
1.40	Supply and place 2.0mm HDPE geomembrane	18,285	m2	9.00	164,565
1.41	No allowance for filtering stations	1	Item	Excl.	0.00
1.42	Leachate Pipework				
1.43	Allowance for leachate pipework including excavation,	2,600	m	120.00	312,000
	supply and place DN110 PN8 PE 100 pipe and backfill (quantity as advised by Tonkin)				
1.44	Allowance for leachate pipework pumps (quantity as	12	No	10,000.00	120,000
	advised by Tonkin) - assumed skid-mounted pump - details TBA				
1.45	Provisional allowance for pits, junctions, headwalls, control	1	Item	50,000.00	50,000
1.46	No allowance for generators / power supplies /	1	Item	Excl.	0.00
	switchboards to pumps (assumed operational cost) - TBA				
1.47	Cell Cap (entire site)				
1.48	Indicative cost included in Stage 1 - Cell Cap cost	1	Note	Excl.	0.00
	breakdown				
2	Stage 1A to 1D - Cell Cap				10,043,500
2.1	Allowance to form 1000mm thk sub-soil cap (to entire site) -	203,500	m2	19.00	3,866,500
	2 (no allowance for imported fill)				
2.2	Allowance to supply and place 200mm topsoil including	203,500	m2	12.00	2,442,000
22	levelling Allowance for ground cover including planting and seeding	203 500	m2	11.00	2 228 500
2.5	with native grasses (average cost - details TBA)	203,300	1112	11.00	2,230,300
2.4	Provisional allowance for small shrub covering - assumes 1	1	Item	240,000.00	240,000
2.5	Provisional allowance for small tree planting - assume 1 No.	1	Item	520.000.00	520.000
215	per 30m2	-	100111	520,000100	520,000
2.6	Allowance for cap drainage - details TBA - assumed open swale	2,100	m	65.00	136,500
2.7	Allowance for dust management and monitoring (water cart,	1	Item	600,000.00	600,000
	air monitoring, gate cleaning station, etc.) - based on 6				
2					2 450 044
ני 21	Front End Recycling Facility (30m x 15m)	1			2,439,044
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### Rev: Initial



Ref	Description	Quantity	Unit	Rate	Total
3	Additional Infrastructure				2,459,044
3.2	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	450	m2	5.00	2,250
3.3	Allowance to supply and place quarry rubble (assume 100mm thk) including trimming and compacting (assumed locally sourced)	450	m2	15.00	6,751
3.4	No allowance for concrete handstand - as advised	1	Item	Excl.	Excl.
3.5	Allowance for perimeter fencing including entry and exit gates	1	Item	20,000.00	20,000
3.6	Allowance for covered area and enclosure to Front End Recycling Facility - allowed 150m2 enclosed shed with 15m2 covered carport area adjacent - design details TBA	1	Item	120,000.00	120,000
3.7	No allowance for power, lighting or water supply to Front End Recycling Facility	1	Item	Excl.	0.00
3.8	Allowance for RORO Bin Storage Area (8m x 15m) - allowed clearing of site, supply and place of quarry rubble (assume 100mm thk) including trimming and compacting	120	m2	25.00	3,000
3.9	Allowance for Drum Muster Drop-Off Area (12m x 12m) - allowed clearing of site, supply and place of quarry rubble (assume 100mm thk) including trimming and compacting	144	m2	25.00	3,600
3.10	Community Transfer Station / Resource Recovery Shed (35m x 25m)	1			
3.11	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	875	m2	5.00	4,375
3.12	Allowance to supply and place sub-base (assume 100mm thk) including trimming and compacting	875	m2	14.00	12,251
3.13	Allowance for concrete hardstand (assume 100mm thk) including surface finish	875	m2	90.00	78,750
3.14	Allowance for joints (extent TBC)	1	Item	2,500.00	2,500
3.15	Allowance for stormwater drainage to hardstand - allowed 5 No. GIPs + 50m pipework and connection to existing - details TBA	1	Item	25,000.00	25,000
3.16	Allowance for canopy to Community Transfer Station - allowed 15m x 10m steel framed canopy including metal roof sheeting, columns and roof drainage (not enclosed - assume no power / lighting)	1	Item	40,000.00	40,000
3.17	Allowance for directional signage (extent TBA)	1	Item	5,000.00	5,000
3.18	No allowance for power or lighting to Community Transfer Station	1	Note	Excl.	Excl.
3.19	Administration Building (assumed transportable building)				
3.20	Allowance to relocate existing transportable Administration Building (to be located somewhere within property boundaries - location TBA) - assume crane and transport vehicle locally sourced	1	Item	18,500.00	18,500
3.21	Allowance for new site office / lunchroom and amenities - allowed 1 x transportable office building and 1 x small amenities block (ATCO or similar) including delivery to site and craneage	1	Item	95,000.00	95,000
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# P0292 - Buronga Landfill Expansion Project: P0292 - Buronga Landfill Expansion

## Cost Plan: Concept Design Estimate No. 2 (V5)

### Rev: Initial

Ref	Description	Quantity	Unit	Rate	Total
3	Additional Infrastructure				2,459,044
3.22	<u>Maintenance Area (20m x 15m) - location TBA (not shown on drawing)</u>				
3.23	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	300	m2	5.00	1,500
3.24	Allowance to supply and place sub-base (assume 100mm thk) including trimming and compacting	300	m2	14.00	4,200
3.25	Allowance for concrete hardstand (assume 100mm thk) including surface finish	300	m2	90.00	27,000
3.26	Allowance for joints (TBC)	1	Item	1,500.00	1,500
3.27	Allowance for stormwater drainage to hardstand - allowed 2 No. GIPs + 20m pipework and connection to existing - details TBA	1	Item	12,000.00	12,000
3.28	Allowance for directional signage (extent TBA)	1	Item	5,000.00	5,000
3.29	Allowance for canopy to Maintenance Area - allowed 15m x 10m steel framed canopy including metal roof sheeting, columns and roof drainage (not enclosed)	1	Item	40,000.00	40,000
3 30	Unsealed Haulage / Access Road (4200m as advised)				
3.31	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	33,600	m2	5.00	168,000
3.32	Allowance to supply and place fill for unsealed road including trimming and compacting (length of road as advised by Tonkin - assume width of 8m) - assume to remain in position (ie. no allowance for removal upon completion of works)	33,600	m2	22.00	739,216
2 22	Residual Drop Off Area (20m x 20m)	1			
3.34	Allowance to clear area of topsoil and debris ready for works (assume stockpile on site)	580	m2	5.00	2,900
3.35	Allowance to supply and place sub-base (assume 100mm thk) including trimming and compacting	580	m2	15.00	8,701
3.36	Allowance for concrete hardstand (assume 100mm thk) including surface finish	580	m2	90.00	52,200
3.37	Allowance for joints (TBC)	1	Item	1,850.00	1,850
3.38	Allowance for stormwater drainage to hardstand - allowed 2 No. GIPs + 20m pipework and connection to existing - details TBA	1	Item	17,000.00	17,000
3.39	Allowance for directional signage (extent TBA)	1	Item	5,000.00	5,000
3.40	Excluded Areas:				
3.41	No allowance for carpark - assume existing	1	Item	Excl.	0.00
3.42	No allowance for Inert C&D Storage - excluded as advised	1	Item	Excl.	0.00
3.43	No allowance for Scrap Metal Storage - excluded as advised	1	Item	Excl.	0.00
3.44	No allowance for Greenwaste Storage - excluded as advised	1	Item	Excl.	0.00
3.45	No allowance for Tyres area - excluded as advised	1	Item	Excl.	0.00
3.46	No allowance for Weigh Bridge and Gate House - assume existing structures (to remain)	1	Item	Excl.	0.00
Canico					

## P0292 - Buronga Landfill Expansion Project: P0292 - Buronga Landfill Expansion Cost Plan: Concept Design Estimate No. 2 (V5)



Ref	Description	Quantity	Unit	Rate	Total
3	Additional Infrastructure				2,459,044
3.47 3.48	Additional Infrastructure Costs - Water Storage Tank Allowance for 45kL static water tank including subbase preparation, slab on ground (assume required) pump and power supply	1	Item	60,000.00	60,000
3.49	Allowance for mechanical water level devices to monitor water levels within tank (allowance only - details unclear)	1	Item	20,000.00	20,000
3.50	Additional Infrastructure - Emergency Access Point and Access Road				
3.51	Allowance for unsealed access road from Arumpo Road to water tank including clearing existing topsoil, subgrade preparation, supply and place fill including trimming and compacting (assume 300m L x 8m W road)	2,400	m2	40.00	96,000
3.52	Allowance for edge treatments to access track (batter /	1	Item	5,000.00	5,000
3.53	No allowance for kerbing and stormwater infrastructure (assume not required)	1	Item	Excl.	0.00
3.54	Allowance for emergency vehicle access gate (off Arumpo Road)	1	Item	5,000.00	5,000
3.55	Additional Infrastructure Costs - Fire Hydrants and Ring Main				
3.56	Allowance for ring main to perimeter of landfill area including excavation, bedding, installation of ring main and backfill - assumed quantity	3,000	m	200.00	600,000
3.57	Allowance for pillar hydrant to ring main including thrust block and connection to ringmain - assume 1 No. per 150m	20	No	5,000.00	100,000
3.58	Allowance for booster assembly for ring main	1	Item	50,000.00	50,000
<b>4</b> 4 1	LFG Management System				3,391,500
4.2	Allowance for gas well infrastructure pipework - included in Landfill Gas Well Infrastructure cost below Note: Indicative quantity only - pending pipework design	7,200	m	Incl.	0.00
4.3	layout Allowance for Landfill Gas Well Infrastructure including pipework, manifolds and installation (allowance only) Note: assumed quantity only (based on 1 well per 50m of pipework)	85	No	25,000.00	2,125,000
4.4	Landfill Gas Flare				
4.5	PC Sum allowance for Landfill Gas Flare including supply, delivery to site, skid, stack, perimeter fencing and installation (allowance only)	1	Item	850,000.00	850,000
4.6	Contingency				
4.7	Allowance for LFG Management System contingency (to accommodate for individual site characteristics)	14	%	2,975,000.00	416,500
12	Escalation to late 2032 (10 years)				19,830,000
12.1 Capiso	Project Total (Excl. GST)	32.00	%	61,949,317.58	19,830,000
· ·					

# **Buronga Landfill Expansion**

Amendment Report

Appendix H – Crown Consent

#### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



### **Melissa Salt**

From:	James Golsworthy <james@jgconsult.com.au></james@jgconsult.com.au>
Sent:	Wednesday, 24 August 2022 1:44 PM
То:	Melissa Salt
Cc:	David McClure; Jessica Nash
Subject:	RE: Land Owner's Consent - Wentworth Shire Council Waste Management Facility

Thanks Mel

Crown Lands have indicated Arumpo Road is a Council road/Reserve. They have further indicated Council should know if it is a Council road! Looks like we have this one resolved then.

Regards

James

From: Melissa Salt <Melissa.Salt@tonkin.com.au>
Sent: Wednesday, 24 August 2022 9:18 AM
To: James Golsworthy <james@jgconsult.com.au>
Cc: David McClure <david@jgconsult.com.au>; Jessica Nash <jessica@jgconsult.com.au>
Subject: RE: Land Owner's Consent - Wentworth Shire Council Waste Management Facility

Hi James,

Wow that is a turnaround. Thanks for following this through.

So is the Arumpo Road reserve Crown or Council? Are they still saying it is Council and we don't need their approval for the turn lanes or is this also changed? Given they have just changes their minds can we please just confirm that the Arumpo Road Reserve, where we are planning works, is Council?

Thanks,

Mel

**Melissa Salt** Principal Scientist Environment & Waste

×		
×		
Tor	nkin	

Level 2, 170 Frome Street Adelaide SA 5000 Office +61 8 8273 3100 Direct +61 8 8132 7543 Mobile +61 428 997 761 Melissa.Salt@tonkin.com.au tonkin.com.au



### **Department of Planning and Environment**

James Golsworthy Consulting Client: Wentworth Shire Council

Our ref: DOC22/165364 File: 22/03682

Via Email: james@jgconsult.com.au

09 August 2022

Dear Sir/Madam	
Consent for Development Comprising:	Waste Management Facility
Crown Land	Lots 197 & 212 DP 756946 and Part Crown Road to the south of these Lots
Crown reserve	R86496 for Rubbish Depot, notified 24 October 1969
Parish	Gol Gol
County	Wentworth

Consent is granted by the Minister for Lands and Water to the lodgement of applications for approval under the *Environmental Planning and Assessment Act 1979*, and other associated applications required under other legislation, for the development proposal described above.

- The Land Owner Consent is granted conditional to the following:
  - 1. Land Owner Consent will expire after a period of 12 months from the date of this letter if not acted on within that time. Extensions of this consent may be sought
  - You are required to forward a copy of the DA approval to the NSW Department of Planning and Environment – Crown Lands ("the Department") after approval and prior to commencing works.
  - 3. You are required to ensure that the approval provided is consistent with this Land Owner Consent.
  - 4. The Land Owner Consent is provided for the works detailed on the plans provided by you and retained by the Department in File 22/03682.

Land Owner Consent is granted in accordance with the following:

- Land Owner Consent is given without prejudice so that consideration of the proposed development may proceed under the *Environmental Planning and Assessment Act 1979* and any other relevant legislation;
- The grant of this Land Owner Consent does not guarantee that any subsequent authority to occupy will be granted;

- Land Owner Consent does not imply the concurrence of the Minister for Lands and Water for the proposed development and does not provide authorisation under the Crown Land Management Act 2016 for this proposal;
- The issue of Land Owner Consent does not prevent the Department from making any submission commenting on, supporting or opposing an application;
- The Minister reserves the right to issue Land Owner Consent for the lodgement of applications for any other development proposals on the subject land concurrent with this Land Owner Consent;
- Any changes made to the proposal, including those imposed by the consent authority, must be consistent with the Land Owner Consent and therefore if modifications are made to the proposed development details must be provided to the Department for approval;
- Land Owner Consent also allows application to any other approval authority necessary for this development proposal.

This letter should be submitted to the relevant consent or approval authority in conjunction with the development application and/or any other application. You are responsible for identifying and obtaining all other consents, approvals and permits required under NSW and Commonwealth laws from other agencies for the proposed development.

It is important that you understand your obligations relating to Condition 3. If any alterations are made to the application (whether in the course of assessment, by conditions of consent, or otherwise), it is your responsibility to ensure the amended or modified development remains consistent with this Land Owner Consent. If there is any inconsistency or uncertainty you are required to contact the Department before undertaking the development to ensure that the Department consents to the changes. A subsequent LOC application may incur additional application fees.

For further information, please contact Vanessa Woodham on 02 6883 5433 or vanessa.woodham@crownland.nsw.gov.au.

Yours sincerely

VINOD

Vanessa Woodham Property Services Officer Department of Planning & Environment Crown Lands, Far West Area

## Attachment A – Location Map



### **Melissa Salt**

From:James Golsworthy <james@jgconsult.com.au>Sent:Wednesday, 12 October 2022 10:56 AMTo:Melissa SaltCc:David McClureSubject:FW: LOC 635149 - Wentworth Shire Council

Hello Mel

See below in relation to the Arumpo Road road reserve from Crown Lands. The action required is outlined by Vanessa.

I am on leave therefore if you could contact Dave if you require any further assistance.

Regards

James

From: Vanessa Woodham <vanessa.woodham@crownland.nsw.gov.au>
Sent: Monday, 10 October 2022 12:51 PM
To: James Golsworthy <james@jgconsult.com.au>
Subject: RE: LOC 635149 - Wentworth Shire Council

Hello James

I had to speak with our Roads Team on another matter and thought to question them regarding the access road to the new Waste Facility.

Their advice is it is Crown Road and Council should apply to have it transferred to them as per the usual process. Council is obviously maintaining the road already.

### Please note: I work Monday, Tuesday & Wednesday only

Kind Regards

Vanessa Woodham | Property Services Officer Crown Lands – Far West Area | Department of Planning and Environment 45 Wingewarra Street DUBBO NSW 2830 | PO Box 2185 DANGAR NSW 2309 T: 1300 886 235 E: vanessa,woodham@crownland.nsw.gov.au | W: www.crownland.nsw.gov.au | W: www.dpie.nsw.gov.au All enquiries should be addressed to cl.western.region@crownland.nsw.gov.au



The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

# **Buronga Landfill Expansion**

Amendment Report

Appendix I – LUCRA

#### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



## Land Use Conflict Risk Assessment

Buronga Landfill Expansion

Wentworth Shire Council

29 August 2022 Ref: 202597R006



## **Document History and Status**

A For Review KL MRS MRS 29/08/2022	Rev	Description	Author	Reviewed	Approved	Date
	А	For Review	KL	MRS	MRS	29/08/2022

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Appendix A Historical Aerial Photographs Appendix B Risk Identification and Risk Ranking Definitions Appendix C Detailed Risk Assessment

# **1** Introduction

## **1.1 Proposed Activity**

This Land Use Conflict Risk Assessment (LUCRA) has been prepared by Tonkin on behalf of Wentworth Shire Council (WSC) as part of an Environmental Impact Statement (EIS) in support of a proposed expansion to the Buronga Landfill (the site); owned and operated by WSC.

The aims of the LUCRA are defined in the Land Use Conflict Risk Assessment Guide and are as follows:

- accurately identify and address potential land use conflict issues and risk of occurrence before a new land use proceeds or a dispute arises
- objectively assess the effect of a proposed land use on neighbouring land uses
- increase the understanding of potential land use conflict to inform and complement development control and buffer requirements, and
- highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation and evaluation of separation strategies.

There are four primary steps involved in preparing a LUCRA which are outlined in Section 2 which include the following:

- 1. gather information about proposed land use change and associated activities
- 2. evaluate the risk level of each activity
- 3. identify risk reduction management strategies
- 4. record LUCRA results

This LUCRA document is based on the guidelines provided in the Land Use Conflict Risk Assessment Guide.

### **1.2 Project Description**

The proposed development (the Project) is to expand the waste management services provided by WSC at the Buronga Landfill. The Project is to be staged over the next 120 years and comprises:

- upgrading the existing recycling infrastructure to provide a dedicated recycling facility, community
  resource recovery area and bulking up areas to improve recycling rates and economics of
  recycling;
- constructing new landfill cells to the north of the existing landfill area, increasing the landfill footprint from 19 ha to approximately 40 ha. The expansion is proposed to be undertaken in eleven stages with each stage providing 3-5 landfill cells;
- increasing maximum waste volumes from 30,000 tonnes per annum to 100,000 tonnes per annum over the longer term. Current waste acceptance from within WSC is nearing the limit of 30,000 tonnes per annum. It is also proposed to accept waste from the surrounding NSW local government areas (LGAs), such as Balranald, Central Darling and Murray River and from interstate councils such as Mildura and Renmark-Paringa.

The proposed activity is a State significant development as specified under Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (NSW) as, if approved, it is proposed to:

- become a regional landfill by accepting waste from other LGAs;
- have the ability to accept > 75,000 tonnes per annum of putrescible waste;
- have the capacity to receive more than 650,000 tonnes of putrescible waste over its site life.

A detailed description of the project is provided in EIS Section 3.

## 2 Gather Information

As stated in the LUCRA Guide, Step 1 of undertaking a LUCRA is to gather information about proposed land use changes and associated activities. Information gathered is provided in Step 2.

A description of the existing site and surroundings is summarised in Table 2.1 below with details provided in the EIS Section 3.2 and within the studies presented in the Appendices and summarised in Section 6.

#### **Table 2.1 Site Identification Details**

Aspect	Detail
Site Name	Buronga Landfill
Site Location	258 Arumpo Road, Wentworth, NSW, 2739
Landfill Area (ha)	Currently 19 ha of a total 124 ha licenced area
Site Owner	Wentworth Shire Council
Site Occupier	Wentworth Shire Council
Certificate of Title	Lot 197 & 212 DP756946 and Lot 1 DP1037845
Current Zoning	Site - SP2 (Waste or Resource Management Facility) Surrounding Areas – RU1 (Primary Production)
Current Use	Solid Waste Landfill / Resource Recovery Centre
EPA Licence	Environmental Protection Licence (EPL) No. 20209
Regional Setting	Rural, Industrial, Agricultural
Surrounding Land	NORTH: Broadscale agriculture (grazing), Arumpo Road
Uses	EAST: Remnant vegetation, irrigated agriculture to SE, Lake Gol Gol
	SOUTH: Remnant vegetation, irrigated agriculture to SW (grapevines, orchards)
	WEST: Arumpo Road, Industry including bentonite and gypsum suppliers, Mourquong saltwater disposal basin

### 2.1 Nature of the Land Use Change and Development Proposed

The proposed land use development will involve construction works including the construction of new landfill cells, the capping of landfill cells and vegetation clearance. This will also include the erection of new structures on the site including sheds, a front-end recycling facility and landfill gas management area. The perimeter of the landfill area will be expanded to the north and the east and stormwater and leachate management areas will be utilised in the south east of the site.

Further details on the developments proposed including proposed waste acceptance, proposed site layout and site activities can be found in Section 3.5 of the EIS document. Further details of the proposed changes to landfill cells and other site structures including basis of design and stormwater, leachate and gas management are provided in Section 3.6 of the EIS document.

#### Nature of the Precinct Where the Land Use Change and 2.2 **Development is Proposed**

The surrounding areas of the site are characterised as vineyards, orchids (citrus) and avocado crops. A summary of the surrounding land use activities can be found in Table 2.2.

Table 2.2: Summary of surrounding land use and activities				
Business	Distance from site	Produce	Nature of activities	
Antony Grape Farm	380 m south	Adjoining agricultural property that his son lives on. Produces table grapes for export (mostly to china)	Harvest between January and April	
AW & JA Barnfield		Livestock	Possible animal husbandry in Spring months	
Duxton Buronga Winery	2 km	Large scale vertically integrated wine enterprise. Grapes are harvested and sold as either fruit or processed into wine. Processing occurs at the winery.	Harvest between January and April	
Orange World	1.0 km	Orange world is a working 50- acre citrus property which also offers educational tours. They also grow avocado trees, process orange products for sale to customers. They are closed to customers during February.	Closed to public all of Feb. Valencia harvest Oct-March Navel oranges harvest June- Oct Irrigation - as required	
Neighbouring Agriculturalist	400m -2.5km from site (closest neighbour to gate)	Produces Citrus	Spraying - as required Irrigation - as required Harvest	
Neighbouring Agriculturalist	400m -2.5km from site (closest neighbour to gate)	Produces Avocado	Harvest November to March	
Neighbouring Agriculturalist	400m -2.5km from site (closest neighbour to gate)	Produces Grapes	Harvest between January and April	

Further details on the nature of the precinct of the site can be found in section 6.10.1 of the EIS document.

## 2.3 Topography, Climate and Natural Features

The topography of the site area ranges from 30-40 m AHD to 60 m AHD at the highest point. Further details on the topography of the area can be found in section 6.10.1 of the EIS document. The mean rainfall of the area is 285.4mm/year with the highest amount of rainfall often occurring in July. Further details on the site climate can be found in section 6.1.2.2 of the EIS document.

The natural features close to the site are predominantly Gol Gol Lake and the Murray River, north of which are over 2 km from the boundary. Native vegetation on the site has been assessed with some areas of good quality vegetation identified; however no species or communities of state significance were identified.

There are no travelling stock routes (TSRs) located within 2 km of the site boundaries. The closest TSRs are two Category 4 TSRs located on either side of Arumpo Road to the north of Gol Gol Lake, approx. 2.6 km ENE of the site boundary. Category 4 TSRs are defined as "in Western Division only, that are rarely if ever used for travelling stock or emergency management, but are important, valued and used for other reasons such as biodiversity conservation, First Nations Peoples' heritage or recreation. These TSRs are also used as Stock Watering Places."

### 2.4 Site History

Historical aerial imagery is available from 1965, 1979, 1990, 1993, 2017 and 2019. A summary of the visible land use on the site and surrounding areas is provided in Table 2.3 with images reproduced as Appendix A.

The site has been used for waste disposal since 1934. The oldest aerial photograph (1965) shows limited disturbance in the south east of the site. By 1979 the disturbance area had increased but only begun to move eastward and westward into Lots 197 and Lot 1 by 1990. Anecdotally it is understood that the disturbance in the east and north of the site was related to soil extraction for quarrying purposes, which is evident from the disturbance in this area. Landfill practices have changed significantly by 2017 with a rectangular waste footprint, the current cell and the leachate pond. The CRC is evident by 2019.

The areas to the north have been used for broadscale grazing historically and continue to be used. Horticulture is evident to the south of the site from the earliest image in 1965. Between 1979 and 1990, horticulture has expanded in the south but since has remained static. The mining industry appears has commenced by 1990 with small quarry pits evident with the operations expanded by 1993. Broadscale agriculture is present to the north and west of the site with cropping to the north noted by 2017.

<b>Fable 2.3 Summary of Change</b>	s in Historical Aerial Photography
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Date	On site	Off site
09/07/1965	Mainly undisturbed. Treed vegetation along Arumpo Road and to the east of the site with sparse vegetation in between. Various tracks evident across the site. Cleared and disturbed area in the southern part of the site along the change in vegetation to the east	Arumpo Road is unsealed. Horticulture and residence evident to the south of the site in the same location as Anthony's vineyards and on the western side of Arumpo Road. Other surrounding areas vegetated, possibly used for grazing
15/05/1979	Increased disturbance. Cleared area in trees lining Arumpo Road. Lot 212 is highly disturbed with ground covered cleared but some trees remain. Disturbed areas along	Arumpo Road remains unsealed. An increase in tracks to the north of the site. Expanded horticulture in the south with additional vineyards.

Date	On site	Off site
	the vegetation change have increased. More tracks across site	
06/07/1990	Increased disturbance to the east (Lot 197) and west into Lot 1. More tracks across the site and a borrow pit evident to the north east	Arumpo Road remains unsealed. Horticulture extent remains similar to 1979. Possibly grazing land to the north and evidence of quarry pits.
23/08/1993	Continued development of Lot 197. Borrow pit less defined. Disturbed areas to the east appear to be rehabilitating	Arumpo Road remains unsealed. Disturbed areas to the north less evident, possibly rehabilitating. Quarry pits evident and extending to the west of the site. Reduction in area planted for horticulture
25/11/2017	Landfill extent increased to cover Lots 197 and 212 with last cell (western cell) being filled. Borrow pit area has been developed to the north. Leachate pond near existing cell constructed	Arumpo Road is bituminised. Development of other industry to the west of site and north. North east planted to crop. Horticultural extent remains the same.
23/09/2019	Community Recycling Centre has been constructed. Borrow pit deepened. Further development of storage area	Additional shed north of site. Composting at Mallee Earthmovers. Paddock to north planted to crop

## 2.5 Site Inspection Outcomes

A site inspection was conducted by Tonkin on 12 May 2022 to view the site and surrounding areas. The site has remained in a similar configuration since 2019 with continued filling of the current cell. The horticultural areal extent remains as per 2019 and no additional residences were noted to be closer to the site. The property to the north of the landfill is unimproved and likely to be used for grazing of sheep though this was not confirmed during the inspection. The mining operations of Arumpo Gypsum and processing by Mallee Earthmovers is continuing to be undertaken on the western side of Arumpo Road.

## 2.6 Consultation

Consultation was conducted by PlanCom by which owners and operators of adjacent properties within an approximate 3 km radius were interviewed. During the interview process, the following issues were raised:

- Increase in dust cause by increase in traffic
- Increase in odour
- Increased height of landfill affecting visual amenity
- Road safety issues caused by increase in traffic on roads and road disrepair
- Introduction of fruit fly to area due to potentially contaminated materials being transported in from other locations
- Contaminated soil being disposed of at landfill

- Illegal dumping occurring can be an issue if people drive to landfill and find it is not open thus dumping rubbish on adjacent farming properties
- Potential for trucks to roll over with hazardous material e.g., asbestos causing a risk to others in the area
- Odour from fire affecting neighbouring properties
- Concerned the expansion will be beyond the chained fence, allowing paper rubbish to spread beyond fence line
- Land use maintain agricultural land
- Concerned about the nature of the materials being disposed e.g., asbestos

Further details of consultation can be found in Section 5 of the EIS document.



## 3 Land Use Conflict Risk Assessment

### 3.1 Introduction

Step 2 of the LUCRA process is outlined in the LUCRA Guide and is used to evaluate the risk level of each activity. The risk ranking matrix, as described in the LUCRA guide, is used to assess the environmental, public health and amenity impacts according to the following:

- Probability of occurrence
- Consequence of the impact

The risk ranking matrix and probability tables can be found in Appendix B.

### 3.2 Initial Risk Identification and Risk Ranking

The risk ranking matrix provided in the LUCRA Guide is used to rank the identified potential land use conflicts. A rank of 25 represents the highest magnitude of risk and a ranking of 1 represents the lowest magnitude of risk. The initial risk evaluation shows most risks have a very low ranking, with all risks likely to be 10 or less. The detailed assessment is presented in Appendix C.

#### **Table 3.1 Initial Risk Evaluation**

Activity	Identified Potential Conflict	Risk Rating
Erection of structures including resource recovery shed, roro bin storage, drum muster drop off, front end recycling facility, LFG management area	Erection of structures may impact visual amenity for surrounding landowners	2
Expansion of the site perimeter but no change to land zoning	Reduction in arable land available to future land users	5
Vegetation clearance	Dust generation could result in reduced plant yields from dust deposition	9
Vegetation clearance	Displacement of native and introduced animals which may cause an increase in native and introduced animal numbers on surrounding properties which could impact crops and grazing	8
Transporting waste to site	May cause damage to existing roads which may impact other road users.	17
Transporting waste on site	Transporting waste on site may cause dust which may cause reduced plant yields from dust deposition	6
Loading and unloading of waste on site	Dust generation could result in reduced plant yields from dust deposition	1
Loading and unloading of waste on site	Noise generation could impact neighbours.	3
Loading and unloading of waste on site	Odour could impact neighbours	3

Activity	Identified Potential Conflict	Risk Rating
Storage of batteries, waste oil, drums, household hazard waste, e-waste, fuels, green waste, tyres	Storage of waste onsite may cause an increase in odour which may impact neighbours.	1
Storage of batteries, waste oil, drums, household hazard waste, e-waste, fuels, green waste, tyres	The storage of waste could potentially cause bushfires which may impact surrounding land users, cause infrastructure damage and damage crops and livestock	10
Crushing and shredding of green waste, concrete and tyres	Dust generation could result in reduced plant yields from dust deposition	3
Crushing and shredding of green waste, concrete and tyres	Noise generation could impact neighbours.	12
Waste disposal in landfill cells	May cause an increase in odour which could impact neighbours.	5
Waste disposal in landfill cells	May cause bushfires which could impact surrounding land users, cause infrastructure damage and damage crops and livestock	10
Waste disposal in landfill cells	The importation of quarantine material may cause a biosecurity risk to surrounding land users including crops and livestock	10
Waste disposal in landfill cells	Waste disposal may cause an increase in pests in the area which may impact surrounding crops	9
Waste disposal in landfill cells	May cause soil contamination or reduction in soil quality	1
Waste disposal in landfill cells	May cause a reduction in groundwater quality which could impact stock or irrigation water supplies	1
Importation of unknown waste	Potential for undeclared wastes to be disposed of at landfill which could impact neighbours	10
Cell and cap construction	Dust generation could result in reduced plant yields from dust deposition	5
Cell and cap construction	Noise generation could impact neighbours.	1
Cell and cap construction	Traffic could be increased which may cause an increase in road usage	3
Landfill gas generation and collection	Landfill gas generation may cause an odour which could impact neighbours	1
Landfill gas generation and collection	May cause an increase in greenhouse gasses emitted and contribute to climate change	8

Activity	Identified Potential Conflict	Risk Rating
Generation and storage of leachate	Potential for leachate to cause groundwater contamination impacting neighbouring groundwater users such as stock water and irrigation water	2
Surrounding land user undertaking harvest activities	Traffic may increase on shared roads offsite	1
Aerial spraying	Increased landform height may impact low flying aircraft	1
Aerial spraying	Birds numbers may increase due to activities onsite which could impact aircraft	2

## 3.3 Risk Reduction Controls

The aims of risk reduction management as stated in the LUCRA Guide are to:

- Identify management strategies that affect the probability of an event occurring, such as the implementation of certain procedures
- new technology or scientific controls that might lower the risk probability values.

The management strategies proposed within the EIS to be implemented to reduce the risk rating of identified potential conflicts are outlined in Table 3.2 below.

#### Table 3.2 Management Strategy

Potential conflict	Management Strategy (Method of Control)	Revised risk ranking	Performance Target
Reduction in arable land available to future land users	Proposed rehabilitation is to return to native vegetation consistent with surrounding Plant Community Types	3	No impact outside site boundary Native vegetation successfully established
Dust generation could result in reduced plant yields from dust deposition	Vegetation will be cleared in stages as required	5	Dust contained to within site No complaints from neighbours
Displacement of native and introduced animals which may cause an increase in native and introduced animal numbers on surrounding properties which could impact crops and grazing	Ensure regular inspection of entire site and not only within disturbed areas to effect control	5	No outbreaks of noxious weeds.

Potential conflict	Management Strategy (Method of Control)	Revised risk ranking	Performance Target
May cause damage to existing roads which may impact other road users.	Proposed improvements to road as discussed in EIS	5	
The storage of waste could potentially cause bushfires which may impact surrounding land users, cause infrastructure damage and damage crops and livestock	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared by fire engineer	6	
Noise generation could impact neighbours.	Activities to be restricted to only one crushing or grinding type machinery operating on-site at any one time	9	Zero complaints
May cause bushfires which could impact surrounding land users, cause infrastructure damage and damage crops and livestock	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared by fire engineer Additional water supply point to north of site to allow for faster response	6	No fires
Waste disposal may cause an increase in pests in the area which may impact surrounding crops	Weed and Pest Management Procedure to be developed Stock-proof fencing to be constructed around site	6	No noxious weeds Prompt response to any observed outbreak No complaints from neighbours
May cause an increase in greenhouse gasses emitted and contribute to climate change	LFG monitoring to be undertaken Provision for LFG active control once required	5	

## 3.4 Performance Monitoring

The effectiveness of the management strategy proposed can be monitored by:

- Routine monitoring of the site and surrounds as specified in the LEMP
- Establishing and maintaining a complaints register as required by the EPL and LEMP
- Recording and reporting all incidents, including fire, and notifying EPA in accordance with EPL conditions
- Implementing a pest and weed management plan for the entire site and not confined to the currently disturbed area

## 3.5 Limitations/Assumptions

This assessment is based on the assumption that the site continues to operate in accordance with the Environment Protection Licence and LEMP and that the permitted waste types remain the same.

## **3.6 Key Documents**

Department of Primary Industries. (2011). *Land Use Conflict Risk Assessment Guide*. Department of Primary Industries, Resource Planning & Development Unit

Tonkin. (2022). *Buronga Landfill Expansion Environmental Impact Statement*. Tonkin Consulting, Adelaide SA: Ref 202597R04 Rev 4 Dated 25/01/2022.

Tonkin. (2022). *Buronga Landfill Expansion Project Traffic Assessment: Environmental Impact Assessment*. Tonkin Consulting, Adelaide SA: Ref 202597 Rev E Dated 14/12/2021.



## 4 **Conclusions and Recommendations**

The potential risks identified were not high risks with the risk ranking remaining at 10 or less for all identified risks. The existing use of the site as a landfill combined with the location of the site and distance to neighbours has provided a low risk of land use conflict for the proposed development.

Additional management measures have been included in the EIS to reduce the impacts as far as practical. These measures include:

- Rehabilitation using endemic native species to provide an environment similar to surroundings
- Progressive removal of vegetation
- Maintenance of stock-proof fencing
- Upgrade of Arumpo Road intersection and progressive widening of the road
- Fire controls within buildings and increase fire water supply on-site
- LFG monitoring and provision for active control system as required

# Appendix A Historical Aerial Photographs



Figure A1 Aerial Photograph from 09/07/1965





Figure A2 Aerial Photograph from 15/05/1979





Figure A3 Aerial Photograph from 06/07/1990



Figure A4 Aerial Photograph from 23/08/1990





Figure A5 Aerial Photograph from 25/11/2017 (MetroMap)





Figure A6 Aerial Photograph from 23/09/2019 (MetroMap)

# Appendix B Risk Identification and Risk Ranking Definitions

#### **Table B1 Probability Table**

Level	Descriptor	Description
А	Almost Certain	Common or repeating occurrence
В	Likely	Known to occur, or 'it has happened'
С	Possible	Could occur, or 'I've heard of it happening
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

#### **Table B2: Measure of Consequence**

Level	Descriptor	Description
1	Severe	Severe and/or permanent damage to environment Irreversible Severe impact on the community Neighbours are in prolonged dispute and legal action involved
2	Major	Serious and/or long-term impact to the environment Long-term management implications Serious impact on the community Neighbours are in serious dispute
3	Moderate	Moderate and/or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur
4	Minor	Minor and/or short-term impact to the environment and community Can be effectively managed as part of normal operations Infrequent disputes between neighbours
5	Negligible	Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely

#### Table B3: Risk Ranking Matrix

Consequence	Probability				
	А	В	С	D	E
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1


## **Appendix C Detailed Risk Assessment**

202597R006 Land Use Conflict Risk Assessment | Buronga Landfill Expansion

Activity	Potential conflict	Current Status	Consequence	Probability	Risk Rating	Management Strategy (Method of Control)	Revised Consequence	Revised Probability	Revised risk ranking	Performance Target
Erection of structures including resource recovery shed, roro bin storage, drum muster drop off, front end recycling facility, LFG management area	Erection of structures may impact visual amenity for surrounding landowners	Proposed structures are not visible from surrounding areas except for at the entrance. Structures to be natural colours, e.g. pale eucalypt	5: Negligible	D: Unlikely	2					
Expansion of the site perimeter but no change to land zoning	Reduction in arable land available to future land users	The site is currently zoned for use as a landfill and owned by Council. The site is unimproved and of low agricultural value	4: Minor	D: Unlikely	5	Proposed rehabilitation is to return to native vegetation consistent with surrounding Plant Community Types	4: Minor	E: Rare	3	No impact outside site boundary Native vegetation successfully established
Vegetation clearance	Dust generation could result in reduced plant yields from dust deposition	Dust control is a standard practice at landfills and part of the EPL Prevailing winds from predominantly from the south/south east in the morning and from the south/south west/west in the afternoon. Horticultural crops are located to the south of the site, i.e. upwind with less sensitive uses (native vegetation, grazing and mining activities) located down wind of the site	3: Moderate	D: Unlikely	9	Vegetation will be cleared in stages as required	4: Minor	D: Unlikely	5	Dust contained to within site No complaints from neighbours
Vegetation clearance	Displacement of native and introduced animals which may cause an increase in native and introduced animal numbers on surrounding properties which could impact crops and grazing	Clearing to be undertaken progressively to limit displacement Control of pests and weeds in accordance with LEMP Daily cover of waste to minimise attraction	4: Minor	C: Possible	8	Ensure regular inspection of entire site and not only within disturbed areas to effect control	4: Minor	D: Unlikely	5	No outbreaks of noxious weeds.
Transporting waste to site	May cause damage to existing roads which may impact other road users.	Arumpo Road is a Council- owned bituminised road	3: Moderate	B: Likely	17	Proposed improvements to road as discussed in EIS	4: Minor	D: Unlikely	5	
Transporting waste on site	Transporting waste on site may cause dust which may cause reduced plant yields from dust deposition	Dust control is a standard practice at landfills Haul roads constructed of hard pavement as all - weather roads and routinely maintained No dust complaints to date	4: Minor	E: Rare	6					

Activity	Potential conflict	Current Status	Consequence	Probability	Risk Rating	Management Strategy (Method of Control)	Revised Consequence	Re Pro
Loading and unloading of waste on site	Dust generation could result in reduced plant yields from dust deposition	Dust control is a standard practice at landfills and part of the EPL Prevailing winds from predominantly from the south/south east in the morning and from the south/south west/west in the afternoon. Horticultural crops are located to the south of the site, i.e. upwind with less sensitive uses (native vegetation, grazing and mining activities) located down wind of the site	5: Negligible	E: Rare	1			
Loading and unloading of waste on site	Noise generation could impact neighbours.	Noise assessment indicates neighbours not affected	4: Minor	E: Rare	3			
Loading and unloading of waste on site	Odour could impact neighbours	Air quality assessment indicates neighbours not affected	4: Minor	E: Rare	3			
Storage of batteries, waste oil, drums, household hazard waste, e-waste, fuels, green waste, tyres	Storage of waste onsite may cause an increase in odour which may impact neighbours.	CCR is enclosed No complaints to date Current storage limits controlled by licence	5: Negligible	E: Rare	1			
Storage of batteries, waste oil, drums, household hazard waste, e-waste, fuels, green waste, tyres	The storage of waste could potentially cause bushfires which may impact surrounding land users, cause infrastructure damage and damage crops and livestock	Buildings comply with require vegetation buffers	2: Major	E: Rare	10	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared by fire engineer	3: Moderate	E:



Revised Revised Probability risk

Rare	6	

								_
Activity	Potential conflict	Current Status	Consequence	Probability	Risk Rating	Management Strategy (Method of Control)	Revised Consequence	F
Crushing and shredding of green waste, concrete and tyres	Dust generation could result in reduced plant yields from dust deposition	Dust control is a standard practice at landfills and part of the EPL Prevailing winds from predominantly from the south/south east in the morning and from the south/south west/west in the afternoon. Horticultural crops are located to the south of the site, i.e. upwind with less sensitive uses (native vegetation, grazing and mining activities) located down wind of the site Cease activities on days of high wind	4: Minor	E: Rare	3			
Crushing and shredding of green waste, concrete and tyres	Noise generation could impact neighbours.	Noise assessment indicates undertaking activities concurrently could impact neighbours Activity undertaken infrequently (approx. 2-6 times/year for typically < 1 week)	4: Moderate	B: Likely	12	Activities to be restricted to only one crushing or grinding type machinery operating on- site at any one time	3: Moderate	C
Waste disposal in landfill cells	May cause an increase in odour which could impact neighbours.	Proposed development moves waste cells away from nearest residents Daily cover to reduce odour Prompt rehabilitation to reduce LFG Construction of active LFG control once viable Monitoring of LFG from surface and in structures Air quality assessment indicates unlikely to impact neighbours	4: Minor	D: Unlikely	5			
Waste disposal in landfill cells	May cause bushfires which could impact surrounding land users, cause infrastructure damage and damage crops and livestock	Compaction and covering of waste to reduce oxygen ingress Water available on-site for firefighting No fires to date	2: Major	E: Rare	10	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared	3: Moderate	E



Activity	Potential conflict	Current Status	Consequence	Probability	Risk Rating	Management Strategy (Method of Control)	Revised Consequence	R P
						by fire engineer Additional water supply point to north of site to allow for faster response		
Waste disposal in landfill cells	The importation of quarantine material may cause a biosecurity risk to surrounding land users including crops and livestock	Waste placed in cells under special burial procedure No occurrences to date Development moves cells further from surrounding horticulture	2: Major	E: Rare	10			
Waste disposal in landfill cells	Waste disposal may cause an increase in pests in the area which may impact surrounding crops	Daily cover of waste	3: Moderate	D: Unlikely	9	Weed and Pest Management Procedure to be developed Stock-proof fencing to be constructed around site	3: Moderate	E
Waste disposal in landfill cells	May cause soil contamination or reduction in soil quality	Waste placed in lined cells, compacted and covered daily LEMP requires prompt clean- up of litter Leachate collected and evaporated on-site in appropriately designed and lined ponds with no spills	5: Negligible	E: Rare	1			
Waste disposal in landfill cells	May cause a reduction in groundwater quality which could impact stock or irrigation water supplies		5: Negligible	E: Rare	1			
Importation of unknown waste	Potential for undeclared wastes to be disposed of at landfill which could impact neighbours	Licence controls waste accepted at landfill Waste control procedure in place Signage at Landfill advising of waste types received All waste enters via weighbridge Observation of waste during unloading All waste placed in lined cells	2: Major	E: Rare	10			



Revised Probability

Revised Performance risk Target



Activity	Potential conflict	Current Status	Consequence	Probability	Risk Rating	Management Strategy (Method of Control)	Revised Consequence	F
Cell and cap construction	Dust generation could result in reduced plant yields from dust deposition	Contractor will be required to prepare a CEMP including dust management	4: Minor	D: Unlikely	5			
Cell and cap construction	Noise generation could impact neighbours.	Noise assessment indicates no impact	5: Negligible	E: Rare	1			
Cell and cap construction	Traffic could be increased which may cause an increase in road usage	Traffic impact assessment indicates negligible impact	4: Minor	E: Rare	3			
Landfill gas generation and collection	Landfill gas generation may cause an odour which could impact neighbours	Air quality assessment indicates no impact LFG currently not actively controlled and no complaints Dry climate reduces methane generation	5: Negligible	E: Rare	1			
Landfill gas generation and collection	May cause an increase in greenhouse gasses emitted and contribute to climate change	Daily, interim and final capping reduces methane generation Waste placed is relatively dry resulting more aerobic decomposition	4: Minor	C: Possible	8	LFG monitoring to be undertaken Provision for LFG active control once required	4: Minor	C
Generation and storage of leachate	Potential for leachate to cause groundwater contamination impacting neighbouring groundwater users such as stock water and irrigation water	Leachate ponds are lined Low leachate generation due to dry climate	5: Negligible	D: Unlikely	2			
Surrounding land user undertaking harvest activities	Traffic may increase on shared roads offsite	Traffic impact assessment suggests unlikely to impact	5: Negligible	E: Rare	1			
Aerial spraying	Increased landform height may impact low flying aircraft	Landform final height is similar to currently approved height	5: Negligible	E: Rare	1			
Aerial spraying	Birds numbers may increase due to activities onsite which could impact aircraft	Daily cover of waste No issues at present	5: Negligible	D: Unlikely	2			



Potential conflict	Management Strategy (Method of Control)	Revised risk ranking	Performance Target
Reduction in arable land available to future land users	Proposed rehabilitation is to return to native vegetation consistent with surrounding Plant Community Types	3	No impact outside site boundary Native vegetation successfully established
Dust generation could result in reduced plant yields from dust deposition	Vegetation will be cleared in stages as required	5	Dust contained to within site No complaints from neighbours
Displacement of native and introduced animals which may cause an increase in native and introduced animal numbers on surrounding properties which could impact crops and grazing	Ensure regular inspection of entire site and not only within disturbed areas to effect control	5	No outbreaks of noxious weeds.
May cause damage to existing roads which may impact other road users.	Proposed improvements to road as discussed in EIS	5	
The storage of waste could potentially cause bushfires which may impact surrounding land users, cause infrastructure damage and damage crops and livestock	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared by fire engineer	6	
Noise generation could impact neighbours.	Activities to be restricted to only one crushing or grinding type machinery operating on- site at any one time	9	Zero complaints



Potential conflict	Management Strategy (Method of Control)	Revised risk ranking	Performance Target
May cause bushfires which could impact surrounding land users, cause infrastructure damage and damage crops and livestock	Storage areas have allowance for fire appliances and meet buffers around flammable wastes Fire control to be installed in sheds Fire Safety Plan to be prepared by fire engineer Additional water supply point to north of site to allow for faster response	6	No fires
Waste disposal may cause an increase in pests in the area which may impact surrounding crops	Weed and Pest Management Procedure to be developed Stock-proof fencing to be constructed around site	6	No noxious weeds Prompt response to any observed outbreak No complaints from neighbours
May cause an increase in greenhouse gasses emitted and contribute to climate change	LFG monitoring to be undertaken Provision for LFG active control once required	5	



## **Buronga Landfill Expansion**

Amendment Report

Appendix J– MinView Plan and Mining Liaison

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07





202597L02\_MEG Notification

7 July 2022

Morello Earthmoving Pty Ltd PO BOX 644 MILDURA VIC 3502 morello@morelloearthmoving.com.au

#### Dear Sir/Madam

#### LETTER OF NOTIFICATION: PROPOSED BURONGA LANDFILL EXPANSION

We are writing to you as your company holds an exploration lease application over the Buronga Landfill as well as mining titles and title applications near the Buronga Landfill on Arumpo Road, as shown in the attached plan and summarised in the table below. We want to notify you of the proposed expansion of the Buronga Landfill and would like to understand any matters that you would like to be considered.

Title	Holder	Distance to Buronga Landfill (km)
ELA6430	Morello Earthmoving Pty Ltd	0
MLA615	Morello Earthmoving Pty Ltd	2.3
MLA617	Morello Earthmoving Pty Ltd	1.7
ML1679	Morello Earthmoving Pty Ltd	1.3
ML1804	Morello Earthmoving Pty Ltd	1.7

The Buronga landfill encompasses the Wentworth Community Recycling Centre and is owned by Wentworth Shire Council (WSC). It is approximately 4.5 km north northeast of the township of Buronga. WSC is proposing to expand the facility to meet local and regional needs for the next 100 years. It will also provide for expanded recycling facilities and reduction of waste going to landfill in line with the NSW government Waste and Resource Recovery Strategy and the National Waste Action Plan as well as expanding the landfill to the north of the existing area (shown in the attached as "Buronga Landfill"). The development is being assessed by Department of Industry, Planning and Environment (DPIE) as a State Significant Development.

WSC originally consulted with the you and other site neighbours in April 2021 as part of the preparation of the Environmental Impact Statement (EIS). The EIS was placed on public exhibition earlier this year, with no comment being received from the public but additional information was requested by some government departments. DPIE noted that we did not provide a plan of the proposed development in relation to the exploration title boundary along with the letter of notification sent in April 2021 as requested by Department of Regional NSW (Minerals, Exploration and Geoscience). This letter seeks to rectify this oversight.

More information about the project and the assessment process can be found on the DPIE website <u>https://www.planningportal.nsw.gov.au/major-projects/project/40406</u>. . Via this link you will find the documents provided to DPIE for the approvals process, including the EIS.

Tonkin has been engaged by WSC to lead the environmental assessment and Melissa Salt, Principal Scientist, would be please to answer any questions and receive any comments you may have. We are inviting you to make a time to meet online or via the phone. The information you provide would



form part of the Submission Response to be submitted to DPIE as part of WSC application for project approval.

To make an appointment, find out more about the project or provide any comments, please contact Melissa via:

Phone: 0428 997761

Email: melissa.salt@tonkin.com.au.

Please make this contact prior to **29 July 2022** so that we can ensure your comments are included in the additional information.

Yours sincerely,

M Just

Melissa Salt Principal Scientist, Environment and Waste Tonkin

Enc Exploration and Mining Titles and Application Plan





# Exploration and Mining Titles $\bigotimes_{\mathbb{N}}$ Applications

Contact: geoscience.products@planning.nsw.gov.au

Date Saved: 07/07/2022 03:46

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202597L02\_MEG Notification

7 July 2022

Mallee Quarries Pty Ltd PO Box 200 Robinvale VIC 3549 <u>Anthony@mee.com.au</u>; <u>Steve@mee.com.au</u>

Dear Sir/Madam

#### LETTER OF NOTIFICATION: PROPOSED BURONGA LANDFILL EXPANSION

We are writing to you as your company holds exploration and mining leases over land near the Buronga Landfill on Arumpo Road, as shown in the attached plan and summarised in the table below. We want to notify you of the proposed expansion of the Buronga Landfill and would like to understand any matters that you would like to be considered.

Title	Holder	Distance to Buronga Landfill (km)
ML1644	Mallee Quarries Pty Ltd	1.3

The Buronga landfill encompasses the Wentworth Community Recycling Centre and is owned by Wentworth Shire Council (WSC). It is approximately 4.5 km north northeast of the township of Buronga. WSC is proposing to expand the facility to meet local and regional needs for the next 100 years. It will also provide for expanded recycling facilities and reduction of waste going to landfill in line with the NSW government Waste and Resource Recovery Strategy and the National Waste Action Plan as well as expanding the landfill to the north of the existing area (shown in the attached as "Buronga Landfill"). The development is being assessed by Department of Industry, Planning and Environment (DPIE) as a State Significant Development.

WSC originally consulted with the site's neighbours in April 2021 as part of the preparation of the Environmental Impact Statement (EIS). The EIS was placed on public exhibition earlier this year, with no comment being received from the public but additional information was requested by some government departments. DPIE has now requested we consult with all holders of exploration and mining titles and title applications within 3 km of the landfill. This letter seeks to rectify this oversight.

More information about the project and the assessment process can be found on the DPIE website <u>https://www.planningportal.nsw.gov.au/major-projects/project/40406</u>. . Via this link you will find the documents provided to DPIE for the approvals process, including the EIS.

Tonkin has been engaged by WSC to lead the environmental assessment and Melissa Salt, Principal Scientist, would be please to answer any questions and receive any comments you may have. We are inviting you to make a time to meet online or via the phone. The information you provide would form part of the Submission Response to be submitted to DPIE as part of WSC application for project approval.

To make an appointment, find out more about the project or provide any comments, please contact Melissa via:

Phone: 0428 997761

Email: melissa.salt@tonkin.com.au.

Tonkin Consulting ABN 67 606 247 876 ACN 606 247 876 97 Pine Avenue Mildura VIC 3500 Telephone + 61 03 5021 4486 | mildura@tonkin.com.au | tonkin.com.au Adelaide | Berri | Mt Gambier | Mildura | Darwin | Brisbane | Sydney Building exceptional outcomes together



Please make this contact prior to **29 July 2022** so that we can ensure your comments are included in the additional information.

Yours sincerely,

MM Dutt

Melissa Salt Principal Scientist, Environment and Waste

Tonkin

Enc Exploration and Mining Titles and Application Plan





# Exploration and Mining Titles $\bigotimes_{\mathbb{N}}$ Applications

Contact: geoscience.products@planning.nsw.gov.au

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202597L02\_MEG Notification

7 July 2022

Larmon Pty Ltd 4 Bothroyd Court MILDURA VIC 3502 admin@murrayriversalt.com.au

Dear Sir/Madam

#### LETTER OF NOTIFICATION: PROPOSED BURONGA LANDFILL EXPANSION

We are writing to you as your company holds exploration and mining leases over land near the Buronga Landfill on Arumpo Road, as shown in the attached plan and summarised in the table below. We want to notify you of the proposed expansion of the Buronga Landfill and would like to understand any matters that you would like to be considered.

Title	Holder	Distance to Buronga Landfill (km)
EL7175	Larmon Pty Ltd	2.4

The Buronga landfill encompasses the Wentworth Community Recycling Centre and is owned by Wentworth Shire Council (WSC). It is approximately 4.5 km north northeast of the township of Buronga. WSC is proposing to expand the facility to meet local and regional needs for the next 100 years. It will also provide for expanded recycling facilities and reduction of waste going to landfill in line with the NSW government Waste and Resource Recovery Strategy and the National Waste Action Plan as well as expanding the landfill to the north of the existing area (shown in the attached as "Buronga Landfill"). The development is being assessed by Department of Industry, Planning and Environment (DPIE) as a State Significant Development.

WSC originally consulted with the site's neighbours in April 2021 as part of the preparation of the Environmental Impact Statement (EIS). The EIS was placed on public exhibition earlier this year, with no comment being received from the public but additional information was requested by some government departments. DPIE has now requested we consult with all holders of exploration and mining titles and title applications within 3 km of the landfill. This letter seeks to rectify this oversight.

More information about the project and the assessment process can be found on the DPIE website <u>https://www.planningportal.nsw.gov.au/major-projects/project/40406</u>. . Via this link you will find the documents provided to DPIE for the approvals process, including the EIS.

Tonkin has been engaged by WSC to lead the environmental assessment and Melissa Salt, Principal Scientist, would be please to answer any questions and receive any comments you may have. We are inviting you to make a time to meet online or via the phone. The information you provide would form part of the Submission Response to be submitted to DPIE as part of WSC application for project approval.

To make an appointment, find out more about the project or provide any comments, please contact Melissa via:

Phone: 0428 997761

Email: melissa.salt@tonkin.com.au.

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Please make this contact prior to **29 July 2022** so that we can ensure your comments are included in the additional information.

Yours sincerely,

MM Dut

Melissa Salt Principal Scientist, Environment and Waste

Tonkin

Enc Exploration and Mining Titles and Application Plan





# Exploration and Mining Titles $\bigotimes_{\mathbb{N}}$ Applications

Contact: geoscience.products@planning.nsw.gov.au

Date Saved: 07/07/2022 03:46

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202597L05\_MEG Notification

7 July 2022

Iluka Resources Murray Basin, Victoria Locked Bag 1001, Hamilton, VIC 3300

Dear Sir/Madam

#### LETTER OF NOTIFICATION: PROPOSED BURONGA LANDFILL EXPANSION

We are writing to you as your company holds exploration and mining leases over land near the Buronga Landfill on Arumpo Road, as shown in the attached plan and summarised in the table below. We want to notify you of the proposed expansion of the Buronga Landfill and would like to understand any matters that you would like to be considered.

Title	Holder	Distance to Buronga Landfill (km)
EL9381	Iluka Resources	2.1

The Buronga landfill encompasses the Wentworth Community Recycling Centre and is owned by Wentworth Shire Council (WSC). It is approximately 4.5 km north northeast of the township of Buronga. WSC is proposing to expand the facility to meet local and regional needs for the next 100 years. It will also provide for expanded recycling facilities and reduction of waste going to landfill in line with the NSW government Waste and Resource Recovery Strategy and the National Waste Action Plan as well as expanding the landfill to the north of the existing area (shown in the attached as "Buronga Landfill"). The development is being assessed by Department of Industry, Planning and Environment (DPIE) as a State Significant Development.

WSC originally consulted with the site's neighbours in April 2021 as part of the preparation of the Environmental Impact Statement (EIS). The EIS was placed on public exhibition earlier this year, with no comment being received from the public but additional information was requested by some government departments. DPIE has now requested we consult with all holders of exploration and mining titles and title applications within 3 km of the landfill. This letter seeks to rectify this oversight.

More information about the project and the assessment process can be found on the DPIE website <u>https://www.planningportal.nsw.gov.au/major-projects/project/40406</u>. . Via this link you will find the documents provided to DPIE for the approvals process, including the EIS.

Tonkin has been engaged by WSC to lead the environmental assessment and Melissa Salt, Principal Scientist, would be please to answer any questions and receive any comments you may have. We are inviting you to make a time to meet online or via the phone. The information you provide would form part of the Submission Response to be submitted to DPIE as part of WSC application for project approval.

To make an appointment, find out more about the project or provide any comments, please contact Melissa via:

Phone: 0428 997761

Email: melissa.salt@tonkin.com.au.

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Please make this contact prior to **29 July 2022** so that we can ensure your comments are included in the additional information.

Yours sincerely,

MM Dutt

#### Melissa Salt

Principal Scientist, Environment and Waste

#### Tonkin

- Enc Exploration and Mining Titles and Application Plan
- CC Iluka Resource Corporate Office, GPO Box U1988, Perth Western Australia 6845





# Exploration and Mining Titles $\bigotimes_{\mathbb{N}}$ Applications

Contact: geoscience.products@planning.nsw.gov.au

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### **Melissa Salt**

From:	Shontelle Curtis <shontelle curtis@iluka.com=""></shontelle>
Sent:	Thursday, 28 July 2022 10:23 AM
То:	Melissa Salt
Subject:	Notification of Proposed Buronga Landfill Expansion
Attachments:	EL9381_Notification Letter - Proposed Buronga Landfill Expansion - WSC and TC_ 220707.pdf

Good morning Lisa,

Thank you for sending through the letter of notification for the proposed Buronga landfill expansion, which is in close proximity (2.1km) to Iluka's Exploration Licence 9381.

We do not have any objections to the proposed expansion but would like to request an inspection of the geology of the pit wall, following its construction.

Please let us know what is required to arrange this?

Regards,

Shontelle Curtis | Tenement Manager Iluka Resources Limited | Level 18, 240 St Georges Terrace | Perth WA 6000 GPO Box U1988, Perth I WA 6845 Phone +61 8 9360 4698 | Mobile +61 448 238 880 Shontelle.Curtis@iluka.com



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## **Buronga Landfill Expansion**

Amendment Report

Appendix K – Additional Stakeholder Communication

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



### **Melissa Salt**

From:Lyndon Patterson <Lyndon.Patterson@environment.nsw.gov.au>Sent:Friday, 26 August 2022 3:27 PMTo:Isaac NichollsCc:Melissa SaltSubject:RE: Buronga Landfill Expansion EIS: SSD 10096818

Hi Isaac,

Thank you for the email and phone message. I tried to call back.

I recommend that the submissions report address the two key issues in Attachment A of the correspondence from Heritage NSW dated 25 March (Reference: DOC22/132641-5).

I don't have any further comments at this time. If you have questions in regards to our correspondence feel free to call.

Regards, Lyndon

#### Lyndon Patterson Senior Assessment Officer Heritage Assessments Heritage NSW Department of Planning and Environment

T 02 6022 0619 M 0436 676 791 E Lyndon.Patterson@environment.nsw.gov.au

dpie.nsw.gov.au

Yanga National Park 38773 Sturt Highway Balranald NSW 2715



## 

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Please consider the environment before printing this email.

From: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Sent: Friday, 26 August 2022 2:23 PM
To: Lyndon Patterson <Lyndon.Patterson@environment.nsw.gov.au>
Cc: Melissa Salt <Melissa.Salt@tonkin.com.au>
Subject: Buronga Landfill Expansion EIS: SSD 10096818

Hi Lyndon

Hope you are well. I gave you a call earlier but left a voicemail.

I am working on the submissions report to address the comments received on the EIS for the proposed expansion of the Buronga Landfill. As a part of the Department of Planning and Environment's (DPE) response to the EIS they have requested evidence of additional consultation with several agencies including Heritage NSW.

I have attached the Heritage NSW response to the EIS as well as the initial response to the SEARS. The EIS responses will be addressed in the submissions report.

Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer

×		
×	Na mangan pang kana didiga pang kana dan kana da	

**Tonkin** Level 2, 170 Frome Street Adelaide SA 5000 Office +61 8 8273 3100 Direct +61 8 8132 7566 Isaac.Nicholls@tonkin.com.au

#### tonkin.com.au



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### PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

### **Melissa Salt**

From:	Martha Dotter <martha.dotter@rfs.nsw.gov.au></martha.dotter@rfs.nsw.gov.au>
Sent:	Monday, 29 August 2022 12:12 PM
То:	Isaac Nicholls
Cc:	Joanne Laundess; Melissa Salt; 'Tegan Harris'
Subject:	RE: Buronga Landfill Expansion EIS: SSD 10096818

Thanks Isaac – our advice is that we are awaiting receipt of documentation as requested in our previous correspondence and as such, we have no further comments.

Its seems odd that DPE are requesting further consultation where there is nothing to consult on – can you please advise your contact in DPE who requested this ?

Regards Martha



Martha Dotter | Supervisor Development Assessment & Planning (South) Currently working Monday, Wednesday and Friday Planning and Environment Services Built and Natural Environment NSW RURAL FIRE SERVICE Locked Bag 17 Granville NSW 2142 P 02 4472 0600 M 0408 459 678 F 02 4472 0690 E Martha.Dotter@rfs.nsw.gov.au www.rfs.nsw.gov.au | www.facebook.com/nswrfs | www.twitter.com/nswrfs PREPARE. ACT. SURVIVE.

From: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Sent: Friday, 26 August 2022 5:11 PM
To: Martha Dotter <Martha.Dotter@rfs.nsw.gov.au>
Cc: Joanne Laundess <Joanne.Laundess@rfs.nsw.gov.au>; Melissa Salt <Melissa.Salt@tonkin.com.au>
Subject: RE: Buronga Landfill Expansion EIS: SSD 10096818

Hi Martha,

Thankyou for your prompt reply.

I got in touch as DPE have asked for evidence of additional consultation with RFS as a part of the submissions report. This is to provide an opportunity for you to provide any additional comments beyond the advice already provided. If you have no additional advice to provide I will note that in the submissions report.

Have a good weekend.

Thanks,

Isaac Nicholls Engineer

×	
×	

Tonkin Level 2, 170 Frome Street Adelaide SA 5000 Office +61 8 8273 3100 Direct +61 8 8132 7566 Isaac.Nicholls@tonkin.com.au tonkin.com.au



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Please consider the environment before printing this email

From: Martha Dotter <<u>Martha.Dotter@rfs.nsw.gov.au</u>>
Sent: Friday, 26 August 2022 2:25 PM
To: Isaac Nicholls <<u>Isaac.Nicholls@tonkin.com.au</u>>
Cc: Joanne Laundess <<u>Joanne.Laundess@rfs.nsw.gov.au</u>>
Subject: FW: Buronga Landfill Expansion EIS: SSD 10096818

#### Hi Isaac

Thanks for making contact. I am not sure what you are after comments/engagement on. The attached two documents are the advice provided by the RFS.

Thank you Martha



Martha Dotter | Supervisor Development Assessment & Planning (South) Currently working Monday, Wednesday and Friday Planning and Environment Services Built and Natural Environment NSW RURAL FIRE SERVICE Locked Bag 17 Granville NSW 2142 P 02 4472 0600 M 0408 459 678 F 02 4472 0690 E Martha.Dotter@rfs.nsw.gov.au www.rfs.nsw.gov.au | www.facebook.com/nswrfs | www.twitter.com/nswrfs PREPARE. ACT. SURVIVE. From: Isaac Nicholls <<u>Isaac.Nicholls@tonkin.com.au</u>>
Sent: Friday, 26 August 2022 2:07 PM
To: Martha Dotter <<u>Martha.Dotter@rfs.nsw.gov.au</u>>
Cc: Joanne Laundess <<u>Joanne.Laundess@rfs.nsw.gov.au</u>>; Melissa Salt <<u>Melissa.Salt@tonkin.com.au</u>>
Subject: Buronga Landfill Expansion EIS: SSD 10096818

Hi Martha,

Hope you are well. I spoke to the duty officer Josh who gave me your email to forward my query to.

I am working on the submissions report to address the comments received on the EIS for the proposed expansion of the Buronga Landfill. As a part of the Department of Planning and Environment's (DPE) response to the EIS they have requested evidence of additional consultation with several agencies including NSW RFS.

I have attached the NSW RFS response to the EIS as well as the initial response to the SEARS. The EIS responses will be addressed in the submissions report.

Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer



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OF FAME

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### **Melissa Salt**

From:	Justine Clarke <justine.clarke@waternsw.com.au></justine.clarke@waternsw.com.au>
Sent:	Friday, 2 September 2022 3:01 PM
То:	Isaac Nicholls
Cc:	Melissa Salt
Subject:	RE: Buronga Landfill Expansion EIS: SSD 10096818

Thank you for the response Isaac.

We will respond formally during the RTS period.

If anything comes up in the interim and you require clarification, please do not hesitate to contact me.

Regards

#### **Justine Clarke**

Catchment and Asset Protection Adviser



Level 14, 169 Macquarie Street PO Box 398 Parramatta NSW 2150 **M:** 0457 535 955 justine.clarke@waternsw.com.au www.waternsw.com.au

From: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Sent: Friday, 2 September 2022 1:26 PM
To: Justine Clarke <Justine.Clarke@waternsw.com.au>
Cc: Melissa Salt <Melissa.Salt@tonkin.com.au>
Subject: RE: Buronga Landfill Expansion EIS: SSD 10096818

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Hi Justine,

Thankyou for your response. I just gave you a call to discuss this but missed you.

We will be responding to WaterNSW's comments in the Submissions Report. In relation to the first two comments made by WaterNSW regarding impacts to monitoring bore GW087083; the development will not impact on the monitoring bore infrastructure. The monitoring bore is outside of the footprint of the development, and the design of the upgraded facilities will be undertaken in accordance with best management practices to minimise the potential for impacts to groundwater to occur.

The third comment made notes that the mitigation measures contained within Section 6.3.4 of the EIS were not all included in Table 7.1 summarising mitigation measures. This was an oversight and an update mitigation measures table will be included.

I appreciate that formal review of these comments will be provided by WaterNSW following review of the submissions report. I have provided the above summaries of our responses to provide some information about what will be contained within the submissions report.

I am happy to discuss these responses further, or discuss any further comments WaterNSW may have. Please give me a call if you would like to discuss.

Kind Regards,

Isaac Nicholls Engineer

×
Tonkin
Level 2, 170 Frome Street
Adelaide SA 5000
Office +61 8 8273 3100
Direct +61 8 8132 7566
Isaac.Nicholls@tonkin.com.au
tonkin.com.au
×



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From: Justine Clarke <Justine.Clarke@waternsw.com.au>
Sent: Friday, 2 September 2022 10:44 AM
To: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Cc: Melissa Salt <<u>Melissa.Salt@tonkin.com.au</u>>
Subject: RE: Buronga Landfill Expansion EIS: SSD 10096818

Hi Isaac

Thank you for writing to WaterNSW regarding the above proposal.

The below email does not constitute consultation with WaterNSW. As per our response to EIS (which you appended), can you provide any further advice on how you will be responding in your RTS, so that we can be sure you have appropriately considered the impacts we advised?

Regards

Justine Clarke Catchment and Asset Protection Adviser



Level 14, 169 Macquarie Street PO Box 398 Parramatta NSW 2150 **M:** 0457 535 955 justine.clarke@waternsw.com.au www.waternsw.com.au

From: Isaac Nicholls <<u>Isaac.Nicholls@tonkin.com.au</u>>
Sent: Friday, 26 August 2022 2:11 PM
To: Justine Clarke <<u>Justine.Clarke@waternsw.com.au</u>>
Cc: Melissa Salt <<u>Melissa.Salt@tonkin.com.au</u>>
Subject: Buronga Landfill Expansion EIS: SSD 10096818

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Hi Justine

Hope you are well.

I am working on the submissions report to address the comments received on the EIS for the proposed expansion of the Buronga Landfill. As a part of the Department of Planning and Environment's (DPE) response to the EIS they have requested evidence of additional consultation with several agencies including WaterNSW.

I have attached the WaterNSW response to the EIS. The EIS responses will be addressed in the submissions report.

Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer

×	
×	

**Tonkin** Level 2, 170 Frome Street Adelaide SA 5000 Office +61 8 8273 3100 Direct +61 8 8132 7566 <u>Isaac.Nicholls@tonkin.com.au</u>

### tonkin.com.au



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### **Isaac Nicholls**

Operational Liaison <opsliaison@fire.nsw.gov.au></opsliaison@fire.nsw.gov.au>
Monday, 5 September 2022 3:27 PM
Isaac Nicholls
Fire Safety; Aaron Ross
BFS22/674: Buronga Landfill Expansion EIS

#### Good afternoon Isaac,

I note your intention to consult with FRNSW regarding the Response To Submissions (RTS) report, for the Buronga Landfill Expansion addressing FRNSW comments received on the Environmental Impact Statement (EIS).

At this stage FRNSW provide no further comments or recommendations, subsequent to our response to the EIS (BFS22/674 D22/12490), dated 25 February 2022.

FRNSW will review and provide specific comment and recommendations on the finalised RTS via the Department of Planning Portal at the appropriate time.

#### Many thanks



## PREPARED FOR ANYTHING.

www.fire.nsw.gov.au



From: Fire Safety < FireSafety@fire.nsw.gov.au >
Sent: Monday, 5 September 2022 8:48 AM
To: Timothy Wilson < Timothy.Wilson@fire.nsw.gov.au >; John Hawes < John.Hawes@fire.nsw.gov.au >
Subject: FW: File BFS22/674: Buronga Landfill Expansion EIS

Good morning Tim/John

We received the below email regarding Buronga Landfill EIS (FRN20/3202 BFS22/674 8000019759).

Can you please advise if you will respond or if you need admin to provide comments. I will get the below emailed put into trim in the interim.

Thanks Dave



DAVID SHIELD Administration & Project Officer CSD ADMIN & PROJECT SERVICES | Fire and Rescue NSW

T: 02 9742 7434 E: <u>David.Shield@fire.nsw.gov.au</u> A: 1 Amarina Avenue, Greenacre NSW 2190 | Locked Mail Bag 12, Greenacre, NSW 2190 <u>www.fire.nsw.gov.au</u>



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From: Isaac Nicholls <<u>Isaac.Nicholls@tonkin.com.au</u>>
Sent: Friday, 2 September 2022 4:31 PM
To: Fire Safety <<u>FireSafety@fire.nsw.gov.au</u>>
Cc: Melissa Salt <<u>Melissa.Salt@tonkin.com.au</u>>
Subject: RE: File BFS22/674: Buronga Landfill Expansion EIS

CAUTION: This email originated from outside of Fire and Rescue NSW. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Attn: Leading Firefighter Timothy Wilson

Hi Timothy,

I am following up on my email below from last week regarding the Buronga Landfill EIS. We are required to consult with Fire & Rescue for this development. Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer

×	Teng yang yang Mada Mito yanini akadi di kada Ping Jacobatha Tang



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From: Isaac Nicholls <<u>Isaac.Nicholls@tonkin.com.au</u>>
Sent: Friday, 26 August 2022 12:51 PM
To: firesafety@fire.nsw.gov.au
Cc: Melissa Salt <<u>Melissa.Salt@tonkin.com.au</u>>
Subject: File BFS22/674: Buronga Landfill Expansion EIS

Attn: Leading Firefighter Timothy Wilson

Hi Timothy,

Hope you are well

I am working on the submissions report to address the comments received on the EIS for the proposed expansion of the Buronga Landfill. As a part of the Department of Planning and Environment's (DPE) response to the EIS they have requested evidence of additional consultation with several agencies including Fire & Rescue.

I have attached the Fire & Rescue response to the EIS as well as the initial response to the SEARS. The EIS responses will be addressed in the submissions report.

Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer
×	
×	

Tonkin Level 2, 170 Frome Street Adelaide SA 5000 Office +61 8 8273 3100 Direct +61 8 8132 7566 Isaac.Nicholls@tonkin.com.au tonkin.com.au

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## **Isaac Nicholls**

From:	Simon Francis <simon.francis@dpie.nsw.gov.au></simon.francis@dpie.nsw.gov.au>
Sent:	Monday, 5 September 2022 9:18 AM
То:	Isaac Nicholls
Cc:	Melissa Salt; DPIE Water Assessments Mailbox
Subject:	Re: Buronga Landfill Expansion EIS: SSD 10096818

Hi Isaac

Unless there's something specific you would like to discuss with us regarding our advice for the EIS (which will inform your responses in the submissions report), there's nothing I can see that we need to discuss at this stage.

We have look forward to seeing the submissions report.

 

 Kind Regards

 Simon Francis

 Senior Project Officer - Assessments

 Water | Department of Planning and Environment

 M 0428 926 117 | E simon.francis@dpie.nsw.gov.au

 www.dpie.nsw.gov.au

 Planning, Industry & Environment

 Our Vision: Together, we create thriving environments, communities and economies.

Daring	Collaborative	Creative	Kind	Inclusive

I live and work on Awabakal Country.

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

We work flexibly. If you have received an email from me outside of normal business hours, I'm sending it at a time that suits me. Unless it's urgent, I'm not expecting you to read or reply until normal business hours.

From: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Sent: Friday, 2 September 2022 4:28 PM
To: Simon Francis <simon.francis@dpie.nsw.gov.au>
Cc: Melissa Salt <Melissa.Salt@tonkin.com.au>; DPIE Water Assessments Mailbox
<water.assessments@dpie.nsw.gov.au>
Subject: RE: Buronga Landfill Expansion EIS: SSD 10096818

Hi Simon,

I am following up on my email from last week regarding the Buronga Landfill expansion. I gave you a call today but wasn't able to reach you.

Can you please let me know if DPE Water has any additional comments to make regarding this development or would like to discuss this development further. Could you please give me a call on (08) 8273 3100 when you are available to discuss.

Isaac Nicholls Engineer





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From: Isaac Nicholls <Isaac.Nicholls@tonkin.com.au>
Sent: Friday, 26 August 2022 12:43 PM
To: simon.francis@dpie.nsw.gov.au
Cc: Melissa Salt <Melissa.Salt@tonkin.com.au>
Subject: Buronga Landfill Expansion EIS: SSD 10096818

Hi Simon,

Hope you are well. Just gave you a call but got your voicemail.

I am working on the submissions report to address the comments received on the EIS for the proposed expansion of the Buronga Landfill. As a part of the Department of Planning and Environment's (DPE) response to the EIS they have requested evidence of additional consultation with several agencies including DPE Water.

I have attached the DPE Water response to the EIS as well as the initial response to the SEARS. The EIS responses will be addressed in the submissions report.

Can you please let me know if you have any additional comments or would like to discuss this development further. If you would like to discuss, please give me a call on (08) 8273 3100.

Kind Regards,

Isaac Nicholls Engineer



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Amendment Report

Appendix L – Air Quality

### Wentworth Shire Council





Wentworth Shire Council c/o Tonkin Consulting 3-5 Helen Street,

Mount Gambier, SA, 5290,

Australia

25 August 2022

Ref: 70B-21-0092-GCO-37012-0-draft

Dear Melissa,

#### Tonkin - Buronga Landfill air quality assessment

Please find Vipac Engineers and Scientists' (Vipac) response to matters outlined within the email forwarded by Tonkin Consulting on 28 April 2022 from the Department of Planning and Environment (DPIE). It is our understanding that a response is sought relevant to the issues raised in relation to the Buronga Landfill Expansion Air Quality Assessment (Ref 70B-21-0092-TRP-47306653-1), hereafter referred to as the Report below:

- 1. Assessment to be based on the hours of operation as indicated in the EIS
- 2. Additional modelling of PM2.5 and PM10 with a view to attaining no incremental increase from the proposal, as required in the EPA's Approved Methods
- 3. Clarification if actual data has been used in the modelling, and if not, provide justification
- 4. Assessment of the impacts of the LFG flare

## 1 VIPAC RESPONSE

## 1.1 ASSESSMENT TO BE BASED ON THE HOURS OF OPERATION AS INDICATED IN THE EIS

The air quality assessment outlined in the Report Section 2.4 is based on operational hours as follows:

- 6:00am to 7:00pm Monday to Friday; and
- 7:00am to 6.00pm Saturdays, Sundays and Public Holidays.

These hours are consistent with those indicated in the EIS.

# 1.2 ADDITIONAL MODELLING OF PM2.5 AND PM10 WITH A VIEW TO ATTAINING NO INCREMENTAL INCREASE FROM THE PROPOSAL, AS REQUIRED IN THE EPA'S APPROVED METHODS

Sections 7.2 and 7.3 of the Report provide the results of the dispersion modelling as incremental increase and cumulative impacts assessed against relevant criteria for PM10 and PM2.5. As discussed in these Sections, the model predictions for cumulative impacts of PM10 and PM2.5 are above the 24 hour average criteria because the maximum measured 24 hour background are already above the criteria for these pollutants.

As outlined in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, further investigation of the contemporaneous measured background and predicted data has therefore been undertaken. The measured background concentrations exceed the PM10 and PM2.5 criteria on 16 and 2 days, respectively. No additional exceedances of the criteria are predicted by the modelling inclusive of the landfill emissions.

Furthermore, the maximum incremental contribution of the landfill emissions to the cumulative PM10 and PM2.5 are negligible  $(0.81 \ \mu g/m^3)$  and  $0 \ \mu g/m^3)$  on those days. As specified in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, under these circumstances no additional assessment is therefore required.



## 1.3 CLARIFICATION IF ACTUAL DATA HAS BEEN USED IN THE MODELLING, AND IF NOT, PROVIDE JUSTIFICATION

There is no available measured data for the existing Buronga Landfill and has therefore not been used in the modelling. Furthermore, the majority of the landfill activities will cease at the existing landfill cells with the planned expansion such that measured data at the existing site would no longer be relevant.

It is also noted that where possible, conservative assumptions are adopted (cell locations, maximum activities and in the estimation of emission factors) such that predicted impacts are likely higher than those that would typically occur or as measured.

### 1.4 ASSESSMENT OF THE IMPACTS OF THE LFG FLARE

The following section outlines the methodology and results of the assessment of the impacts from the proposed LFG Flare. It is noted that methodology is consistent with that adopted and outlined in the Report but is not restated here again (e.g. the derivation of the meteorological data and modelling approach). Please refer to the Report for a detailed discussion of the methodology.

#### 1.4.1 EMISSIONS SCENARIOS

The emissions inventory from the LFG Flare was developed based upon an anticipated maximum rate of 1,000 m<sup>3</sup>/hr. The preliminary design plans for the Flare are provided in Appendix A.

The maximum rate was conservatively modelled on a 24 hour 7 days per week for the modelling assessment as provided in Table 1-1. Pollutant emission rates were estimated based upon emission factors for flaring provided in Table 8 of the NPI EET Manual for Oil and Gas Extraction and Production Version 2. A 100% conversion of NOx to NO<sub>2</sub> is also conservatively assumed.

Source Type	Diameter (m)	Velocity (m/s)	Temperature (K)	Release Height (m)	Carbon monoxide (g/s)	Oxides of nitrogen (g/s)
Point	2.4	0.06	1,033	8	3.0	0.52

## Table 1-1: Emissions Input Data

#### 1.4.2 RESULTS

Table 1-2 summarises the results of the modelling at the 4 sensitive receptors. The modelling results are presented as incremental contributions of the proposed Flare to the pollutant concentrations. Neither CO or  $NO_2$  are routinely monitored as part of the NSW EPA rural air monitoring network. Background data for these pollutants is therefore unavailable. Furthermore, the background concentrations of these pollutants in the environment surrounding Buronga are expected to be minimal. As shown in the table, the maximum model predictions of pollutant concentrations at all sensitive receptors are well below the criteria for each pollutant.

Based on the results of the air dispersion modelling, therefore, the proposed LFG Flare is not expected to generate adverse air quality impacts at any potentially sensitive receptors in the surrounding environment.

Table 1-2.	Model Prediction	ns at the Sen	sitive Recentors
I ADIC 1-Z.	MUDUEI FIEUICLIUI	וז מנ נווב שבוו	

ID	Carbon Monoxide (µg/m³)			Nitrogen dio	xide (µg/m³)
	15 minutes	1 hour	8 hours	1 hour	annual
SR1	410.75	311.29	44.17	53.96	0.27
SR2	30.44	23.07	4.03	4.00	0.03
SR3	122.96	93.19	15.35	16.15	0.07
SR4	476.86	361.39	81.02	62.64	0.15
criteria	100,000	30,000	10,000	246	62



### 2 CLOSURE

As demonstrated in the preceding sections, the operation of the proposed LFG Flare is not expected to generate adverse air quality impacts at any potentially sensitive receptors in the surrounding environment.

Vipac's recommendations provided in the Report are therefore unchanged such that air quality should not be considered a constraint to proposed landfill expansion.

Yours sincerely,

Vipac Engineers & Scientists Ltd

Dr. Stephen Thomas

**Air Quality Principal** 



## Appendix A LFG FLARE





Tonkin - Buronga Landfill air quality assessment

Response to DPIE Comments



Amendment Report

Appendix M – Traffic Plans

Wentworth Shire Council





TTTTT	
LDER	
3.5m 4.5m	TO MUNGO NATIONAL PARK
6.0m	- <u>3.5</u> m
OF SEAL ESO	25.0m
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BY COLOUR. PRINTED IN	DRAWING NOT TO BE RELIED ON IF GREYSCALE.
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BURONGA LANDFILL EXPAN ARUMPO ROAD INTERSECT CONCEPT DESIGN	NSION TON UPGRADE
TLENAME: 202597 INTERS CONCEPT.DWG	PROJECT NUMBER DRAWING NUMBER REVISION A
1\APPDATA\LOCAL\TEMP\ACPUBLISH_10400\20259	7 INTERS CONCEPT.DWG -S1- (27-06-22 2:13:29PM)



Amendment Report

Appendix N – Well Locations

Wentworth Shire Council





Amendment Report

Appendix O – Updated BDAR

Wentworth Shire Council





## BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

**JANUARY 2023** 



I certify that this report has been prepared on the basis of the requirements of, and information provided under, the Biodiversity Assessment Method and s6.15 of the BC Act.

In preparing this assessment, I have acted in accordance with the **Accredited BAM ASSESSOR Code of Conduct.** 

I declare that I have considered the circumstances, and there is no actual, perceived or potential conflict of interest.

Ty Mit

Troy Muster Date: 31/01/2023 BAM Assessor Accreditation No: BAAS 18175

## **Reporting office**

Victoria Mildura 84 Lemon Ave

## **Document information**

Report Authors:	Troy Muster, Stephen Erlandsen, Mina Ivanov, Dylan Butcher
Document status:	Final
Citation:	Pinion Advisory, 2023, Biodiversity Development Assessment Report, Buronga Landfill Expansion, Mildura, VIC

## **Document status**

Date	Issue Number
23 July 2021	Draft 1
30 July 2021	Draft 2
28 Sept 2021	Draft 3
3 Dec 2021	Final V1
27 August 2022	Final V2
31 January	Final V3
2023	

Purpose of Revision
Peer Review
Peer Review
Feedback from Tonkin
Threatened Species Data
Address BCD comments
Revised development
footprint

Reviewed by	Authorised by
Troy Muster	Troy Muster
Stephen Erlandsen	Troy Muster
Stephen Erlandsen	Troy Muster
Stephen Erlandsen	Troy Muster
Troy Muster	Troy Muster
Troy Muster	Troy Muster



1300 746 466

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## Acronyms and abbreviations

BAM	Biodiversity Assessment Methodology
BAM-C	Biodiversity Assessment Method Calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BCAR	Biodiversity Certification Assessment Report
ВСТ	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BLE	Buronga Landfill Expansion
BOAMS	Biodiversity Offsets and Agreements Management System
BOM	Australian Bureau of Meteorology
BOS	Biodiversity Offsets Scheme (NSW)
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environment Management Plan
cm	centimetre
CWTH	Commonwealth
DBH	Diameter at Breast Height
DPE	Department of Planning and Environment (NSW)
DPI	Department of Primary Industry (NSW)
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (CWTH)
FM Act	Fisheries Management Act 1994 (NSW)
GIS	Geographic Information System
НВТ	Hollow Bearing Trees
HTW	High-Threat Weeds
IBRA	Interim Biogeographic Regionalisation for Australia
КТР	Key Threatened Species
LEP	Local Environmental Plan
LGA	Local Government Area
LLS Act	Local Land Services Act 2013 (NSW)
MNES	Matters of National Environmental Significance
NSW	New South Wales
OEH	Office of Environment and Heritage (NSW)
РСТ	Plant Community Type
REAP	Regional Environmental Action Plan (NSW)
SAII	Serious and Irreversible Impact
SEARS	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy (NSW)
SSD	State Significant Development
TEC	Threatened Ecological Community
VEC	Vulnerable Ecological Community



## 1 Introduction

Wentworth Shire Council in the far west of NSW is seeking project approval to expand a waste and resource management facility in Buronga under Section 4.55 of the *Environmental Planning and Assessment act 1979* (EP&A Act). A map of the location is below (Figure 1). The Buronga landfill expansion proposal (BLE) is classified as a State Significant Development (SSD) (SSD 10096818) under the *State Environmental Planning Policy (State and Regional Development) 2011* and is considered a 'major project'. The BLE will cater for projected waste management requirements for the region.

It is important to note that an existing development consent for establishing borrow pits was issued in January 2017 (DA15/154 – Appendix B). The development consent covers part of the BLE, including the progressive removal of native vegetation to establish borrow pit sites until 2053.

The Department of Planning and Environment (DPE) has requested that the impacts and offset requirements within the area covered by the existing development consent be accounted for separately from the area outside of the existing development consent.

This Biodiversity Development Assessment Report (BDAR) assesses the impacts of the BLE in accordance with the NSW Biodiversity Assessment Method (BAM) as required by the Secretary's Environmental Assessment Requirements (SEARs) for the proposal. Pinion Advisory has prepared this BDAR on behalf of the proponent (Case 24826). The team was led by Troy Muster (Senior Environmental Consultant), who is accredited under Section 6.10 of the NSW *Biodiversity Conservation Act 2016* (BC Act), reference BAAS18175. Troy was assisted by Stephen Erlandsen, Dylan Butcher, and Mina Ivanov. Stephen Erlandsen (B. Ag. Sc.) has almost 40 years professional experience in botany and soil management in the semi-arid environment of south-west NSW and north-west Victoria. Dylan Butcher (B. Env. & Cons. Sc.) has eight years' experience as an environmental consultant and specialises in flora and fauna assessment. Mina Ivanov (B. Sc. (Hons)) has three years' experience as an environmental consultant and specialises in flora and fauna assessment. 2021; further site assessments occurred on: 31 March, 6, 7, and 8 April, 4, and 6 May, 20 July 2021, and July 2022. Targeted threatened species surveys were undertaken in October 2021.

The following terms have been used in this document.

Subject land	The land which is directly impacted by the proposed development incorporating the landfill footprint, stormwater management area, and waste resource recovery areas.
Development site	All landholdings which are directly involved in the development proposal, including the existing waste and resource management facility. Lots 1 DP 1037845, 197 DP 756946, and 212 DP 756946.
Buffer area	Land within 1,500 m of the subject land.
Extended landscape	Landscape features beyond the buffer area are notable for understanding fauna, flora, geological, and assessment decisions.
Vegetation Zone	A subset of a Plant Community Type (PCT) is based on a broad condition scale.



## 1.1 The proposal

The subject land covers an area of 41.7 ha within Lot 1 DP 1037845 (Figure 1). Approximately 17.53 ha is native vegetation, and approximately 24.16 ha is not native vegetation.

The subject land (Figure 1) outlines the proposed development of a waste and resource management facility. The proposed development involves four substages which are then divided into three cells within the operational footprint of each stage; only one cell would be operating at any one time until its completion, then a transitioned rehabilitation program would be undertaken for that cell. This development is expected to operate cell by cell for approximately 37.8 years, with each cell operating for approximately three years. It is noted that each substage will likely be delineated and cleared (worst case) as one with each cell constructed and rehabilitated in turn.



Figure 1. Site map

## 1.2 General description

The subject land is located within the Wentworth Shire Council (WSC) Local Government Area (LGA) on the east side of Arumpo Road, approximately 6 km north of Buronga, NSW. The subject land and development site are zoned SP2 (Infrastructure) under the Wentworth Local Environmental Plan (LEP). The subject land is within Lot 1 DP 1037845, while the development site includes Lots 197 DP 756946 and 212 DP 756946.

Five Plant Community Types (PCT) have been mapped within the Subject land, divided into nine vegetation zones (Figure 2 and Figure 3):

 PCT 15 – Black Box open woodland wetland with Chenopod understorey mainly on the outer floodplains in south-western NSW (Mainly Riverina Bioregion and Murray Darling Depression Bioregion) – (Vegetation Zone 1 – Good condition)



- PCT 58 Black Oak Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion – (Vegetation Zone 2 – Good condition; Vegetation Zone 3 – Moderate condition; Vegetation Zone 4 – Poor condition; Vegetation Zone 8 – Very poor condition regrowth)
- PCT 170 Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones – (Vegetation Zone 5 – Moderate condition; Vegetation Zone 10 – Very poor condition regrowth)
- PCT 252 Sugarwood open woodland of the inland plains mainly Murray Darling Depression Bioregion – (Vegetation Zone 6 – Poor condition)
- PCT 143 Narrow-leaved Hopbush Scrub Turpentine Senna shrubland on semi-arid and arid sandplains and dunes (Vegetation Zone 7 Poor condition regrowth)

There has been historic clearing of native vegetation and preliminary development of a waste and resource management facility within the development site. A previous development consent issued by Wentworth Shire Council in 2017 (DA15/154) covers most of the subject land. This development consent was issued for the development of borrow pits to provide cover for the existing landfill site and for the use as landfill cells for future use. The area covered by this development consent is identified in Figure 1. In order to distinguish between the current consent area and the rest of the subject land, DPE requested that this BDAR identify biodiversity impacts and offset requirements within the current consent area (Figure 2) separately to those outside of the current consent area (Figure 3).

During the field work, the assessment team noted that there had been widespread dumping of small volumes of waste throughout the property. There are also randomly scattered areas where minor earthworks have been conducted, such as digging a borrow pit or dumping overburden.

Some of the rubbish dumping and earthworks appear to be historic; however, most appears to be more recent. A high proportion of the plastic materials is windblown.





Figure 2. Location map current consent area (related case 00024930)



Figure 3. Location map outside current consent area (related case 00025590)



## 2 Site context

## 2.1 Landscape features

To distinguish between the impacts inside and outside the previous consent area two separate related cases within the parent case in the *Biodiversity Offsets and Agreements Management System* (BOAMS) have been created. Each related case requires a separate landscape assessment due to the different development areas and associated buffers. The landscape features within the existing consent area (related case 00024930) and outside the existing consent area (related case 00025590) for the site are described in Table 1.

Landscape	Description		
features			
IBRA Bioregion	The subject land is within the Riverina IBRA Bioregion. Directly north-east of the subject land within the buffer zones for both related cases (00024930 and 00025590) is the Murray Darling Depression IBRA Bioregion.		
	Some features described in the BDAR reflect on the biodiversity of the subject land concerning the nearby presence of the Murray Darling Depression IBRA Bioregion.		
IBRA Sub-region	The subject land resides within the Robinvale Plains IBRA Sub-region. Directly north of the subject land is the South Olary Plain IBRA Sub-region.		
LGA	The subject land and buffer zones (assessment areas) for both related cases (00024930 and 00025590) are located within the Wentworth Shire Council Local Government Area (LGA)		
Mitchell landscape	The assessment areas (related case 00024930 and 00025590) contain three Mitchell landscapes: The dominant landscape is the Murray Lakes, Swamps and Lunettes.		
	<b>Murray Lakes, Swamps and Lunettes (MII):</b> Large active freshwater lakes and swamps frequently flooded by the river, generally round or kidney-shaped. Often nested within larger relict Quaternary Lake features. Beaches, sand, and clay pellet lunettes and sandhills on the eastern margins. Lake beds and associated channels of grey cracking clay, beaches of brown to white sands, lunettes of deep cemented yellow to white sands, with or without interbedded strata of pelleted clay. Relief of lakes and channels to 10 m, lunettes to 20 m. <u>Cover: 55% (related case 00024930) 53% (related case 00025590)</u>		
	<b>Murray Channels and Floodplains (Muc):</b> Active channels and seasonally inundated floodplains of the Murray streams in Quaternary alluvium with associated billabongs, swamps, channels, levees and source bordering dunes, relief to 10 m. Includes scalded alluvial flats, broad elevated floodplains and associated relict channels; isolated sandy rises, relief to 5 m. <u>Cover: 27% (related case 00024930) 28%</u> (related case 00025590)		
	<b>Mallee Cliffs Sandplains (Mcs):</b> Extensive, slightly undulating sandplain of Quaternary aeolian sands with east-west trending dunes, often with blowouts, partly scalded broad swales and small depressions, relief 6 to 10 m. Solonized brown soils, calcareous loamy sand, texture-contrast soils on the plain, red and brown sands on dunes, non-cracking grey or brown clays in depressions. <u>Cover: 18%</u> (related case 00024930) 19% (related case 00025590)		
Native vegetation cover	Native vegetation within the subject land covers 17.53 ha (42%), and non-native vegetation covers 24.16 ha (33%). Native vegetation on the subject land within related case 00024930 covers 13.77 ha (42%) and non-native vegetation covers 18.96 ha (58%). Native vegetation cover on the subject land within related case 00025590 covers 3.76 ha (42%) and non-native vegetation covers 5.21 ha (58%).		
	Native vegetation within the assessment area for related case 00024930 covers 1,007.7 ha (88%) and non-native vegetation covers 142.5 ha (12%). Native vegetation within the assessment area for related case 00025590 covers 1,186.1 ha (87%) and non-native vegetation covers 184.7 ha (13%).		
Rivers, streams, and estuaries	There are no rivers, streams, or estuaries within the subject land or assessment areas for both related cases (00024930 and 00025590); however, there are two notable features in the extended landscape:		
	<b>Murray River:</b> The Murray River is a nationally significant and highly regulated waterway. <u>Location: 3.6</u> <u>km southwest of subject land (related case 00024930); 3.4 km southwest of the subject land (related case 00025590)</u>		
	<b>Gol Gol Creek:</b> This creek is connected to the Murray River and is maintained at the weir pool level (Lock 11) to supply water to irrigators and residents in Gol Gol North. It also and operates as an inlet		





	channel for Gol Gol Swamp and Lake Gol Gol. <u>Location: 2.1 km east of the subject land (related case</u> 00024930); 1.7 km east of the subject land (related case 00025590)
Wetlands	There is no wetland present within the subject land or assessment areas for related case 00024930, however one of the four water bodies in the extended landscape are on the outer edge of the assessment area for related case 00025590.:
	<b>Mourquong Saltwater Disposal Basin:</b> This is a disposal site for saline groundwater from the Buronga Salt Interception Scheme (SIS). The Buronga SIS is Shared Work (NSW and Commonwealth) under the Murray Darling Basin Authority Basin Salinity Management Strategy. The scheme consists of eight interception bores which are located on the Murray River floodplain to the south of the Basin. These bores intercept highly saline groundwater (approx. 65,000 EC) and prevent around 17,500 tonnes of salt from entering the Murray River (MDBA undated). The intercepted groundwater is pumped via pipeline to the Basin which receives approx. 2,500 Megalitres of highly saline groundwater per year. The Basin is outside the assessment area for both related cases (00024930 and 00025590. Location: 3.2 km west of the subject land (related case 00024930); 3 km west of the subject land (related case 00025590)
	<b>Mourquong Irrigation Drainage Water Disposal Area:</b> This area is used to dispose of irrigation drainage water collected by subsurface drains from the adjacent irrigation area. The volumes of drainage water vary depending on climatic conditions, however, there has been a significant reduction in drainage water volumes in the local area over the last 20-30 years due to the adoption of more efficient irrigation practices. The area is located outside the assessment area for related case 00024930 and on the outer adge of the assessment area for related case 00025500 which intersects with the pactern
	edge of the drainage disposal area. <u>Location: 1.67 km west of the subject land (related case 00024930);</u> <u>1.34 km west of the subject Land (related case 00025590</u>
	<b>Lake Gol Gol:</b> Is an ephemeral lake which is periodically inundated via a regulated inlet from Gol Gol Creek during high flow events in the Murray River. Although the lake is predominately dry, it provides shallow freshwater habitat during infrequent inundation events. The area is located 450 m outside the assessment area for related case 00024930 and 50 m outside of the assessment area for related case 00025590. <u>Location: 1.95 km east of the subject land (related case 00024930); 1.56 km east of the subject land (related case 00025590)</u>
	<b>Gol Gol Swamp:</b> This wetland infrequently contains water. The natural inlet from Gol Gol Creek is regulated and water is diverted north via a man-made channel which runs along the western edge of Gol Gol Swamp and connects back to the natural creek which connects Gol Gol Swamp with Lake Gol Gol. Gol Gol Swamp is outside the assessment area for both related cases (00024930 and 00025590. Location: 4.8 km east of the subject land (related case 00024930); 4.3 km east of the subject land (related case 00025590)
Habitat Connectivity	The subject land has several connective habitat features relevant to both related cases (00024930 and 00025590).
	Spanning north and south along the western boundary of the subject land is mallee woodland vegetation made up of predominantly <i>Eucalyptus</i> spp. Overstorey with a range of Chenopods, other small shrubs, and herbs; similar to, and mapped as predominantly PCT 170 transitioning to PCT 58 to the north.
	Along the eastern perimeter and part of the southern perimeter of the development, the footprint is an open woodland dominated by <i>Eucalyptus largiflorens</i> overstorey and a sparsely covered Chenopod understorey; similar to and mapped as PCT 15.
Areas of geological significance and soil hazard features	The Groundwater Impact Assessment (Tonkin 2021) indicates that groundwater levels beneath the subject land range from 5.9 m to 7.5 m below ground level. This feature is relevant to both related cases (00024930 and 00025590). Saline groundwater is a feature of the local area, as described in the description of the Mourquong Saltwater Disposal Basin above.
Areas of outstanding biodiversity value	There are no declared AOBVs within the subject land or the surrounding landscape for both related cases (00024930 and 00025590).
Landscape features identified in the SEARs	A SEARs has been addressed as part of the development of this BDAR; there are no landscape features on the subject land or the surrounding landscape (related cases 00024930 and 00025590) identified within the SEARs.





Figure 4. Landscape features (related case 00024930



Figure 5. Landscape features (related case 00025590)



## 3 Native vegetation

## 3.1 Native vegetation extent

There is approximately 17.53 ha of native vegetation occurring within the subject land, based on aerial photo interpretation; this is comprised of:

- 0.72 ha (PCT 15: Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (Mainly Riverina Bioregion and Murray Darling Depression Bioregion)) (Table 2)
- 9.86 ha (PCT 58: Black Oak Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion) (Table 3)
- 3.80 ha (PCT 170: Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones) (Table 4)
- 1.70 ha (PCT 252: Sugarwood open woodland of the inland plains mainly Murray Darling Depression Bioregion) (Table 5)
- 1.45 ha (PCT 143: Narrow-leaved Hopbush Scrub Turpentine Senna shrubland on semiarid and arid sandplains and dunes) (Table 6)

There is 24.16 ha of non-native vegetation within the subject land which has been historically cleared as part of the current landfill. This area consists of bare ground, access tracks, exotic ground cover, buildings, or landfill area.

Aerial interpretation of the subject land and buffer area has determined that there is 88% cover of native vegetation and 12% cover of non-native vegetation within the current consent area (related case 000249300) and 87% cover of native vegetation and 13% cover of non-native vegetation outside the current consent area (related case 00025590).

Black Box open woodland wetland with chenopod understory mainly on the outer floodplains in south- western NSW (Mainly Riverina Bioregion and Murray Darling Depression Bioregion)				
Vegetation Formation	Semi-arid woodlands (Grassy sub-formation)			
Vegetation Class	Inland floodplain woodlands			
Vegetation Type	PCT ID		15	
	Common Community Nan	ne	Black Box open woodland wetland	
The approximate extent	0.72 ha	Percentage o	f PCT	50%
within the subject land		cleared in Bio	oregion	
Species relied upon for	Species Name		Relative abundance	
PCT information	Eucalyptus largiflorens		40%	
	Rhagodia spinescens		10%	
	Enchylaena tomentosa		10%	
	Maireana brevifolia		5%	
	Dissocarpus paradoxus		5%	
Justification of evidence used to identify the PCT	<i>Eucalyptus largiflorens</i> is the only tree species present. The vegetation is relatively intact and open. The understorey is sparse with the mid and ground stratum dominated by chenopod species and a relatively low cover of forbs and grasses also present in the ground stratum. The vegetation is at a lower elevation than the rest of the subject land ranging from $36 \text{ m} - 38 \text{ m}$ AHD. The soil consists of alluvial clays with some aeolian deposits at the surface, particularly around the edge of the vegetation.			
	Based on these attributes a short list of 15 PCT's with the Robinvale Plains IBRA sub- region were identified using the NSW Bionet Vegetation Classification. Each of these PCT's was considered and most were excluded based on significant differences in species attributes within one or more stratum e.g species that rely on more regular			

#### Table 2. Description of PCT 15 in the subject land



	flooding than the species present, such as <i>Eucalyptus camaldulensis, and</i> <i>Muehlenbeckia florulenta</i> . Four candidate PCT's were short-listed, PCT 15, PCT 16, PCT 216 and PCT 630. Following a review of the PCT description and species list in each stratum PCT 16 and 216 were excluded based on significant differences in the description and species composition in the mid and ground stratum e.g. a lack of mid stratum species in PCT 16 and the domination of <i>Sclerolaena muricata</i> var. <i>semiglabra</i> in PCT 216.			
	PCT 15 and PCT 630 are very similar in species composition and structure, with the notable absence of <i>Atriplex rhagoides</i> in the mid stratum of PCT 15. <i>Atriplex rhagoides</i> was not observed on site. The Bionet Vegetation Classification indicates that PCT 630 was previously mistyped to PCT 15. A review of the distribution in the PCT description and the NSW State Vegetation Type Map indicates that PCT 630 occurs between Wentworth (26 km west of the subject land) and the SA border and north along the Darling River and Darling River Anabranch. A review of the distribution of PCT 15 using the same data indicates that it is common in the local area on the outer floodplain and that it is mapped on the subject land, including within the area of vegetation in question.			
	PCT 15 is considered to be the most appropriate PCT based on the information and analysis above, in summary:			
	<ul> <li>Eucalyptus largiflorens is the dominant overstorey species contributing to nearly 100% of the canopy cover</li> <li>The understorey species composition and structure is characteristic of the identified PCT</li> <li>The vegetation is located on alluvial soils on the outer floodplain</li> <li>The location is within the Robinvale Plains IBRA subregion</li> <li>The identified PCT is consistent with the NSW State Vegetation Type Map</li> </ul>			
TEC Status	Not a TEC			
Examples image	<image/>			



Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling				
Depression Bioregion				
Vegetation Formation	Semi-arid woodlands (Shrubby sub-formation)			
Vegetation Class	Semi-arid sand plain woodlar	nds		
Vegetation Type	PCT ID		58	
	Common Community Nan	ne	Black Oak – V	Vestern rosewood
The approximate extent	9.86 ha	Percentage o	of PCT	50%
within the subject land		cleared in Bio	oregion	
Species relied upon for	Species Name		Relative abundance	
PCT information	Sclerolaena patenticuspis		35%	
	Dissocarpus paradoxus		30%	
	Casuarina pauper		15%	
	Maireana brevifolia		10%	
	Alectryon oleifolius subsp. ca	nescens	5%	
Justification of evidence used to identify the PCT	<i>Casuarina pauper</i> is the dominant overstorey species present. Other overstorey species include <i>Myoporum platycarpum</i> subsp. <i>platycarpum, Alectryon oleifolius</i> subsp. <i>canescens</i> and <i>Pittosporum angustifolium</i> . Overstorey trees are scattered across the area, often forming clumps, with open areas in between. The mid and ground stratu is dominated by chenopod species with a relatively low cover of grasses and forbs present. The topography is slightly undulating with elevations varying from 38 m – 4. AHD. Soil types consist of calcareous red-brown loamy sands. The eastern parts of the area have a history of ground disturbance from earthmoving activities, evidenced by uneven terrain, isolated islands of raised vegetation and piles of soil. This includes ar area of regrowth which is at a lower elevation than the rest of the area where much the topsoil has been removed. The regrowth contains isolated immature overstorey vegetation ( <i>Casuarina pauper, Myoporum platycarpum</i> subsp. <i>platycarpum</i> and <i>Pittosporum angustifolium</i> ) and an understorey dominated by isolated chenopods, forbs and grasses.		nt. Other overstorey species yon oleifolius subsp. are scattered across the e mid and ground stratum er of grasses and forbs ns varying from 38 m – 49 m s. The eastern parts of the g activities, evidenced by es of soil. This includes an of the area where much of ed immature overstorey sp. platycarpum and by isolated chenopods,	
	A review of the NSW Bionet Vegetation Classification data revealed that nine PCT's within the Robinvale Plains IBRA sub-region contain <i>Casuarina pauper</i> in the upper stratum. Each of these PCT's was considered and most were excluded based on significant differences in species attributes and structure within one or more stratum, or soil type e.g., shrubland PCT's with a zero – low benchmark for tree species richness and cover.			
	Three candidate PCT's were short-listed, PCT 58, PCT 221 and PCT 252. The difference in these PCT's are in the species composition, as the structural attributes in the P benchmarks for all three PCT's are identical. A review of the PCT descriptions rewith the these PCT's contain similar species in each stratum, however there are some distinguishing features in terms of species composition. PCT 252 is a sub-associat PCT 58, with the upper stratum dominated by <i>Myoporum platycarpum</i> subsp. <i>platycarpum</i> in PCT 252 and <i>Casuarina pauper</i> in PCT 58. As noted above <i>Casuarin pauper</i> is the dominant upper stratum species. In PCT 221 the main understorey is <i>Maireana sedifolia</i> , which dominates the mid-stratum. <i>Maireana sedifolia</i> is not in the benchmark for PCT 58 and was not recorded during the site assessment. In addition, 18 of the 25 mid and ground stratum species recorded during the site assessment are listed in the benchmark for PCT 58 is not mapped within the subject land however it is common in the surrounding area. The vegetation is mapped as PCT PCT 170, however the attributes of the vegetation do not match these PCT's.		d PCT 252. The differences ral attributes in the PCT PCT descriptions revealed wever there are some 252 is a sub-association of <i>atycarpum</i> subsp. noted above <i>Casuarina</i> ne main understorey species <i>aireana sedifolia</i> is not listed ne site assessment. In rded during the site ur are listed in the A review of the NSW State <i>v</i> ithin the subject land, on is mapped as PCT 15 and atch these PCT's.	
	<ul> <li>Casuarina pauper is of the canopy cove</li> </ul>	s the dominant or r with <i>Myoporur</i>	overstorey spec	ies, contributing up to most subsp. <i>platycarpum</i> and





TEC Status	<ul> <li>The understorey species composition and structure are characteristic of the identified PCT</li> <li>The soil type is consistent with the soil characteristics identified in the PCT description.</li> <li>The location is within the Robinvale Plains IBRA subregion</li> <li>The identified PCT is not mapped within the vegetation, however it is consistent with similar vegetation mapped in the surrounding area.</li> </ul>		
Examples image			
	<image/>		

Table 4. Description of PCT 170 in the subject land

Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones					
Vegetation Formation	Semi-arid Woodlands (Shrubby sub-formation)				
Vegetation Class	Sand plain mallee woodlands				
Vegetation Type	PCT ID Common Community Name		170		
			Chenopod sandplain mallee woodland		
The approximate extent	3.80 ha	Percentage o	f PCT	41%	
within the subject land		cleared in Bioregion			
Species relied upon for	Species Name		Relative abundance		
PCT information	Dissocarpus paradoxus		30%		
	Sclerolaena patenticuspis		10%		
	Eucalyptus oleosa		10%		
	Eucalyptus dumosa		8%		
	Pittosporum angustifolium		5%		
Justification of evidence used to identify the PCT	<i>Eucalyptus oleosa</i> is the dominant overstorey species, with <i>E. dumosa, E. socialis</i> and several <i>Callitris gracilis</i> subsp. <i>murrayensis</i> also present. The overall density of the				
· · · · · · · · · · · · · · · · · · ·	overstorey is higher than the other PCT's in this area, however there are some open				
	areas present. The mid and ground stratum is dominated by chenopod species, with				
	Roepera apiculata the dominant forb and a low cover of grasses present. Other scattered shrub species such as <i>Pittosporum angustifolium</i> and <i>Senna</i> spp. Are also present in some areas. The topography is slightly undulating with elevation ranging from 37 m to 46 m AHD. Soil types consist of calcareous red-brown sandy loams. The most north-eastern parts of the area have a history of ground disturbance from earthmoving activities, evidenced by uneven terrain, and isolated islands of raised				
	vegetation. Much of the area contains no overstorey species due to this history of				
	disturbance. The understorey is dominated by forbs and grasses, with isolated				



	chenopod species present. The overstorey vegetation present consists of isolated <i>Eucalyptus oleosa, E. dumosa, Callitris gracilis</i> subsp. <i>murrayensis, and Pittosporum angustifolium.</i>
	A review of the NSW Bionet Vegetation Classification data revealed that three PCT's within the Robinvale Plains IBRA sub-region contain <i>E. oleosa</i> as an upper stratum species (PCT 170, PCT 171 and PCT 253).
	PCT 171 contains an understorey dominated by <i>Triodia scariosa</i> , which was not present within this area of vegetation. Although some chenopod species are present within PCT 171 they do not form a major component of the understorey. PCT 252 occurs on gypseous rises, which are not present on the subject land, and contains open or sparse low shrubland with occasional overstory trees. Understorey species listed in the benchmark for PCT 171, in particular ground stratum species, do not closely align with the species observed in this area of vegetation. The benchmark tree cover in PCT 252 is 0%. For these reasons PCT 171 and 252 were excluded.
	PCT 170 is described as a mallee woodland or open mallee shrubland with chenopod shrubs forming a major component of the understorey, which is consistent with the observations of this vegetation during the site assessment. Three of the four upper stratum species observed and 13 of the 14 mid or ground stratum species observed are also listed in the benchmark for PCT 170.
	A review of the NSW State Vegetation Type Map indicates that PCT 170 is mapped within the subject land, including within this area of vegetation. The vegetation is also mapped as mapped as PCT 15 and PCT 153, however the attributes of the vegetation do not match these PCT's.
	<ul> <li>PCT 170 is considered to be the most appropriate PCT based on the information and analysis above, in summary: <ul> <li><i>E oleosa</i> and <i>E. dumosa</i> dominate the overstorey species composition.</li> <li>The understorey species present in this vegetation community are characteristic of the identified PCT.</li> <li>The soil type and topography are consistent with the soil characteristics identified in the PCT description.</li> <li>The location is within the Robinvale Plains IBRA subregion</li> <li>The identified PCT is also mapped within the subject land on the NSW State Vegetation Type Map</li> </ul> </li> </ul>
TEC Status	Not a TEC
Examples image	<image/>



Current and a second se						
Sugarwood open woodland of the inland plains mainly Murray Darling Depression Bioregion						
Vegetation Formation	Semi-arid woodlands (Shrubby sub-formation)					
Vegetation Class	Semi-arid sand plain woodla	ands				
Vegetation Type	egetation Type PCT ID		252			
	Common Community Na	me	Sugarwood op	oen woodland		
The approximate extent	1.7 ha	Percentage of PCT 50%		50%		
within the subject land		cleared in l	Bioregion			
Species relied upon for	Species Name		Relative abu	indance		
PCT information	Myoporum platycarpum		2%			
	Scierolaena pentatropis		60%			
	Dissocarpus paradoxus	Dissocarpus paradoxus		20%		
Instification of avidones	Muoporum platucarpum suk	sp platucarpu	5% m is the only overstorey species present			
used to identify the PCT	<ul> <li>Myoporum platycarpum subsp. platycarpum is the only overstorey species present. The overstorey is sparse with only a few overstorey trees present. The few M. platycarpum subsp. platycarpum have grown separately and are not the same age. Some tree stumps are also present. The understorey consists mainly of chenopod species with Sclerolaena pentatropis and Dissocarpus paradoxus dominating. The topography is relatively flat with elevations varying from 39 m – 41 m AHD. Soil types consist of calcareous red-brown loamy sands.</li> <li>A review of the NSW Bionet Vegetation Classification data revealed that five PCT's within the Robinvale Plains IBRA sub-region contain Myoporum platycarpum subsp. platycarpum in the upper stratum. These PCT's are PCT 21, PCT 28, PCT 58, PCT 154 and PCT 252.</li> <li>PCT 21 and PCT 28 consist of open woodland, which includes Myoporum platycarpum subsp. platycarpum. However, both PCT's consists of a sparse shrub layer with a benchmark cover of 3%, which is much lower than what was observed. PCT 154 consists of open chenopod shrubland dominated by Maireana sedifolia with several other Maireana spp. Often present. Maireana. Sedifolia was not observed and the only Maireana sp. Observed is not listed in the benchmark.</li> </ul>					
	Two candidate PCT's were short-listed, PCT 58 and PCT 252. The differences in these PCT's are in the species composition, as the structural attributes in the PCT benchmarks for both PCT's are identical. A review of the PCT descriptions revealed that these PCT's contain similar species in each stratum, however there are some distinguishing features in terms of species composition. PCT 252 is a sub-association of PCT 58, with the upper stratum dominated by <i>Myoporum platycarpum subsp. platycarpum</i> in PCT 252 and <i>Casuarina pauper</i> in PCT 58. As noted above <i>Myoporum platycarpum subsp. platycarpum</i> is the only stratum specie present. In the mid and ground stratum there nothing to distinguish between the two candidate PCT's with four of the five species recorded during the site assessment listed in the benchmark for both PCT's. A review of the NSW State Vegetation Type Map indicates that both PCT's are not mapped within the subject land, however PCT 58 is common in the surrounding area and PCT 252 is mapped approx. 15 km to the north. The vegetation is mapped as PCT 153, however the attributes of the vegetation do not match this PCT.					
	PCT 252 is considered to be the most appropriate PCT based on the information and analysis above, in summary:					
	<ul> <li>Myoporum platycarpum subsp. platycarpum is the dominant overstorey species, contributing up to all the canopy cover. Casuarina pauper, the dominant overstory species within PCT 58 is not present</li> <li>The understorey species composition and structure are characteristic of the identified PCT</li> <li>The soil type is consistent with the soil characteristics identified in the PCT description.</li> <li>The location is within the Robinvale Plains IBRA subregion</li> </ul>					







Table 6. Description of PCT 143 in the subject land

Narrow-leaved Hopbush – So dunes	crub Turpentine – Senna sl	nrubland on s	semi-arid and	arid sandplains and	
Vegetation Formation	Arid Shrubland				
Vegetation Class	Sand Plain Mulga Shrublands				
Vegetation Type	PCT ID	143			
	Common Community Name		Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland		
The approximate extent	1.45 ha Percentage		of PCT	30%	
within the subject land		cleared in B	n Bioregion		
Species relied upon for	Species Name		Relative abundance		
PCT information	Dodonaea viscosa subsp. angustissima		80%		
	Dissocarpus paradoxus		5%		
	Sclerolaena obliquicuspis		5%		
	Enchylaena tomentosa		5%		
Justification of evidence used to identify the PCT	Foliage cover is dominated by <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> with <i>Accevictoriae</i> subsp. <i>victoriae</i> also present as a mid-stratum species. There is no moverstorey, however several immature <i>Myoporum platycarpum subsp. platycap Pittosporum angustifolium</i> and <i>Casuarina pauper</i> are present. The groundcow consists of a sparse cover of chenopods, forbs, and grass. The area has eviden past disturbance from previous earth moving activities. This evidence includes terrain, piles of soil and the general lack of an overstorey when compared to a vegetation. A review of historic aerial imagery indicates a history of disturbant the layer of mid-stratum shrubs that is now present appearing to become estabetween 2006 and 2010. The soil, although highly disturbed, consists of red-b loamy sands. The topography is slightly undulating due to previous disturbance elevations ranging from 39 m – 41 m AHD.				
	A review of the NSW Bionet Vegetation Classification data revealed that four PCT's within the Robinvale Plains IBRA sub-region contain <i>Casuarina pauper</i> in the upper stratum and <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> in the mid-stratum. These PCT's are PCT 58, PCT 143, PCT 170 and PCT 252. PCT 170 contains an overstorey dominated				


	by <i>Eucalyptus</i> spp. And an understorey dominated by chenopods. PCT 58 and PCT 252 are both open woodlands with a sparse shrub layer. Although <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> may be present it is not dominant. PCT 143 is an open shrubland PCT dominated by several shrub species including <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> . It occurs in areas that have been highly disturbed by grazing or clearing and it is likely a derived community. Although a comparison of species present against the PCT benchmarks indicates a similar alignment with PCT 143 and PCT 58, the dominance of <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> aligns more closely with PCT 143. This differs from the rest of the adjoining regrowth area to the north which has been classed as PCT 58 as it contains more frequent isolated immature overstorey vegetation ( <i>Casuarina pauper, Myoporum platycarpum</i> subsp. <i>platycarpum</i> and <i>Pittosporum angustifolium</i> ), and a more diverse understorey which is not dominated by <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> .						
	A review of the NSW State Vegetation Type Map indicates that PCT 143 is not mapped within the subject land, however isolated areas are mapped as PCT 143 in the surrounding area. The vegetation is mapped as PCT 15 and PCT 153, however the attributes of the vegetation do not match these PCT's.						
	PCT 143 is considered to be the most appropriate PCT based on the information and analysis above, in summary:						
	<ul> <li>Dodonaea viscosa subsp. angustissima is the dominant species, contributing to most of the canopy cover, which aligns more closely to PCT 143, as opposed to more prevalent overstorey plants and a more diverse shrub layer which would align with PCT 58.</li> <li>The understorey species composition and structure are characteristic of the identified PCT</li> <li>The soil type is consistent with the soil characteristics identified in the PCT description.</li> <li>The location is within the Robinvale Plains IBRA subregion</li> <li>The identified PCT is not mapped within the vegetation, however it is mapped in the surrounding area</li> </ul>						
TEC Status	Not a TEC						
Examples image							



# 3.2 Justification for non-native vegetation

Areas of non-native vegetation were identified through aerial imagery and on-site assessment (Figure 6 and Figure 7). The areas identified as non-native vegetation on the subject land consist of the existing landfill site and associated infrastructure and facilities, including buildings, borrow pits, stockpiles, and access areas for waste and resource management traffic. Areas identified as non-native vegetation in the buffer area consist of irrigated horticulture to the south of the subject land, soil extraction sites to the north, a gypsum and organic fertiliser storage and distribution facility to the north west, and a bentonite processing facility to the west.



Figure 6. Native and non-native vegetation (related case 00024930





Figure 7. Native and non-native vegetation (related case 00025590)

# 3.3 Vegetation integrity assessment

As described in Section 1, an existing development consent was issued in January 2017 (DA15/154); this covers part of the BLE and is identified in Figure 8. The development consent included the progressive removal of native vegetation to establish borrow pit sites and landfill cells until 2053.

DPE has requested that the impacts and offset requirements within the area covered by the current development consent be accounted for separately from the area outside of the current development consent. Figure 8 identifies the location of the current consent area in relation to the subject land. Table 7 describes the vegetation zones inside the current consent area and Table 8 describes the vegetation zones outside the current area.





Figure 8. Development consent and subject land native and non-native vegetation

# 3.4 Vegetation zones

An overview inspection, aerial imagery analysis, detailed floristic plots, and in-situ analysis have been used to identify the vegetation zones and conditions. As described in Section 3.1 five PCT's were identified within the subject land. These PCT's were stratified into nine distinct vegetation zones (Figure 9). The zones were defined based on their overall health, overstorey composition, understorey condition, and past land management/disturbance.

Twenty-three vegetation integrity plots were assessed and randomly distributed across individual zones (Figure 9, Table 7, and Table 8) using the 'random points inside polygon' tool in QGIS. The number of vegetation integrity plots was based on the minimum requirements of Section 4.3.4 of the BAM and on the larger footprint of the original concept design for the development.

As a result of a significant reduction in the proposed footprint of the design since the original concept the number of vegetation integrity plots surveyed in Zone 1, Zone 3, Zone 4, and Zone 5 is higher than the minimum requirement. For the same reason many of the plots are outside of the current extent of the subject land (Figure 9). However, these plots were still considered to be representative of the vegetation integrity zones within the subject land as they were part of the same zone when assessing the footprint of the original concept design for the development.

In the case of Zone 8 (PCT 58) additional plots were assessed to ensure that variability in vegetation cover throughout the zone was captured. Zone 8 is an area that has been heavily disturbed by earthmoving activity, hence it contains patchy regrowth with significant areas of bare ground.

Each vegetation integrity plot was assessed according to Section 4.3.4 of the BAM with composition, structure and function values captured on field data sheets (Appendix C). The vegetation integrity



score for each zone was obtained by entering these values into the BAM-C (Table 9 and Table 10) and using the default benchmarks. Plot photos area appended (Appendix F).

As described in Section 2.1 two separate related cases within the parent case in BOAMS were created so that the impacts and offset requirements within and outside of the previous consent area could identified separately. Each related case was therefore entered separately into the BAM-C. Where vegetation zones crossed both within and outside of the previous consent area the same vegetation integrity plot data was entered into the BAM-C to determine the vegetation integrity score for each related case. There are no differences evident in any of these vegetation zones as the cross the boundary of the previous consent area that justify further stratifying vegetation zones for the purposes of the vegetation integrity assessment. Therefore, the vegetation integrity assessment was undertaken for the zone as a whole and the data used in the BAM-C for both related cases.

Patch size was determined for each vegetation zone according to Section 4.3.2 of the BAM (Table 7 and Table 8). All areas of native vegetation on the subject land have a gap of less than 100 m to the next area of native vegetation and are part of the same patch (Figure 9). This patch continues beyond the subject land and includes all native vegetation within the 1,500 m buffer area. Due to the large areas of contiguous vegetation outside of the buffer area the patch continues for a significant distance to the north, east and west. For the purposes of this assessment patch size for each vegetation zone was mapped to the edge of the 1,500 m buffer for the relevant related case (Figure 6 and Figure 7). Continuing to map patch size beyond the buffer zone was not considered necessary as the patch size for each zone is significantly above the area threshold for the highest patch size class (≥100 ha).

PCT ID	Zone ID	Condition / other defining features	Area (ba)	Survey effort	Patch size
15	15_Zone_1_CA	Good quality vegetation, aligns closely with the representative PCT benchmark	0.55	5	≥100 ha
58	58_Zone_3_CA	Poor quality vegetation with lower tree cover and species diversity than Zone 2 and Zone 4; this zone shows very little disturbance from earthworks and vehicles/machinery.	3.38	3	≥100 ha
	58_Zone_4_CA	Moderate quality vegetation: however, there is significant disturbance from earthworks and vehicles/machinery. This zone has a wider range of understorey plants than Zone 3, which increases the subsequent diversity of flora.	1.94	2	≥100 ha
	58_Zone_8_CA	Very poor-quality vegetation which has re-grown following historic earthmoving activities. The area is much more open than Zone 2, Zone 3 and Zone 4 with scattered immature overstorey, scattered understorey and significant areas of bare ground.	3.31	4	≥100 ha
170	170_Zone_5_CA Moderate quality vegetation, aligns mostly with the representative PCT benchmark; there is significant degradation in areas from litter and roadways; however, most of the old-growth is healthy.		3.13	4	≥100 ha
143	143_Zone_7_CA	Poor quality vegetation which has regrown following historic earthmoving activities. The vegetation is dominated by <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> and lacks overstorey vegetation across almost all of the area.	1.45	1	≥100 ha

Table 7. Vegetation zones inside the existing consent area – Case 00024930

\*Total number of plots surveyed across the whole zone i.e., inside existing consent area and outside existing consent area



PCT ID	Zone Number	Stratification unit / Condition class	Area (ha)	Survey effort (# plots)*	Patch size class
15	15_Zone_1_Outside_CA	Good quality vegetation, aligns closely with the representative PCT benchmark	0.16	5	≥100 ha
58	58_Zone_2_Outside_CA	Good quality vegetation with higher tree cover and species diversity than Zone 3 and Zone 4. Little evidence of historic disturbance from earthworks or vehicles.	0.27	2	≥100 ha
	58_Zone_4_Outside_CA	Moderate quality vegetation: however, there is significant disturbance from earthworks and vehicles/machinery. This zone has a wider range of understorey plants than Zone 3, which increases the subsequent diversity of flora.	0.29	2	≥100 ha
	58_Zone_8_Outside_CA	Very poor-quality vegetation which has re- grown following historic earthmoving activities. The vegetation aligns with the PCT benchmark; however, the area is much more open than Zone 3 and Zone 4 with scattered immature overstorey, scattered understorey and significant areas of bare ground.	0.67	4	≥100 ha
170	170_Zone_5_Outside_CA	Moderate quality vegetation, aligns mostly with the representative PCT benchmark; there is significant degradation in areas from litter and roadways; however, most of the old growth is healthy.	0.36	4	≥100 ha
	170_Zone_10_Outside_CA	Very poor-quality vegetation which has re- grown following historic earthmoving activities. There are no overstorey species present within the zone, however overstorey mallee <i>Eucalyptus</i> spp. Species with similar understorey, and soil type are present a short distance to the north. Understorey species present, soil type and landform align with PCT description.	0.30	1	≥100 ha
252	252_Zone_6_Outside_CA	Poor quality vegetation, very sparse overstorey of <i>Myoporum platycarpum</i> with a low diversity understorey, dominated by shrubs.	1.70	2	≥100 ha

Table 8. Vegetation zones outside the existing consent area – Case 00025590

\*Total number of plots surveyed across the whole zone i.e., inside existing consent area and outside existing consent area

Table 9, Currei	nt veaetation	integrity score	s inside the existing	a consent area –	Case 00024930

Zone ID	Composition score	Structure	Function	Vegetation
		score	score	integrity score
15_Zone_1_CA	44.9	58.7	70.7	57.1
58_Zone_3_CA	12.3	66.3	17.3	24.2
58_Zone_4_CA	24.4	80.6	34.6	40.8
170_Zone_5_CA	27.4	81.5	54.3	49.5
143_Zone_7_CA	23.4	49.8		34.2
58_Zone_8_CA	31.7	22.6	3.6	13.7



Zone ID	Composition score	Structure	Function	Vegetation			
		score	score	integrity score			
15_Zone_1_Outside_CA	44.9	58.7	70.7	57.1			
58_Zone_2_Outside_CA	32.5	72.4	80.7	57.5			
58_Zone_4_Outside_CA	24.4	80.6	34.6	40.8			
170_Zone_5_Outside_CA	27.4	81.5	54.3	49.5			
252_Zone_6_Outside_CA	6.9	65.7	6.4	14.2			
58_Zone_8_Outside_CA	31.7	22.6	3.6	13.7			
170_Zone_10_Outside_CA	10.1	27.9	0.1	3.3			

#### Table 10. Current vegetation integrity scores outside the existing consent area – Case 00025590



Figure 9. Vegetation Integrity Zones



# 4 Threatened species

# 4.1 Ecosystem credit species

The Biodiversity Assessment Method Calculator (BAM-C) determined the predicted ecosystem credit species associated with the PCTs present on the subject land. The species have been listed in Table 11 along with their associated habitat, state listing, and national listing.

Table 11. Ecosystem credit species							
Species Name	Vegetation Type(s)	Related case	BC Act listing	EPBC Act			
			status	listing status			
Artamus cyanopterus subsp. cyanopterus	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed			
(Dusky Woodswallow)	PCT 58: Black Oak – Western Rosewood	00024930/00025590					
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590					
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930					
	PCT 252: Sugarwood open woodland	00025590					
<i>Certhionyx variegatus</i> (Pied Honeyeater)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed			
	PCT 58: Black Oak – Western Rosewood	00024930/00025590					
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590					
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930					
	PCT 252: Sugarwood open woodland	00025590					
<i>Chalinolobus picatus</i> (Little Pied Bat)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed			
	PCT 58: Black Oak – Western Rosewood	00024930/00025590					
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590					
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930					
	PCT 252: Sugarwood open woodland	00025590					
<i>Cinclosoma castanotum</i> (Chestnut Quail-thrush)	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590	Vulnerable	Not Listed			
<i>Circus assimilis</i> (Spotted Harrier)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed			
	PCT 58: Black Oak – Western Rosewood	00024930/00025590					
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590					
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland PCT 252: Sugarwood open	00024930					
	woodland	00025590					



Daphoenositta chrysoptera (Varied Sittella)	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western	00024930/00025590 00024930/00025590	Vulnerable	Not Listed
	PCT 170: Chenopod sandplain	00024930/00025590		
	PCT 252: Sugarwood open woodland	00025590		
<i>Falco hypoleucos</i> (Grey Falcon)	PCT 15: Black Box open woodland wetland	00024930/00025590	Endangered	Not Listed
	PCT 58: Black Oak – Western Rosewood	00024930/00025590		
	PCT 170: Chenopod sandplain mallee woodland PCT 143: Narrow-leaved	00024930/00025590 00024930		
	Hopbush – Scrub Turpentine – Senna shrubland	00005500		
	PCT 252: Sugarwood open woodland	00025590		
<i>Falco subniger</i> (Black Falcon)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed
	PCT 58: Black Oak – Western Rosewood	00024930/00025590		
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590		
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930		
Glossopsitta porphyrocephala (Purple-crowned Lorikeet)	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590	Vulnerable	Not Listed
Grus rubicunda (Brolga)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed
Hamirostra melanosternon (Black-	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed
breasted Buzzard)	PCT 58: Black Oak – Western Rosewood	00024930/00025590		
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590		
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine –	00024930		
	PCT 252: Sugarwood open woodland	00025590		
Hieraaetus morphnoides (Little	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed
Eagle)	PCT 58: Black Oak – Western Rosewood	00024930/00025590		
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590		
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine –	00024930		
	PCT 252: Sugarwood open woodland	00025590		
Lichenostomus cratitius (Purple-gaped Honeyeater)	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590	Vulnerable	Not Listed



Lophochroa leadbeateri (Major Mitchell's Cockatoo)	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland PCT 252: Sugarwood open woodland	00024930/00025590 00024930/00025590 00024930/00025590 00025590	Vulnerable	Not Listed
Lophoictinia isura (Square-tailed Kite)	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western Rosewood PCT 252: Sugarwood open woodland	00024930/00025590 00024930/00025590 00025590	Vulnerable	Not Listed
<i>Melanodryas cucullata cucullata</i> (Hooded Robin (south-eastern form))	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland PCT 252: Sugarwood open woodland	00024930/00025590 00024930/00025590 00024930/00025590 00024930	Vulnerable	Not Listed
Ninox connivens (Barking Owl)	PCT 15: Black Box open woodland wetland	00024930/000255900	Vulnerable	Not Listed
Nyctophilus corbeni (Corben's Long-eared Bat)	PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland	00024930/00025590 00024930/00025590	Vulnerable	Vulnerable
Pachycephala 24acility (Gilbert's Whistler)	PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland	00024930/00025590 00024930/00025590	Vulnerable	Not Listed
Polytelis anthopeplus subsp. monarchoides (Regent Parrot (eastern subspecies))	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland	00024930/00025590 00024930/00025590 00024930/00025590	Endangered	Vulnerable
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	PCT 15: Black Box open woodland wetland PCT 58: Black Oak – Western RosewoodPCT 170: Chenopod sandplain mallee woodland PCT 170: Chenopod sandplain mallee woodland PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930/00025590 00024930/00025590 00024930/00025590 00024930	Vulnerable	Not Listed
<i>Stagonopleura guttata</i> (Diamond Firetail)	PCT 58: Black Oak – Western Rosewood PCT 170: Chenopod sandplain mallee woodland	00024930/00025590 00024930/00025590	Vulnerable	Not Listed



Vespadelus baverstocki (Inland Forest Bat)	PCT 15: Black Box open woodland wetland	00024930/00025590	Vulnerable	Not Listed
· ,	PCT 58: Black Oak – Western	00024930/00025590		
	Rosewood			
	PCT 170: Chenopod sandplain mallee woodland	00024930/00025590		
	PCT 143: Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	00024930		

# 4.1.1 Justification for exemptions

One fauna species has been identified as unlikely to occur within the subject land due to habitat constraints identified in the BAM-C and has been excluded from the candidate ecosystem credit species.

## 4.1.1.1 Fauna

### Haliaeetus leucogaster

*Haliaeetus leucogaster* (White-bellied Sea-Eagle) is a large bird of prey, reaching an adult height of 75-85 cm and a 180-220 cm wingspan. This species is commonly found in known communities in which it occurs in NSW; most occurrence records are distributed across the Australian coastline and along the rivers and wetlands of the Murray-Darling Basin. This species inhabits large areas of open water, particularly larger rivers, swamps, lakes, and the ocean.

*Haliaeetus leucogaster* is not likely to occur within the subject land. The BAM-C identified this species as an ecosystem credit species within PCT 15. PCT 170, PCT 58 (related cases 00024930 & 000025590), and PCT 143 (related case 00024930) with a habitat constraint that is not present: *waterbodies – within 1 km of a rivers, lakes, large dams or creeks, wetlands, and coastlines*. As identified Section 2.1 the nearest waterbodies are Lake Gol (1.6 km), Mourquong Irrigation Drainage Water Disposal Area (1.3 km), Mourquong Saltwater Disposal Basin (3 km), Gol Gol Swamp (4.3 km), Gol Gol Creek (1.7 km), and the Murray River (3.6 km).

# 4.2 Species credit species

The BAM-C has provided 12 candidate species credit species listed as threatened species under the BC Act and predicted to occur within the subject land. Thereover, the BAM-C has concluded that the proposal may cause a significant impact to threatened species based upon the location and the presence of the previously described PCTs (Table 12).



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Table 12. Species credit species							
Species credit species	Related case	BC Act listing status	EPBC Act listing status	Species retained for further assessment	Reason for exclusion from further assessment		
Austrostipa metatoris (A Spear-grass)	00024930/00025590	Vulnerable	Vulnerable	Included			
Burhinus grallarius (Bush Stone-curlew)	00024930/00025590	Endangered	Not Listed	Included			
Casuarina obesa (Swamp She-oak)	00024930/00025590	Endangered	Not Listed	Excluded	Habitat constraints		
<i>Eucalyptus leucoxylon</i> subsp. <i>pruinosa</i> (Yellow Gum)	00024930/00025590	Vulnerable	Not Listed	Included			
Haliaeetus leucogaster (White-bellied Sea-eagle)	00024930/00025590	Vulnerable	Not Listed	Excluded	Habitat constraints		
Hamirostra melanosternon (Black-breasted Buzzard)	00024930/00025590	Vulnerable	Not Listed	Excluded	Habitat constraints		
Hieraaetus morphnoides (Little eagle)	00024930/00025590	Vulnerable	Not Listed	Included			
Lophochroa leadbeateri (Major Mitchell's cockatoo)	00024930/00025590	Vulnerable	Not Listed	Included			
Lophoictinia isura (Square-tailed Kite)	00024930/00025590	Vulnerable	Not Listed	Included			
Ninox connivens (Barking Owl)	00024930/00025590	Vulnerable	Not Listed	Included			
Pimelea serpyllifolia subsp. serpyllifolia (Thyme Rice-flower)	00024930/00025590	Endangered	Not Listed	Included			
Polytelis anthopeplus subsp. monarchoides (Regent Parrot (eastern subspecies))	00024930/00025590	Endangered	Vulnerable	Excluded	Habitat constraints		



# 4.2.1 Justification for exemptions

One flora species and three fauna species have been identified as unlikely to occur within the subject land due to habitat constraints identified in the BAM-C and have been excluded from the candidate species credit species.

### 4.2.1.1 *Flora*

### Casuarina obesa

*Casuarina obesa* is a branching shrub to small form tree that grows between 3-15 m in height. This species is not commonly found in known communities in which it occurs in NSW; most occurrence records are present in salt-affected areas and communities placed as plantings for agroforestry. This species grows in slightly moist saline soil and along shorelines of permanent, ephemeral, or relict lakes.

*Casuarina obesa* is not likely to occur within the subject land. The BAM-C identified this species as a candidate species credit species within the subject land (related cases 00024930 & 000025590) with a habitat constraint that is not present: *waterbodies, brackish or saline areas within 100 m from rivers or lakes*. As identified in Section 2.1 the nearest waterbodies are Lake Gol (1.6 km), Mourquong Irrigation Drainage Water Disposal Area (1.3 km), Mourquong Saltwater Disposal Basin (3 km), Gol Gol Swamp (4.3 km), Gol Gol Creek (1.7 km), and the Murray River (3.6 km). No brackish or saline areas are present on the subject land. Due to the absence of the identified habitat constraint *Casuarina obesa* has been excluded from the candidate species credit species and a targeted survey is not required.

### 4.2.1.2 Fauna

### Haliaeetus leucogaster

Haliaeetus leucogaster is a large bird of prey, reaching an adult height of 75-85 cm and a 180-220 cm wingspan. This species is commonly found in known communities in which it occurs in NSW; most occurrence records are distributed across the Australian coastline and along the rivers and wetlands of the Murray-Darling Basin. This species inhabits large areas of open water, particularly larger rivers, swamps, lakes, and the ocean.

*Haliaeetus leucogaster* is not likely to occur within the subject land. The BAM-C identified this species as a candidate species credit species within the subject land (related cases 00024930 & 000025590) with a habitat constraint that is not present: *other: living or dead mature trees within suitable vegetation within 1 km of a rivers, lakes, large dams or creeks, wetlands, and coastlines.* Although living or dead mature trees within suitable vegetation are likely to be present on the subject land there are no river, lakes, large dams or creeks, wetlands and coastlines within 1 km of the subject land (related cases 00024930 & 000025590). As identified in Section 2.1 the nearest waterbodies are Lake Gol (1.6 km), Mourquong Irrigation Drainage Water Disposal Area (1.3 km), Mourquong Saltwater Disposal Basin (3 km), Gol Gol Swamp (4.3 km), Gol Gol Creek (1.7 km), and the Murray River (3.6 km). Due to the absence of the identified habitat constraint *Haliaeetus leucogaster* has been excluded from the candidate species credit species and a targeted survey is not required.

#### Hamirostra melanosternon

*Hamirostra melanosternon* is a large bird of prey, reaching an adult height of 51-61 cm and a 150 cm wingspan. This species is not commonly found in known communities in which it occurs in NSW; most occurrence records are found throughout mainland Australia, except for the Western Australian deserts. This species inhabits a range of inland habitats; however, spending much of its time around watercourses within proximity to grasslands and sparsely timbered woodlands.



*Hamirostra melanosternon* is not likely to occur within the subject land. The BAM-C identified this species as a candidate species credit species within the subject land (related cases 00024930 & 000025590) with a habitat constraint that is not present: *waterbodies: land within 40 m of riparian woodland on inland watercourses/waterholes containing dead or dying eucalypts*. As identified in Section 2.1 the nearest waterbodies are Lake Gol (1.6 km), Mourquong Irrigation Drainage Water Disposal Area (1.3 km), Mourquong Saltwater Disposal Basin (3 km), Gol Gol Swamp (4.3 km), Gol Gol Creek (1.7 km), and the Murray River (3.6 km). Due to the absence of the identified habitat constraint *Hamirostra melanosternon* has been excluded from the candidate species credit species and a targeted survey is not required.

#### Polytelis anthopeplus subsp. monarchoides

Polytelis anthopeplus subsp. monarchoides is a slim, medium-sized parrot, reaching an adult height of 37-42 cm and a 53-57 cm wingspan. This species is commonly found in known communities in which it occurs in NSW; most occurrence records are found along with the Murray River and adjoining areas of mallee; however, there are also scattered records along the Darling River. This species inhabits forests along the Murray, Wakool, and lower Murrumbidgee Rivers, particularly nesting in mature and healthy River Red Gum.

*Polytelis anthopeplus* subsp. *monarchoides* is not likely to occur within the subject land. The BAM-C identified this species as a candidate species credit species within the subject land (related cases 00024930 & 000025590) with a habitat constraint that is not present: *hollow-bearing trees: living or dead E. camaldulensis with hollows greater than 5 cm diameter, greater than 5 m above the ground OR trees with DBH of greater than 40 cm, within 1 km of watercourses or billabongs. Trees can be isolated but within 20 km of mallee*. As identified in Section 2.1 the nearest waterbodies are Lake Gol (1.6 km), Mourquong Irrigation Drainage Water Disposal Area (1.3 km), Mourquong Saltwater Disposal Basin (3 km), Gol Gol Swamp (4.3 km), Gol Gol Creek (1.7 km), and the Murray River (3.6 km). In addition to the absence of water courses or billabongs, *Eucalyptus camaldulensis* is not present on the subject land. Due to the absence of the identified habitat constraint *Polytelis anthopeplus* subsp. *monarchoides* has been excluded from the candidate species credit species and a targeted survey is not required.

# 4.2.2 Species requiring further assessment

### 4.2.2.1 Flora

#### Austrostipa metatoris

Austrostipa metatoris is a perennial spear-grass that grows in a tussock form up to 1 m in height. This species is commonly found in known communities of which it occurs in NSW; most occurrence records are present in the Murray Valley, with scattered records in Lake Cargelligo and Nymagee. This species grows in the Murray Valley's sandy areas, including sandhills, sand ridges, undulating plains, and flat open mallee country.

Austrostipa metatoris is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

Months of survey											
January	February	March	April	May	June	July	August	September	October	November	December
									$\boxtimes$	$\boxtimes$	

### Eucalyptus leucoxylon subsp. pruinosa

*Eucalyptus leucoxylon* subsp. *pruinosa* is a long-lived small to medium-sized tree that grows erect from a single stump up to 20 m in height. This species is not commonly found in known



communities in which it occurs in NSW; most occurrence records are present in scattered remnants through Barham, Euston, along the Murray River, and in some south-western NSW State Forests. This species grows at the bases of sandy rises and on loamy clay flats on the floodplains of the Murray River and its tributaries in the Riverina Bioregion.

*Eucalyptus leucoxylon* subsp. *pruinosa* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

Months of survey											
January	February	March	April	May	June	July	August	September	October	November	December
$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$

### Pimelea serpyllifolia subsp. serpyllifolia

*Pimelea serpyllifolia* subsp. *serpyllifolia* is a long-lived small woody shrub that grows in a densely branched, sprawling yet rarely prostrate form up to 1.5 m in height. This species is not commonly found in known communities in which it occurs in NSW; most occurrence records are present along far south-western NSW in the Euston district. This species grows in scrub and woodland on calcareous soils. Often found in sandy red soils supporting mallee scrub.

*Pimelea serpyllifolia* subsp. *serpyllifolia* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

Months of survey											
January	February	March	April	May	June	July	August	September	October	November	December
						$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	

### 4.2.2.2 Fauna

#### Burhinus grallarius

*Burhinus grallarius* is a large, slim, ground-dwelling bird, reaching an adult height of 55 cm and a 55-60 cm wingspan. This species is not commonly found in known communities in which it occurs in NSW; most occurrence records are scattered across Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. This species inhabits open forests and woodlands, which have a sparse grassy ground layer and fallen timber.

*Burhinus grallarius* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

Months of survey											
January	February	March	April	May	June	July	August	September	October	November	December
	$\boxtimes$										

#### Hieraaetus morphnoides

*Hieraaetus morphnoides* is a small, stocky bird of prey, reaching an adult height of 45-55 cm and a 120 cm wingspan. This species is commonly found in known communities of which it occurs in NSW; most occurrence records are found throughout mainland Australia. This species inhabits open Eucalypt forest, woodland, and open woodland, including She-oak and Acacia woodlands.



*Hieraaetus morphnoides* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

	Months of survey										
January	February	March	April	May	June	July	August	September	October	November	December
							$\boxtimes$	$\boxtimes$	$\boxtimes$		

#### Lophochroa leadbeateri

Lophochroa leadbeateri is a small parrot, reaching an adult height of 40 cm and an 80 cm wingspan. This species is commonly found in known communities in which it occurs in NSW; most occurrence records are found across the arid and semi-arid inland of Australia. This species inhabits both treed and treeless arid zone communities, always within reach of a water body.

*Lophochroa leadbeateri* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

	Months of survey										
January	February	March	April	May	June	July	August	September	October	November	December
								$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$

#### Lophoictinia isura

Lophoictinia isura is a small to medium-sized, long-winged bird of prey, reaching an adult height of 55-60 cm and a 130 cm wingspan. This species is commonly found in known communities in which it occurs in NSW; most occurrence records are predominantly located to the northeast and along the major west-flowing river systems; however, records show its migration south-east for breeding during summer. This species inhabits dry woodlands, open forests, open Acacia scrub, and low open Eucalypt woodland patches.

*Lophoictinia isura* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

	Months of survey										
January	February	March	April	May	June	July	August	September	October	November	December
$\boxtimes$								$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$

#### Ninox connivens

*Ninox connivens* is a medium-sized, large-winged hawk-owl, reaching an adult height of 40-45 cm and a 120 cm wingspan. This species is not commonly found in known communities of which it occurs in NSW; most occurrence records are sparsely scattered across the Australian mainland except for arid regions. This species inhabits woodland and open forest, including fragmented remnants and partly cleared farmland.

*Ninox connivens* is believed to potentially occur within the subject land. The geographical distribution and habitat requirements, along with BAM-C identification, have determined that a targeted survey is required.

Months of survey											
January	February	March	April	May	June	July	August	September	October	November	December



# 4.2.3 Targeted surveys

Targeted surveys were undertaken in October of 2021. October provided a period in which all targeted threatened species were active per their 'Months of Survey' chart. Weather conditions for all survey dates were recorded in-situ. However, some data was obtained from the Bureau of Meteorology (BOM Mildura airport) when on-site recording equipment could not provide the data. The area surveyed was based on the larger footprint of the original concept design for the development. The area surveyed includes the current footprint of the development i.e., the subject land.

## 4.2.3.1 *Community survey and database searches*

### Intent

The remote location and lack of geographical attractions surrounding the Buronga landfill were limiting factors in community input. The application of a community group survey was considered to ameliorate the survey effort for species record databases.

### Method

A community survey was established, engaging local birdlife and naturalist groups to provide knowledge of targeted threatened species distribution within the Buronga area. A Threatened Species Community Survey Document was published for comment between 21 and 31 October 2021.

### Outcome

Several organisations engaged in the community survey provided good insight and evidence of threatened species observations. The engagement prompted several individuals to publish local survey information to species record databases. Furthermore, feedback was received by industry professionals on the engagement parameters, providing suggestions and information as to species observation methods and distribution expectations.

### 4.2.3.2 Transects survey

#### Survey effort

Suitable habitats for four identified threatened species occur within the development area. Targeted surveys were undertaken on 18 October 2021 for approximately 8 hours. The parallel field traverse survey technique was conducted in accordance with the NSW *Guide to Surveying Threatened Plants* (OEH 2016). The location of these transects and the field survey tracks are identified in Figure 10.

### Method

The use of the parallel traversal method (transect) for the targeted species forms two priority functions:

1: The parallel field traverses method, as outlined in the NSW Guide: *Surveying threatened plants and their habitats*, provides a survey effort guide to eliminate imperfect detection errors. Section 4.2 of the NSW Guidelines specifies the width, length, and area of field traverses; when consolidating survey target species, the maximum width was established for the smallest lifeform at 10 m (*Austrostipa metatoris*: in open vegetation).

2: The transect method provides an opportunity to perform in-situ activities, increasing survey effort and efficiencies such as flushing woody debris and mounded ground litter for the Bush Stone-curlew and recording tree hollows to assist and streamline the survey effort conducted for nocturnal wildlife monitoring.



The detection of flora species is exempt from *false absences* when performed at the proposed intensity in October. Transect survey information is shown in Table 13.

#### Survey results

No Yellow Gum (*Eucalyptus leucoxylon* subsp. *pruinosa*), Thyme Rice-flower (*Pimelea serpyllifolia* subsp. *serpyllifolia*), A Spear-grass (*Austrostipa metatoris*), or Bush Stone-curlew (*Burhinus grallarius*) were detected within the transects. They are not considered to occur within the development area. Two hollow-bearing trees were observed within the transects; however, they did not meet the requirements of any threatened nocturnal species in this monitoring program.

	l able 13. Transect survey information.							
Date / hours	Targeted species	Maximum temperature (°C)	Minimum temperature (°C)	Rainfall (mm)	Max wind gust (km/h)			
18 October 2021	Yellow Gum Thyme Rice-flower A Spear-grass Bush Stone-curlew	11.8	28.4	0	SW 39			

#### 4.2.3.3 *Spot count surveys*

#### Survey effort

Suitable habitat for five targeted species occurs within the development area. Targeted surveys were conducted on 19, 21, and 22 October 2021 for approximately 6 hours each day. Fifty-one surveys took place over the three days; fifteen 2 ha/20-minute systematic surveys and two 500 m/20-minute search area surveys were performed each day. The point-count and area search methods were conducted in accordance with the *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DEC 2004). The location of these surveys is identified in Figure 10.

Survey techniques were assigned to cover the entire development footprint. The surveys were conducted in separate locations beginning at dawn to maximise the likelihood of both sight and vocalisations. Opportunistic flushing of organic litter for the Bush Stone-curlew and hollow recording for the Barking Owl occurred while traversing between quadrats.

#### Method

Spot-count surveys (Also *bird census techniques*) incorporate the point-count and area search methods for diurnal bird observations. The application of these spot-count surveys forms a priority function:

1: The point-count and area search methods, as outlined in the *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities*, provides a survey effort guide, addressing recommendations, experience, and application. Section iii (Diurnal birds) of the guidelines lays out the functionality of the selected methodologies; as such, an area-search method of 500 m/20-minutes and a point-count method of 2 ha/20-minutes were established.

In accordance with the BAAS Database, the survey was conducted within the months of survey for all five targeted species. Survey information is in Table 14.

#### Survey results

No sightings of the targeted species were observed over the three days of field visits; They are not considered to occur within the development site. A complete list of bird species observed during the surveys is shown in Table 17.



	Table 14. Quadrat survey information							
Date / hours	Targeted species	Maximum temperature (°C)	Minimum temperature (°C)	Rainfall (mm)	Max wind gust (km/h)			
19 October 2021	Barking Owl	7.9	22.7	0	SSE 41			
21 October 2021	Bush Stone-curlew	13.4	31.7	0	SSE 43			
22 October 2021	Square-tailed Kite Little Eagle Major Mitchell's Cockatoo	12.7	23.6	0	SW 50			

### 4.2.3.4 Nocturnal surveys

#### Survey effort

Suitable habitats for two targeted species occur within the development area. Targeted surveys were conducted on 18, 21, 24, 29, and 30 October 2021 for approximately 2 hours each evening, 15 minutes before sunset. The Nocturnal surveys were conducted in accordance with the Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (DEC 2004) and methodologies listed in the EPBC Survey guidelines for Australia's threatened birds (DEWHA 2010). The location of these surveys is identified in Figure 10.

### Method

Nocturnal surveys were conducted utilising an integrated series of approved methods to capture sightings and/or vocalisations of conspicuous nocturnal species; these methods are:

1: Broadcasting survey: Broadcasting was conducted on all nights. A 360-degree speaker with a capacity to broadcast up to 70 decibels was operated, queuing pre-recorded playbacks for each targeted species. Broadcasting was undertaken over 5 minutes and followed by 10 minutes for operator listening. This method was conducted across two locations within the development site.

2: Area searches (Including tree hollows): Area searches were conducted during the 10-minute listening period of the broadcasting survey. Providing the operator with an opportunity to hear conspicuous species and movement of carnivorous birds of prey.

3: Spotlight searches: Spotlighting was conducted on all nights. A 100-watt spotlight was operated within the survey area for nocturnal area searches. The spotlight was not used on any animal within 30 m of the operator or in clearly visible areas.

The targeted species with species habitat in the development area are known to vocalise in response to broadcasting. Nocturnal survey information is in Table 15.

#### Survey results

No sightings of the targeted species were observed over the five late evening visits; They are not considered to occur within the development site. A complete list of bird species observed during the surveys is shown in Table 17.

Date / hours	Targeted species	Maximum temperature (°C)	Minimum temperature (°C)	Rainfall (mm)	Max wind gust (km/h)
18 October 2021		24	22	0	NNE 21
21 October 2021	Dealine Ord	31	29	0	NE 15
24 October 2021	- Barking Owi Bush stope Curlow	22	20	0	N 14
29 October 2021	- Bush-stone Curlew	20	18	0	N 22
30 October 2021		21	20	0	NE 15

#### Table 15. Nocturnal survey information



# 4.2.4 Targeted survey results

Table 16. Targeted survey results

Species	Presence /	Survey effort	Survey results
	absence	Community in	
Yellow Gum (Eucalyptus leucoxylon subsp. pruinosa	Absent	Community survey Database searches Transect survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape; the nearest recording appears over 170 km southeast, dated 2003 (ALA). While the soil and PCT composition provide suitable habitat for this species to occur within the development footprint, the Community survey responses indicated that the species had not been known to occur in the area. Transect surveys confirmed that the species was not present.
Thyme Rice- flower (Pimelea serpyllifolia subsp. serpyllifolia)	Absent	Community survey Database searches Transect survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape; the nearest recording of a Thyme Rice-flower appears over 40 km southeast, dated 2000 (ALA). While the soil and PCT composition provide suitable habitat for this species to occur within the development footprint, the Community survey responses indicated that the species had not been known to occur in the area. Transect surveys confirmed that the species was not present.
A Spear-grass (Austrostipa metatoris)	Absent	Community survey Database searches Transect survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape; the nearest recording of an <i>Austrostipa metatoris</i> appears over 75 km southeast, dated 1947 (ALA); Extensive research was conducted to ensure accurate monitoring and reporting of the species within the survey effort; however, this species is only known to occur within isolated and well-studied areas. Community surveys reported no responses indicated that there is little knowledge of this species generally. Transect surveys confirmed that the species was not present; however, several species of Austrostipa were collected, identified, and recorded.
Barking Owl (Ninox connivens)	Absent	Community survey Database searches Nocturnal survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape; the nearest recording of a Barking Owl appears 7 km south (in central Mildura), dated 1944 (ALA) – A recent observation places them over 37 km west, dated 2006 (ALA)
Bush Stone- curlew (Burhinus grallarius)	Absent	Community survey Database searches Transect survey Nocturnal survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to have been spotted in the extended landscape; however, a single nearby recording appears around 5 km south, dated 2013 (ALA)
Square-tailed Kite (Lophoictinia isura)	Absent	Community survey Database searches Transect survey Spot count survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape. There are several records of this species as close by as 3 km from the development area; however, these sightings range from 1988 to 1857; a close by and recent recording



			6 km south, dated 2007 (ALA), has not been confirmed upon location visits.
Little Eagle (Hieraaetus morphnoides)	Absent	Community survey Database searches Transect survey Spot count survey	This species has not been recorded within the subject land and was not observed within the development site. This species is not known to occur in the extended landscape; There are several records of this species as close by as 4 km from the development area, several of these sightings were recorded between 2000 and 2010 (ALA); however, the lacking identification of this species from the public and the insufficient observations during the extensive field surveys has concluded that this species is not present within the development area.
Major Mitchell's Cockatoo (Lophochroa leadbeateri)	Absent	Community survey Database searches Transect survey Spot count survey	This species has not been recorded within the subject land and was not observed within the development site. This species is known to occur beyond the extended landscape along the Murray River; the nearest recording of the Major Mitchell's Cockatoo appears 3 km north (in central Mildura), dated 2019 (ALA). Although the local sighting is notable, this species is often seen overhead travelling vast distances; this recording is contingent on an aerial spot.

#### Table 17. Bird species recorded during targeted surveys

Scientific name	Common name	Transect	Spot-count	Nocturnal
Struthidea cinerea	Apostlebird	х	Х	
Gymnorhina tibicen	Australian Magpie	Х	Х	
Pelecanus conspicillatus	Australian Pelican		Х	
Corvus coronoides	Australian Raven	Х	Х	
Threskiornis molucca	Australian White Ibis	Х	Х	
Milvus migrans	Black Kite	Х	Х	
Northiella haematogaster	Blue Bonnet	Х	Х	
Climacteris picumnus	Brown Tree Creeper	Х	Х	
Sturnus vulgaris	Common Starling	Х	Х	
Oreoica gutturalis	Crested Bellbird	Х	Х	
Ocyphaps lophotes	Crested Pigeon		Х	
Eolophus roseicapilla	Galah	Х	Х	
Cracticus torquatus	Grey Butcherbird		Х	
Barnardius zonarius	Mallee Ringneck		Х	
Artamus personatus	Masked Woodswallow		Х	
Falco cenchroides	Nankeen Kestrel		Х	
Manorina melanocephala	Noisy Miner	Х	Х	
Psephotus haematonotus	Red-rumped Parrot	Х	Х	
Myiagra inquieta	Restless Flycatcher		Х	
Hirundo neoxena	Welcome Swallow	Х	Х	
Rhipidura leucophrys	Willie Wagtail	Х	Х	
Manorina flavigula	Yellow-throated Miner	Х	Х	





Figure 10. Targeted species surveys



# 5 Matters of National Environmental Significance

A protected matters search tool (PMST) report under the *Environmental Protection and Biodiversity Conservation Act 2009* was generated on 5 August 2022 to identify *Matters of National Environmental Significance* (MNES) that potentially occur within the subject land. The PMST report was based on a 10 km buffer taken from the boundary of Lot 1 DP 1037845 (Appendix A); the relevant protected matters relating to biodiversity include:

- Wetlands of International Importance (Ramsar)
- Listed Threatened Ecological Communities
- Listed Threatened Species
- Listed Migratory Species
- State and Territory Reserves
- Nationally Important Wetlands

# 5.1 Wetlands of international importance (Ramsar)

The protected matters report indicated three wetlands of international importance:

- Banrock Station wetland complex
- Riverland
- Coorong and Lakes Alexandrina and Albert

The subject land is many hundreds of river kilometres upstream of these three wetlands, which are situated in South Australia. The nearest of these is 'Riverland', which is 170 km as the crow flies and approximately double this distance by the Murray River.

# 5.2 Listed threatened ecological communities

The protected matters report indicated two threatened ecological communities (TEC):

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion (Endangered)
- Mallee Bird Community of the Murray Darling Depression Bioregion (Endangered)

An additional TEC which was not identified in the protected matters report and may be present as it has a known association with PCT 170 is:

• Plains Mallee-Box Woodland (Critically Endangered)

### Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion

Buloke has not been identified within the subject land, buffer area, or known to occur within the extended landscape.

#### Mallee Bird Community of the Murray Darling Depression Bioregion (Endangered)

The subject land is located within the Riverina bioregion; however, the Murray Darling Depression (MDD) bioregion is located within the buffer area for the landscape assessment. Furthermore, a review of the geographic description in Section 1.2.1 of the conservation advice document for this TEC (DAWE 2021a), indicates that it is also located within the Riverina bioregion where the Murray River intrudes into the MDD bioregion, which is applies to the subject land.



An evaluation was undertaken using the Key Diagnostics in Section 2.1 of DAWE 2021a to determine whether the TEC may be present in the assessment area. This involved the following step-based approach (steps from DAWE 2021a in italics followed by response).

Where is the site located?

- 1. Is the area of interest within, or partially within any of the following IBRA bioregions or subregions?
  - Murray Darling Depression (MDD): all seven subregions;
  - Riverina (RIV) subregions where the Murray River intrudes into the MDD: Murray Fans (RIV03, west of Swan Hill), Robinvale Plains (RIV05), and Murray Scroll Belt (RIV06);
  - Darling Riverine Plains (DRP) subregions where the Darling River anabranches intrude into the MDD: Great Darling Anabranch (DRP08); and Pooncarie-Darling (DRP09).

Response: Yes, go to step 2 – The assessment area is located within the Riverina bioregion (Robinvale Plains subregion) and MDD bioregion.

### Are mallee habitats present on site?

2. Is a patch of native vegetation of at least 10 ha present (either wholly or partially within the site)?

Native vegetation is vegetation where native species are the dominant or most common species present in each both the canopy and the understorey.

Response: Yes, go to step 3 – The subject land and buffer area contain over 1000 ha of native vegetation in one patch for both related cases.

3. Does the patch of native vegetation contain an area or areas of at least 5 ha dominated by mallee?

Mallee vegetation is defined as having the following combination of features within an area of native vegetation:

- Vegetation structure is a native woodland to shrubland where a tree canopy is present that is at least sparse (5% crown cover) but not typically closed; AND
- Mallee eucalypt trees are the dominant tree canopy type present. Other non-mallee trees (i.e. non-mallee Eucalypts or non-eucalypt native species) may be present in the tree canopy but do not represent the most common structural type averaged across the remnant or site.

Response: Yes, go to step 3 – Mallee eucalypt trees are the dominant tree canopy species in PCT 170). Although the subject land contains <5 ha of PCT 170 (3.8 ha) within the assessment area there is >5 ha of PCT 170.

#### What terrestrial bird species are recorded?

4. How many species of the Mallee Bird Community (MBC) have been recorded from current bird surveys and/or from existing bird observation records within 20 km of the site and within the last ten years?

At least 3 MBC species, any mix of mallee specialist and dependent species – Yes, the ecological community may be present.

Less than 3 MBC species – The ecological community is not present. If the species observed



are listed threatened species then the site should be managed as species habitat rather than an occurrence of a threatened assemblage.

Response: DAWE 2021a identifies MBC species as an assemblage of 20 component bird species that rely on mallee habitats. These 20 species are made up of eight mallee specialists (bird species found almost exclusively in mallee habitats) and 12 mallee dependants (bird species that are dependent on mallee where it is present but have a wider range extending into non-mallee woodland and shrubland habitats). A review of existing bird observation records using the Atlas of Living Australia (ALA), Birdlife Australia (Birdata), e-Bird, NSW BioNet Atlas, and the Victorian Biodiversity Atlas indicated that 12 of the 20 identified MBC species have been recorded within 20 km of the site in the last ten years. These species are:

- Chestnut Quail-thrush Cinclosoma castanotum V
- Crested Bellbird Oreoica gutturalis NL
- Grey-fronted Honeyeater Ptilotula plumula NL
- Jacky Winter Microeca fascinans NL
- Regent Parrot Polytelis anthopeplus V
- Shy Heathwren Calamanthus cautus NL
- Southern Scrub-robin Drymodes brunneopygia NL
- Splendid Fairy-wren *Malurus splendens NL*
- Spotted Pardalote Pardalotus punctatus NL
- White-eared Honeyeater Nesoptilotis leucotis NL
- White-fronted Honeyeater Purnella albifrons NL
- Yellow-plumed Honeyeater Ptilotula 39acili NL

Two of the recorded species are listed as mallee specialists (*Cinclosoma castanotum* and *Leipoa ocellata*), and ten as mallee dependents. No MBC component species were identified during the bird surveys undertaken as part of the targeted threatened species surveys for this BDAR (Table 17).

Based on the evaluation above the TEC may be present in the assessment area.

#### Plains Mallee-Box Woodland (Critically Endangered)

This TEC has a known association with PCT 170 which occurs on the subject land and within the buffer area of the landscape assessment. An evaluation was undertaken of the characteristics of PCT 170 on the subject land to determine whether it meets the definition of the TEC as described in the conservation advice document (DAWE 2021b). The vegetation must meet the description in Section 2.1 and all the key diagnostic characteristics listed in Section 5.1 of this document to be classified as Plains Mallee-Box Woodland.

A review of the tree canopy description in 2.1 and 5.1 of DAWE 2021b indicates that the primary diagnostic characteristic of the TEC is the dominance of *Eucalyptus porosa* or *E. behriana* in the overstorey. However, *E. calycogona* or *E. dumosa* may be dominant in some areas where the understorey characteristics are consistent with the TEC. The overstorey of PCT 170 within the subject land was not consistent with these characteristics. While *E. dumosa* was present it was not the dominant overstorey species. *E. oleosa*, *E. dumosa* and *E. socialis* were all present, with *E oleosa* the most dominant of the three species. Isolated *Callitris gracilis* were also present.

Some of the understorey characteristics are broadly similar to the TEC description with a sparse small tree/large shrub layer present in some areas, and a low shrub layer dominated by chenopods.



However, tussock grasses are identified as a key characteristic of the TEC and were absent from most of the area.

The TEC typically occurs on near level plains or occasionally on gently sloping terrain surrounding and within run-on landscape depressions (DAWE 2021b). This is not consistent with the landscape position of PCT 170 within the subject land and the surrounding buffer area, where PCT 170 is typically located at a relatively higher position in the landscape (40-45 m AHD). The typical soil characteristics, duplex with clay loam or occasionally sandy clay loam topsoil textures (DAWE 2021b), are not consistent with the sandy loams which are the predominant soil type within PCT 170 on the subject land and the surrounding buffer area.

In NSW the TEC is identified as occurring within the Riverina (subject land) and Murray Darling Depression (buffer area) bioregions (DAWE 2021b). However, the TEC is known to primarily occur in the Kyalite-Tooleybuc-Koraleigh-Speewa area with possible extensions east toward Moulamein (Sluiter & Schultz 2020 in DAWE 2021b), which is a considerable distance (150 km) to the south-east of the subject land. Within the Western Local Land Services region, the TEC is likely or known to occur near Balranald (DAWE 2021b), which is located 135 km east of the subject land. In addition, the TEC is not identified as likely or known to occur within the Wentworth Shire Council Local Government Area.

Based on the evaluation above the characteristics of PCT 170 within the subject land and the surrounding buffer area do not meet the description in Section 2.1 and all the key diagnostic characteristics in Section 5.1 of DAWE 2021b. Therefore, the occurrence of this PCT within the subject land and the surrounding buffer area does not meet the definition of this TEC.

# 5.3 Listed threatened species

The protected matters report indicated twenty-five threatened species, comprising twelve birds, six fish, one frog, two mammals, and four plants. As described in the habitat assessment for the listed threatened species (Table 18), two of these species are considered to have potential habitat within the subject land; these species are:

- Falco hypoleucos (Grey Falcon)
- Nyctophilus corbeni (Corben's Long-eared Bat)

A review of database records (BioNet Atlas, ALA, eBird, Birdata) indicated that there were recent no records for either species within the assessment area or within 10 km of the subject land. It is unlikely that these species would occur within the sub subject land.



Table 18. Listed threatened species					
Name	Habitat	Habitat present	Likelihood of occurrence	Potential for impact	
Birds		-			
<i>Botaurus poiciloptilus</i> (Australasian Bittern)	Permanent freshwater wetlands with tall, dense vegetation.	Absent	Unlikely	No	
<i>Calidris ferruginea</i> (Curlew Sandpiper)	Intertidal mudflats of sheltered coasts and non-tidal swamps.	Absent	Unlikely	No	
Falco hypoleucos (Grey Falcon)	Arid to semi-arid shrubland, grassland and wooded watercourses.	Present	Unlikely	Possible	
<i>Grantiella picta</i> (Painted Honeyeater)	Boree, Brigalow, and Box-Gum Woodlands and Box-Ironbark Forests.	Absent	Unlikely	No	
Leipoa ocellata (Malleefowl)	Tall, dense, and floristically rich mallee with Spinifex understorey.	Absent	Unlikely	No	
Limosa lapponica subsp. baueri (Nunivak Bar-tailed Godwit)	Coastal, intertidal habitats around seagrass, and infrequently saltmarsh.	Absent	Unlikely	No	
<i>Manorina melanotis</i> (Black-eared Miner)	Mature, unfragmented mallee on fertile soil.	Absent	Unlikely	No	
Numenius madagascariensis (Eastern Curlew)	Intertidal sand and mudflat habitat around seagrass vegetation.	Absent	Unlikely	No	
Pedionomus torquatus (Plains- wanderer)	Semi-arid lowland grasslands on hard red-brown soils.	Absent	Unlikely	No	
Pezoporus occidentalis (Night Parrot)	Spinifex grasslands in stony or sandy areas.	Absent	Unlikely	No	
Polytelis anthopeplus subsp. monarchoides (Regent Parrot)	Large, mature, healthy River Red Gum along the Murray River.	Absent	Unlikely	No	
Rostratula australis (Australian Painted Snipe)	Fringes of swamps, marshes and dams with Lignum or low scrub.	Absent	Unlikely	No	
Fish					
Bidyanus bidyanus (Silver Perch)	Upper reaches and highlands or turbid slow-flowing rivers.	Absent	Unlikely	No	
Craterocephalus fluviatilis (Murray Hardyhead)	Open, shallow, slow, or still habitats, often dense aquatic vegetation.	Absent	Unlikely	No	
<i>Galaxias rostratus</i> (Flathead Galaxias)	Still or gentle flowing rocky or sandy habitats, the margin of waterbodies.	Absent	Unlikely	No	
Maccullochella macquariensis (Trout Cod)	Fast-flowing rocky, gravel habitats; or slow-flowing lowland rivers.	Absent	Unlikely	No	
<i>Maccullochella peelii</i> (Murray Cod)	Freshwater, clear, rocky streams or slow-flowing turbid water bodies.	Absent	Unlikely	No	
<i>Macquaria australasica</i> (Macquarie Perch)	Deep sandy or clay rivers or small rocky upland streams.	Absent	Unlikely	No	
Frogs					
<i>Litoria raniformis</i> (Growling Grass Frog)	Still or slow-flowing water with mats of floating or submerged vegetation.	Absent	Unlikely	No	
Mammals					
Nyctophilus corbeni (Corben's Long-eared Bat)	Mallee, box, Buloke communities, or Ironbark, Cypress-pine vegetation.	Present	Unlikely	Possible	
Phascolarctos cinereus (Koala)	Eucalypt woodlands and forests.	Present	Unlikely	No	
Plants					
(Winged Pepper-cress)	seasonally waterlogged and fertile.	Absent	Unlikely	No	
Pterostylis xerophila (Desert Greenhood)	mostly on rock outcrops under low shrubs. 8 known populations in SA and Vic.	Absent	Unlikely	No	



<i>Solanum karsense</i> (Menindee Nightshade)	Solonized brown soils or floodplain grey clays, open Black Box woodland.	Present	Unlikely	No
<i>Swainsona murrayana</i> (Slender Darling-pea)	Floodplains or grassy woodlands with grey, red or brown cracking clay soils.	Absent	Unlikely	No
<i>Swainsona pyrophila</i> (Yellow Swainson-pea)	Mallee scrub on sandy or loamy soil, including disturbed woodland.	Present	Unlikely	No

# 5.4 Listed migratory species

The protected matters report indicated 15 listed migratory species, comprising one marine bird, one terrestrial bird, and 13 wetland birds. As described in the habitat assessment for the listed migratory species (Table 19), none of these species are considered to have potential habitat within the subject land.

Table 19. Listed migratory species				
Name	Habitat	Habitat present	Likelihood of occurrence	Potential for impact
Migratory Marine Birds				
Apus pacificus (Fork-tailed Swift)	Ranging habitats, coastal, inland, urban, open plains, and semi-arid.	Absent	Unlikely	No
Migratory Terrestrial Birds			-	
Motacilla flava (Yellow Wagtail)	Brackish wetlands, salt marshes, coastal and partly inland pastures.	Absent	Unlikely	No
Migratory Wetland Birds				
<i>Actitis hypoleucos</i> (Common Sandpiper)	Coastal or inland wetlands, saline, or fresh, rocky, and muddy shores.	Absent	Unlikely	No
<i>Calidris acuminata</i> (Sharp-tailed Sandpiper)	Inland freshwater wetlands and mudflats, shallow with vegetation.	Absent	Unlikely	No
<i>Calidris ferruginea</i> (Curlew Sandpiper)	Intertidal sand and mudflat habitat or littoral and estuarine habitats.	Absent	Unlikely	No
<i>Calidris melanotos</i> (Pectoral Sandpiper)	Sand and mudflats, Fresh and saltwater marshes, or dry lakes.	Absent	Unlikely	No
<i>Calidris ruficollis</i> (Red-necked Stint)	Intertidal mudflats, or partly inland around coastal wetlands.	Absent	Unlikely	No
Charadrius bicinctus (Double- banded Plover)	Saltmarshes, beaches, estuaries, and coastal and inland pastures.	Absent	Unlikely	No
<i>Gallinago hardwickii</i> (Latham's Snipe)	Vegetated freshwater wetlands, salt marshes, and coastal pastures.	Absent	Unlikely	No
<i>Limosa lapponica</i> (Bar-tailed Godwit)	Estuarine mudflats, mangroves, and coastal regions.	Absent	Unlikely	No
<i>Limosa limosa</i> (Black-tailed Godwit)	Intertidal sand and mudflat habitat, or inland muddy lakes and swamps.	Absent	Unlikely	No
Numenius madagascariensis (Eastern Curlew)	Intertidal sand and mudflat habitat around seagrass vegetation.	Absent	Unlikely	No
<i>Tringa glareola</i> (Wood Sandpiper)	Inland freshwater wetlands, particularly shallow with vegetation.	Absent	Unlikely	No
<i>Tringa nebularia</i> (Common Greenshank)	Estuarine mudflats, mangroves, coastal regions, and inland pastures.	Absent	Unlikely	No
<i>Tringa stagnatilis</i> (Marsh Sandpiper)	Brackish wetlands, particularly lagoons, rivers, and swamps.	Absent	Unlikely	No



### 5.5 State and territory reserves

The protected matters report identified two State reserves, both occurring in Victoria. The reserves are:

- Kings Billabong Park
- River Murray Reserve

Kings Billabong Park borders the Murray River. However, it is 8.4 km from the BLE and is well upstream, so there will be no impact from the BLE.

The River Murray Reserve is a continuous linear reserve along the Victorian bank of the Murray River. The nearest point is 3.7 km from this development. There is no waterway connecting the development with the Murray River, so there will be no impact on the river from the BLE.

### 5.6 Nationally important wetlands

The protected matters report identified one Nationally Important Wetland, which is in Victoria. The wetland is:

• Kings Billabong Wetlands

Kings Billabong Wetlands is on the Victorian bank of the Murray River and one of the main features in the Kings Billabong Park. Kings Billabong Wetlands is 9.8 km from the BLE and is well upstream, so there will be no impact from the BLE.



# 6 Identifying prescribed impacts

Prescribed impacts are biodiversity impacts (including direct and indirect impacts) identified in clause 6.1 of the BC Regulations which are additional to the impacts of native vegetation removal. The prescribed impacts which require assessment are reviewed in Table 20 and include:

- Impacts on the habitat of threatened species or ecological communities including karst, caves, crevices, cliffs, rocks or other geological features of significance; human-made structures; or non-native vegetation.
- Impacts on areas connecting threatened species habitat, such as corridors which facilitate the movement of those species across their range.
- Impacts on waterbodies, water quality and hydrogeological processes
- The impact of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.

The threatened entities that use or are likely to use habitat within the landscape assessment area are identified in Table 20. Threatened species were identified by searching known records within the landscape assessment area on databases (BioNet Atlas, ALA, eBird, Birdata), and reviewing the threatened species surveys undertaken as part of this BDAR (Section 4.2). No threatened species were recorded during the threatened species surveys. However, records for two threatened species within the landscape assessment area were identified during database searches. These two species are Major Mitchell's Cockatoo *Lophochroa leadbeateri* (Vulnerable – BC Act) and Spotted Harrier *Circus assimilis* (Vulnerable – BC Act) and are likely to use some of the features within the landscape assessment area identified in Table 20. The EPBC listed Mallee Bird Community of the Murray Darling Depression Bioregion (MBC) EEC was identified as a threatened entity likely to occur within the landscape assessment area based on the assessment undertaken in Section 5.2.

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
Karst, caves, crevices, cliffs, rocks, or other geological features of significance	⊡Yes / ⊠No	These habitat features are not present on the subject land	NA
Human- made structures	⊠Yes / ⊡No	Buildings, sheds, parking areas, storage areas, concentrated in existing hub area for current landfill	According to the NSW Threatened Species Profile Database (DPE 2022a & DPE 2022b) there is low potential for human made structures to provide habitat value for Major Mitchell's Cockatoo and Spotted Harrier. These structures are not likely to be used for nesting or foraging for either of these species. Major Mitchell's Cockatoo nests in tree hollows, feeds mostly on the ground on seeds of melons, saltbush, wattles, and cypress pine. The Spotted Harrier builds stick nests in trees, is found in grassy open woodlands including mallee remnants, and forages over open habitat. These nesting and foraging habitat features are not present within the human made structures on the subject land.

#### Table 20. Prescribed impacts



Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
			These structures do not provide the required habitat features for the MBC EEC as identified in DAWE 2021a. Although the EEC is likely to be present in the landscape assessment area where mallee vegetation is present, the habitat features provided by human made structures do not provide any of the required habitat features identified in DAWE 2021a. These structures are unlikely to be used by the any of the component bird species for nesting or foraging. This feature requires no further assessment.
Non-native vegetation	⊠Yes / ⊡No	Non-native vegetation consists of annual and perennial weeds. These are scattered throughout the BLE and consists of predominately groundcover species; however, some Prickly Pear ( <i>Opuntia</i> spp.) and African Boxthorn ( <i>Lycium</i> <i>ferocissimum</i> ) are present. There is no existing overstorey of non-native vegetation and no plan to introduce exotic trees and shrubs	According to DPE 2022a and DPE 2022b non-native vegetation present on site is unlikely to provide habitat features that are utilised by Major Mitchell's Cockatoo or Spotted Harrier. The non-native vegetation present is likely to negatively impact on the required habitat features through competition with native species. The non-native vegetation present on site is unlikely to provide the habitat features required for the MBC EEC identified in DAWE 2021a. DAWE 2021a identifies weeds as a threat to the EEC, including African Boxthorn and Prickly Pear. This feature requires no further assessment.
Habitat connectivity	⊠Yes / ⊡No	There is excellent habitat connectivity between the subject land and the assessment area. The assessment area is predominately native vegetation (87-88%). The assessment area is well connected to the surrounding landscape, which is also heavily vegetated. The vegetation includes woodland (mallee, Belah woodland and Black Box woodland) and chenopod shrubland.	As described in Section 5.2 the MBC EEC is likely to be present in mallee vegetation within the subject land and the assessment area. This includes PCT 170 within the subject land (Figure 9) and connected mallee vegetation in the assessment area (Figure 12). Connected vegetation, especially connected woodland habitat, will also provide connectivity between mallee vegetation (Figure 11). The connected vegetation between the subject land and assessment area are likely to provide habitat connectivity for Major Mitchell's Cockatoo and Spotted Harrier. The connected vegetation is likely to contain nesting and foraging habitat attributes for Major Mitchell's Cockatoo described in DPE 2022a, including tree hollows for nesting and wattles, saltbush, and cypress pine for feeding. It is also likely to contain nesting and foraging attributes for the Spotted Harrier described in DPE 2022b, including nesting trees and open woodland habitat for foraging.
Waterbodies, water quality and hydrological processes	⊠Yes / ⊡No	There is one waterbody on the outer edge of the assessment area for related case 00025590, the Mourquong Irrigation Drainage Water Disposal Area, to the west of the subject land (1.3 km). Other water bodies identified in the landscape assessment, Mourquong Saltwater	A review of records on the BioNet Atlas indicate that there are water dependant threatened species records outside of the assessment areas at Lake Gol Gol, Gol Gol Swamp and near the Murray River. These species include Southern Bell Frog <i>Litoria</i> <i>raniformis</i> (Endangered – BC Act, Vulnerable – EPBC Act), Blue Billed Duck <i>Oxyura australis</i> (Vulnerable – BC Act), Frecked Duck <i>Stictonetta naevosa</i> (Vulnerable – BC Act), Australian Painted Snipe <i>Rostratula australis</i> (Endangered – BC Act & EPBC Act), and Curlew Sandpiper <i>Calidris ferruginea</i>



Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
		Disposal Basin, Lake Gol Gol, Gol Gol Creek, and the Murray River, are all located outside of the assessment area with 5 km of the subject land for both related cases. As described in Section 2.1, groundwater beneath the subject land varies in depth from 5.9 m to 7.5 m below ground level (Tonkin 2021). Saline groundwater is a feature in the local area.	(Endangered BC Act, Critically Endangered EPBC Act. The groundwater beneath the subject land is likely to be connected to the groundwater beneath the waterbodies identified in Section 2.1. Any groundwater contamination from the operation of the BLE has the potential to impact these sites.
Vehicle strikes	⊠Yes / ⊡No	There are vehicle tracks throughout the BLE site, including service tracks around the permitter of the proposed landfill area adjacent to retained native vegetation outside of the subject land.	Major Mitchell's Cockatoo and Spotted Harrier are likely to utilise connected native vegetation habitat in the landscape assessment area surrounding the BLE site. Major Mitchell's Cockatoo is more likely to be impacted as it feeds mostly on the ground (DPE 2022a). Component bird species of the MBC EEC are likely to utilise connected native woodland habitat surrounding the BLE site. These include the species listed in Section 5.2 that have been recorded within 20 km of the subject land. A review of database records (BioNet Atlas, ALA, eBird, Birdata) indicated that no records of any of these species have been recorded within the landscape assessment area, however six species have been recorded within 3-4 km of the subject land. These species include Jacky Winter <i>Microeca fascinans</i> , Splendid Fairy-wren <i>Malurus splendens</i> , Spotted Pardalote <i>Pardalotus punctatus</i> , White-eared Honeyeater <i>Nesoptilotis leucotis</i> , White- fronted Honeyeater <i>Purnella albifrons</i> , Yellow-plumed Honeyeater <i>Ptilotula ornata</i> .





Figure 11. Woodland connectivity in assessment area



Figure 12. Mapped Mallee PCT's in assessment area and surrounding landscape



# 6.1 Avoid and minimise direct and indirect impacts

# 6.1.1 Project location

Impacts on biodiversity and threatened species are avoided by locating the BLE alongside a highquality bitumen road which runs past the entrance to the current landfill site. This road will not require upgrading for the BLE. Alternative sites may require major road upgrades with additional biodiversity impacts and the added cost of road works. The BLE is located where there is existing electricity and town water supply infrastructure serving the existing landfill. Therefore, expanding the facility avoids potential impact on biodiversity and increased cost of constructing a new transmission line and water main to a greenfield site that may not have these services close by and is unlikely to have them on-site.

The BLE is suitably located to minimise impacts. The development site was selected because most (79%) of the subject land for the BLE has an existing planning consent, as described earlier in this report. Logically, this consent is followed through and expanded to meet the community's needs in the long term through the BLE. There is existing infrastructure already on-site, such as access tracks, site office, staff amenities, machinery sheds, and fencing that will serve the BLE, thus avoiding biodiversity impacts, and avoiding the cost of constructing/duplicating these features on an alternative greenfield site.

The BLE extends the footprint of the current landfill, consolidating disturbance to one location instead of creating a separate disturbance at a greenfield site. Clustering land development to one location rather than separating them across more than one site minimises biodiversity impacts. Most of the subject land for the BLE has been heavily disturbed by the existing landfill's past and current operational activities. Furthermore, previous land use of rangeland grazing, loam extraction, and cutting of trees for firewood, fence posts or vine trellising (being so close to an irrigation district and towns) has significantly reduced the quality of native vegetation thus minimising impacts compared to a higher quality site in an alternative location.

# 6.1.2 Project design

The infrastructure already in place for the current landfill has been incorporated into the design for the BLE. The infrastructure will not need to be built or relocated thus avoiding impacts.

Incorporating a buffer zone along the Arumpo Road boundary avoids visual impacts of the development from the road and provides refuge and connectivity for wildlife when adjacent cells of the same vegetation type are cleared. A buffer zone along the eastern boundary similarly will provide refuge and connectivity for wildlife when cells to the west with similar vegetation types are cleared. Areas of buffer zones being retained have a higher overall vegetation quality than the area to be cleared.

The design of the BLE consists of four substages which are then each divided into three cells, which will be progressively cleared, developed, and rehabilitated over the life of the landfill. This approach will minimise biodiversity impacts both in the short term and longer-term, as only the operational cells will be completely devoid of native vegetation at any one time.

Landfill cells will be rehabilitated in accordance with NSW *Solid Waste Landfill Guidelines* to provide a suitable surface for revegetation with endemic native trees, shrubs, and grasses. The capping soil will be at least 1.2 m deep and consist of overburden from cell construction, i.e. topsoil (nominally upper 0.2 m) and subsoil (nominally within 2 m of the surface) of the natural soil profile. The



vegetation will be selected from species associated with the natural open woodland species, with the exact species selected dependent on the seed or tube stock available at the time of final capping construction.

In brief, there will be three stages in the life of a cell:

- Clearing native vegetation, removal of topsoil and overburden, placement of liner, leachate collection system, and surface stormwater drains in readiness for receival of waste.
- Landfill operation until a cell is full mean life of a cell is estimated to be approximately three years.
- Rehabilitation: including capping with overburden, placement of topsoil, and revegetation.

These design features will minimise loss of habitat at any one time and allow fauna to relocate closer to adjoining undisturbed and rehabilitated areas when land clearing occurs.

Three stormwater storage ponds and a leachate pond planned for the BLE have been sited to minimise impacts on native vegetation. The leachate pond is located in the south-east of the BLE in an area of poor vegetation quality with almost no overstorey trees (Zone 6). The southern stormwater pond is located in an area of non-native vegetation within the current landfill footprint. The north-eastern landfill pond is located in an area of poor-quality vegetation with no overstorey (Zone 10). The north-western stormwater pond is located in an area with little overstorey trees. Stormwater ponds have also been sited to avoid and minimise impacts on native vegetation, i.e. by utilising previously disturbed sites where possible (current landfill footprint or footprint of previous soil extraction).

The existing sheds, office, and storage areas have been incorporated into the BLE, thus avoiding new impacts. New buildings, carparks and hardstand areas have been located to avoid and minimise impacts and will largely be in areas on non-native vegetation in the current landfill footprint. A new emergency access road at the north-west of the landfill site will avoid impacts to overstorey trees.

# 6.2 Avoid and minimise prescribed impacts

# 6.2.1 Project location

# 6.2.1.1 Habitat connectivity

Impacts on habitat connectivity are avoided by locating the BLE at the existing landfill site. The site contains existing access, power and water supply, site office, sheds, internal roads and significant areas of non-native vegetation. These existing features will serve the BLE, avoiding habitat loss and impacts to habitat connectivity that may occur on a greenfield site.

The location of the subject land within a much larger area of connected vegetation minimises the impacts on habitat connectivity of any native vegetation removal within the subject land. The assessment area is largely native vegetation with between 87%-88 % of the area assessed as native vegetation within a continuous patch. This includes significant areas of mallee and other woodland vegetation. This pattern continues in the wider landscape with large areas of contiguous vegetation present, including mallee and other woodland vegetation.



## 6.2.1.2 Waterbodies, water quality and hydrogeological processes

Locating the BLE in an area which is relatively high in the landscape maximises the depth to groundwater and reduces the likelihood of the landfill cells impacting on groundwater. The elevation for the BLE ranges from 36 – 45 m AHD, while the bed of surrounding waterbodies such as Gol Gol Lake and the Mourquong Saltwater Disposal Basin are as low as 30 m AHD.

Locating the BLE a considerable distance from waterbodies also minimises the chances of the BLE impacting on these areas via groundwater. The underlying geology at the BLE site also limits the likelihood of groundwater impacts. Tonkin (2021) concludes that the overall risk to groundwater is low with the depth to groundwater varying from 5.9 to 7.5 m below ground level and unlikely to rise. Furthermore, with groundwater essentially within clay bearing units flow rates are likely to be slow, should the water table be intersected by excavation works (Tonkin 2021).

### Vehicle strikes

The location of the site minimises the risk of vehicle strikes on Major Mitchell's Cockatoo, Spotted Harrier and the identified component bird species of the MBC EEC by maximising the use of existing infrastructure, non-native vegetation and degraded vegetation at the existing landfill site. The large areas of good quality connected native vegetation in the assessment area and surrounding landscape will minimise the likelihood of these threatened entities crossing areas of unsuitable habitat within the BLE.

# 6.2.2 Project design

### 6.2.2.1 Habitat connectivity

The infrastructure already in place for the current landfill has been incorporated into the design for the BLE. The infrastructure will not need to be built or relocated thus avoiding impacts to habitat connectivity that could occur at a greenfield site.

Incorporating a buffer zone along the Arumpo Road and the eastern boundary of the BLE provides connectivity for Major Mitchell's Cockatoo, Spotted Harrier and the MBC EEC when adjacent cells of the same vegetation type are cleared. Areas of buffer zones being retained tend to have a higher overall vegetation quality than the area to be cleared, particularly on the western side of the BLE.

The design of the BLE consists of four substages which are then each divided into three cells, which will be progressively cleared, developed, and rehabilitated over the life of the landfill. This approach will minimise impacts to habitat connectivity for the identified threatened entities, both in the short term and longer-term, as only the operational cells will be completely devoid of native vegetation at any one time.

Landfill cells will be rehabilitated in accordance with NSW *Solid Waste Landfill Guidelines* to provide a suitable surface for revegetation with endemic native trees, shrubs, and grasses. The capping soil will be at least 1.2 m deep and consist of overburden from cell construction, i.e. topsoil (nominally upper 0.2 m) and subsoil (nominally within 2 m of the surface) of the natural soil profile. The vegetation will be selected from species associated with the natural open woodland species, with the exact species selected dependent on the seed or tube stock available at the time of final capping construction.

In brief, there will be three stages in the life of a cell:

• Clearing native vegetation, removal of topsoil and overburden, placement of liner, leachate collection system, and surface stormwater drains in readiness for receival of waste.


- Landfill operation until a cell is full mean life of a cell is estimated to be approximately three years.
- Rehabilitation: including capping with overburden, placement of topsoil, and revegetation.

These design features will minimise habitat connectivity impacts at any one time for the identified threatened entities.

The three stormwater storage ponds and the leachate pond have been located to minimise impacts on native vegetation, in particular overstorey trees. This will minimise impacts on woodland habitat which provides habitat connectivity for the identified threatened entities.

The existing sheds, office, and storage areas have been incorporated into the BLE design, thus avoiding additional impacts to habitat connectivity. New buildings, carparks and hardstand areas have been located to avoid and minimise impacts to habitat connectivity and will largely be in areas on non-native vegetation in the current landfill footprint. A new emergency access road at the north-west of the landfill site has been designed to avoid impacts to overstorey trees, minimising impacts on woodland habitat connectivity which provides habitat connectivity for the identified threatened entities.

### 6.2.2.2 Waterbodies, water quality and hydrogeological processes

The design of the BLE will avoid impacts to groundwater by designing landfill cells to avoid direct interaction with groundwater. Landfill cells will be constructed with an engineered lining and leachate collection system (Tonkin 2022). This will form a barrier between the landfill cells and the environment, avoiding direct interaction with subsurface groundwater and the potential for groundwater contamination with leachate. Leachate will be managed as per Section 3.6.4 of the EIS (Tonkin 2022), where it will be pumped to a lined leachate pond and disposed of via evaporation, avoiding groundwater contamination. Stormwater will be managed as per Section 3.6.5 of the EIS (Tonkin 2022). Stormwater run-off from disturbed areas will be detained on site to prevent discharge of any sediment laden water from site (Tonkin 2022). Stormwater will only be released from site once the water quality is suitable for discharge (Tonkin 2022). These measures will minimise the potential for groundwater contamination and offsite impacts to identified waterbodies.

### 6.2.2.3 Vehicle strikes

The BLE has incorporate the existing access road and internal tracks into the design. The design of the BLE is not likely to significantly increase the risk of vehicle strikes on Major Mitchell's Cockatoo, Spotted Harrier and the identified component bird species of the MBC EEC, considering the site is already used as a landfill. However, there will be a potential increase in traffic due to increasing operations and access. The frequent change of internal access tracks over the BLE's life will be limited to a single landfill cell except for transition periods where two cells will temporarily be active.

The access track for emergency in the northwest of the subject land will is reserved for emergency access and will be rarely used.

Any increased risk of vehicle strike on the identified threatened entities, in particular Major Mitchell's Cockatoo and the identified component bird species of the MBC EEC, will be negligible.



### 7 Impact assessment

### 7.1 Direct impacts

The potential for direct impacts on biodiversity is limited to the clearing of native vegetation and habitat. The construction and operational phases of the BLE present direct impacts (Table 21) on biodiversity values. The BLE will sequentially impact all native vegetation within the subject land as each of the four stages is developed over its estimated 37.8-year lifetime.

		10010 21.0	anninary of resid		npacts	
Direct impact	Related	BC Act	EPBC Act	SAII	Project phase/timing of	Extent (ha)
	case	Status	Status	entity	impact	
PCT 15 (15 Zone 1)	00024930	Not listed	Not listed	No	Construction (Stage 1A)	0.55
PCT 15 (15 Zone 1)	00025590	Not listed	Not listed	No	Construction (Stage 1A)	0.16
PCT 58 (58 Zone 2)	00025590	Not listed	Not listed	No	Construction (Stage 1A)	0.27
PCT 58 (58 Zone 3)	00024930	Not listed	Not listed	No	Construction (Stages 1C, 1D)	3.38
PCT 58 (58 Zone 4)	00024930	Not listed	Not listed	No	Construction (All Stages)	1.94
PCT 58 (58 Zone 4)	00025590	Not listed	Not listed	No	Construction (Stages 1A, 1C, 1D)	0.29
PCT 170 (170 Zone 5)	00024930	Not listed	Not listed	No	Construction (All Stages)	3.13
PCT 170 (170 Zone 5)	00025590	Not listed	Not listed	No	Construction (All Stages)	0.36
PCT 252 (252 Zone 6)	00025590	Not listed	Not listed	No	Construction (Stage 1A)	1.70
PCT 143 (143 Zone 7)	00024930	Not listed	Not listed	No	Construction (Stages 1A, 1B)	1.45
PCT 58 (58 Zone 8)	00024930	Not listed	Not listed	No	Construction (All Stages)	3.31
PCT 58 (58 Zone 8)	00025590	Not listed	Not listed	No	Construction (All Stages)	0.67
PCT 170 (170 Zone 10)	00025590	Not listed	Not listed	No	Construction (Stage 1D)	0.30

Table 21	ummary	of residual	direct impacts

### 7.2 Indirect impacts

There are several factors (Table 22) that have indirect impacts on biodiversity values. The indirect impacts may not be an immediate or obvious effect; however, in the long-term may impact identified threatened entities. In addition, the likelihood and consequences of impact risk for indirect impacts have been addressed with a risk matrix (Appendix E) (ISO 31000).



Table 22. Summary of residual indirect impacts								
Indirect impact	Impacted entity	Extent	Frequency	Duration	Project phase/ timing	Likelihood and consequences		
Introduction of new weeds from landfill site to adjacent vegetation	Native vegetation outside of the subject land (includes PCT 15, PCT 58, PCT 170, PCT 252)	Retained native vegetation outside subject land (see Site Map)	Ongoing	Long-term	Operation	It is possible for new weeds to be introduced to the landfill site via green waste or machinery and plant and spread into the surrounding vegetation. The consequence if this occurs will depend on the type of weed introduced, however it could be significant. Risk Rating = Moderate		
Impact to adjacent vegetation outside of subject land	Native vegetation outside of the subject land (includes PCT 15, PCT 58, PCT 170, PCT 252) MBC EEC	Retained native vegetation adjacent to subject land (High risk vegetation impact zone on Site Map)	Ongoing	Long-term	Construction & operation	It is possible that inadvertent native vegetation impacts could occur outside of the subject land during vegetation clearing/constructio n and operation. The consequence of these impacts to the MBC EEC across the ABC EEC across the assessment area is likely to be minor due to the relatively small and isolated nature of the impacts. Risk Rating = Low The consequence to the adjacent vegetation is likely to be significant. Risk Rating = Moderate		

#### 1.1. 22 C

#### **Prescribed impacts** 7.3

### 7.3.1 Habitat connectivity

### 7.3.1.1 *Nature*

Impacts to habitat connectivity for Major Mitchell's Cockatoo, Spotted Harrier and the MBC EEC will consist of the removal of native vegetation within the subject land.

### 7.3.1.2 *Extent*

The extent of the impacts to habitat connectivity consists of 17.53 ha of native vegetation removal within the subject land. This includes PCT 170, PCT 58, PCT 15, PCT 143 and PCT 252.



### 7.3.1.3 Duration

The impacts will occur during the construction of the BLE. Most of these impacts will be during the construction of the landfill cells which will be progressively cleared and developed as required over the life of the landfill, as described in Section 6.2.

### 7.3.1.4 Consequences

Considering the extent and location of the impacts and the avoidance and minimisation measures described in 7.2 the impacts on habitat connectivity for Major Mitchell's Cockatoo, Spotted Harrier and the MBC EEC will not be significant. The location of the subject land within a much larger area of connected vegetation minimises the impacts on habitat connectivity of any native vegetation removal within the subject land. The assessment area is largely native vegetation with between 87%-88 % of the area assessed as native vegetation. This pattern continuous patch. This includes significant areas of mallee and other woodland vegetation. This pattern continues in the wider landscape with large areas of contiguous vegetation present, including mallee and other woodland vegetation. The native vegetation witch represents < 1.5% of the total area of native vegetation witch provide habitat connectivity for Major Mitchell's Cockatoo, Spotted Harrier and the MBC EEC in the assessment area and the surrounding landscape will not be significantly impacted. The habitat impacted within the subject land is therefore not likely to impact significantly on habitat connectivity important for any of these threatened entities. No further mitigation measures will be required.

### 7.3.2 Waterbodies, water quality and hydrogeological processes

### 7.3.2.1 Nature

Groundwater beneath the subject land is at a depth of between 5.9 to 5.7 m AHD (Tonkin 2021) and any groundwater contamination during the operation of the BLE has the potential for offsite impacts. Tonkin (2021) indicates that groundwater movement is slow and the overall risk to groundwater is low.

### 7.3.2.2 Extent

The groundwater beneath the subject land is likely to be connected to waterbodies identified in the landscape assessment in Section 2.1.

### 7.3.2.3 Duration

Potential impacts to groundwater could occur during the operation of the landfill.

### 7.3.2.4 Consequences

Considering the avoidance and minimisation measures described in 7.2 and the outcome of the Groundwater Impact Assessment (Tonkin 2021) there is a very low likelihood of impacts to groundwater and flow on impacts to the waterbodies identified in Section 2.1. The lining of the landfill cells and the associated leachate collection system described in 3.6.4 of the EIS (Tonkin 2022) is designed to prevent groundwater contamination from leachate. Furthermore, the stormwater management system described in 3.6.5 of the EIS (Tonkin 2022) is designed to prevent potential off-site impacts from contaminated sediments. These measures will minimise the potential for groundwater contamination and offsite impacts to identified waterbodies. Further measures to mitigate any potential residual impacts are described in Section 7.4.



### 7.3.3 Vehicle strikes

### Nature

Vehicle strikes have the potential to impact Major Mitchell's Cockatoo, Spotted Harrier and identified component species of the MBC EEC.

### Extent

The high-risk areas for vehicle strike will be on service tracks around the permitter of the subject land adjacent to retained native vegetation.

### Duration

The impacts will occur during the construction and operation of the BLE.

### Consequences

Considering the avoidance and minimisation measures described in 7.2 the impacts of bird strike on the identified threatened entities is likely to be low. Furthermore, the foraging/feeding habits of Major Mitchell's Cockatoo (as described in DPE 2022a) and the component bird species of the MBC EEC (as described in DAWE 2021a), indicate that these threatened entities are at a higher risk of vehicle strike than Spotted Harrier. However, the database records (BioNet Atlas, ALA, eBird, Birdata) and the bird survey undertaken for this BDAR indicate that there is a low likelihood of encountering any of these threatened entities. The impacts of vehicle strike on Major Mitchell's Cockatoo, Spotted Harrier and the identified component bird species of the MBC EEC are unlikely to be significant. Further measures to mitigate any potential residual impacts are described in Section 7.4.

### 7.4 Mitigating residual impacts – management measures and implementation

Proposed measures to mitigate and manage impacts are detailed in Table 23. Further details on the implementation of these measures are provided in Table 24.

Please note that mitigation measures related to leachate and stormwater management and monitoring as well as groundwater monitoring are summarised in Table 23. Further details of these requirements are provided in the EIS (Tonkin 2022).



#### Buronga Landfill Expansion BDAR

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy (including risk of failure)	MNES
Monitor retained native vegetation on the property for high priority weeds	Transect survey in native vegetation on the property surrounding the subject land	Spring	Annually	Land Manager	This is a recognised method. Minimal risk of failure	N/A
Monitor green waste stockpile areas for high priority weeds	Transect survey in and around green waste stockpile areas	Summer, autumn, winter, and spring	Annually	Land Manager	This is a recognised method. Minimal risk of failure	N/A
Clearly identify the extent of the subject land/construction footprint adjacent to native vegetation	Install permanent markers (posts/bollards) along boundary of subject land and adjacent native vegetation.	During construction and operation	Ongoing	Land Manager	High efficacy, minimal risk of failure	N/A
Enforce site speed limit of 10 kph to mitigate chances of bird strike	orce site speed Install regular Construction & Ongoing Land Manager High efficacy. A speed I kph for all traffic will re likelihood & consequent vehicle strike, further r the already low potent vehicle strike on identities		High efficacy. A speed limit of 10 kph for all traffic will reduce the likelihood & consequence of vehicle strike, further minimising the already low potential of vehicle strike on identified threatened entities	Major Mitchell's Cockatoo & identified component species of MBC EEC.		
Implement leachate and stormwater management, monitoring and mitigation measures	As described in EIS & Landfill Environmental Management Plan (LEMP)	As described in EIS & LEMP. As required by EPA Licence	As described in EIS & LEMP. As required by EPA Licence	Land Manager	High efficacy. Ongoing monitoring and reporting requirements to EPA as part of licence.	N/A

Table 23. Summary of proposed mitigation & management measures



Measure/action	Monitoring & evaluation	Performance criteria	Adaptive management threshold	Adaptive management response
Monitor retained native vegetation on the property for high priority weeds	Transect survey at 10m intervals in spring of each year. Record species & location of high priority weeds* against baseline survey. Report to landfill manager. *High priority regional weeds identified in Western Regional Strategic Weed Management Plan (WLLS 2017) and Weeds of National Significance	Number and area of infestations of identified weed species equal to or less than baseline survey data.	New infestation not in baseline survey or increased extent of infestation detected in baseline survey.	Implement control program for identified infestations. Contact Western Local Land Services for technical advice.
Monitor green waste stockpile areas (stockpiles and 50m buffer) for high priority weeds	Transect survey at 10m intervals in summer, autumn, winter and spring of each year. Record species & location of high priority weeds*. Report to landfill manager. *High priority regional weeds identified in <i>Western Regional</i> <i>Strategic Weed Management Plan</i> (WLLS 2017) and <i>Weeds of National</i> <i>Significance</i>	Number and area of infestations of identified weed species equal to or less than baseline survey data.	New infestation not in baseline survey or increased extent of infestation detected in baseline survey.	Implement control program for identified infestations. Contact Western Local Land Services for technical advice.
Clearly identify the extent of the subject land/construction footprint adjacent to native vegetation with permanent markers	Monitor retained native vegetation along boundary of subject land for impacts during construction (daily) and operation (monthly).	Area of native vegetation impacted outside of subject land during construction. Area of native vegetation impacted during operation from vehicles or rubbish dumping outside of subject land and existing management tracks.	Native vegetation impacts outside of subject land and existing management tracks	Assess extent and severity of impacts. Notify Landfill Manager. Contact accredited native vegetation assessor for advice. Implement rehabilitation of affected area.
Enforce site speed limit of 10 kph	Monitor vehicle speeds.	Vehicle speed.	Vehicle observed exceeding speed limit.	Speak to driver regarding speed limit requirements
	Report incidences of bird strike to Landfill Manager. Identify and document bird species (contact ecologist if required).	Number of vehicle bird strikes and resulting injury or deaths.	Injury or death of identified threatened entity from bird strikes	Contact ecologist for advice regarding appropriate adaptive management response

Table 24. Details on implementation of management measures



### 7.5 Impacts on Matters of National Environmental Significance

### 7.5.1 Mallee Bird Community of the Murray Darling Depression Bioregion

As described in Section 5.2 the Mallee Bird Community of the Murray Darling Depression Bioregion (Endangered) may be present in the assessment area and the surrounding landscape. This ecological community is listed as an endangered EEC under the EPBC Act. An assessment was undertaken using the *Matters of National Significance, Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (DOE 2013) to determine if there are any significant impacts on this EEC from the BLE development. This involved reviewing the impacts of the BLE development against each significant impact criteria for critically endangered and endangered ecological communities on page 11 of the guidelines. Each seven criteria from the guidelines are detailed below in italics, followed by a response evaluating the impacts against each of the criteria.

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

• reduce the extent of an ecological community

The scale of mallee vegetation (PCT 170) removal for the BLE development is not significant at the landscape scale. Within the assessment area (subject land and the 1,500 m buffer area) a total of 3.8 ha of mallee vegetation is proposed for removal, of which 3.13 ha is within the previous consent area and 0.36 ha is outside the previous consent area. This comprises 22% of the total vegetation proposed for removal for the BLE development and less than 0.4% of the total native vegetation within the assessment area. The assessment area for both related cases is largely native vegetation with between 87%-88 % of the area assessed as native vegetation (Figure 6 and Figure 7) within a continuous patch. This includes significant areas mapped as mallee vegetation (PCT 170) and other woodland PCT's. This pattern continues in the wider landscape with large areas of contiguous vegetation present, including mallee vegetation (Figure 11 and Figure 12). The mallee vegetation impacted by the BLE development comprises of a very small percentage of the mallee vegetation within the assessment area and surrounding landscape and the development will not further isolate or fragment this vegetation. The large areas of mallee vegetation which provide habitat for the EEC in the assessment area and the surrounding landscape will not be significantly impacted. The BLE development will therefore not reduce the extent of the EEC.

• fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines

As outlined above the BLE development will impact a very small area (<4 ha) of mallee vegetation within the assessment area and surrounding landscape, which is largely vegetated. This vegetation consists of significant areas of contiguous vegetation, including mallee vegetation. Due to the largely intact nature of the surrounding vegetation and the very small area impacted, the mallee vegetation in the assessment area and surrounding landscape will retain the same high levels of connectivity. The BLE development will not result in the further fragmentation of this EEC.

• adversely affect habitat critical to the survival of an ecological community DAWE (2021a) identifies occurrences of the EEC that meet the criteria outlined in Section 5.2 with the following two characteristics as critical to the survival of the EEC.



- 1. Known populations of threatened mallee birds listed individually under national environment law, especially the limited range mallee specialists.
- 2. Areas where several members of the Mallee Bird Community are known to occur and can act as reservoirs or source populations to colonise other nearby sites, if populations in the latter suffer impacts.

Of the 12 component bird species listed in DAWE 2021a that were recorded within 20 km of the subject land (in the last 10 years), one is listed as threatened under the EPBC Act, Regent Parrot *Polytelis anthopeplus* (Vulnerable), with the nearest record approximately 5 km south-east of the subject land (eBird). Regent Parrot is identified in DAWE 2021a as a mallee dependent species, rather than a mallee specialist. Although Regent Parrot is known to occur in the surrounding landscape, the overall impact on mallee habitat is negligible due to the small area impacted by the BLE development. The development will not impact on the large areas of mallee vegetation and other connected woodland habitat in the surrounding landscape which are critical to the survival of the local population of Regent Parrot. For similar reasons the small area of mallee vegetation impacted by the BLE development will not impact on any known populations of Mallee Bird Community species that may act as reservoirs to colonise nearby sites. The large areas of mallee vegetation in the assessment area and surrounding landscape which provide habitat for the local Mallee Bird Community will not be impacted by the removal of less than 4 ha of mallee vegetation on the subject land.

• modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns

The BLE development will not modify or destroy abiotic factors which are necessary for the survival of the EEC within the assessment are and surrounding landscape. Although the EEC is not a groundwater dependent community, impacts of increased soil salinity through rising groundwater are relevant in the local area. Tonkin (2021) indicates that the BLE development is unlikely to impact local groundwater and that rises in groundwater levels are unlikely. The BLE development will alter surface drainage patterns within the subject land, however this will not impact on surface drainage patterns in the surrounding landscape, including mallee vegetation habitat relevant to the EEC. Other risks such as off-site contamination will be managed through erosion and sedimentation control and stormwater management measures as discussed in Section 7.3.

• cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting

The BLE development will not cause a substantial change in the species composition of the EEC in the assessment area and surrounding landscape. As outlined above the development will impact a small area of mallee habitat in a highly vegetated landscape which contains large areas of connected mallee and other woodland habitat. The small scale of the impacts will not impact on the overall species composition of the EEC.

- cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
  - assisting invasive species, that are harmful to the listed ecological community, to become established, or



 causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or

Invasive species and off-site contamination risks will be managed, as outlined in Section 7.4. The BLE development will therefore not result in an increased risk from these threats to the EEC in the assessment area and surrounding landscape.

• interfere with the recovery of an ecological community.

As outlined above the BLE development will impact a small area of mallee habitat in a highly vegetated landscape. Due to the small scale of the impacts the development will not affect the overall health or recovery of the EEC in the assessment area and surrounding landscape which contains large areas of connected mallee and other woodland habitat.

Based on the assessment above the BLE development will not have a significant impact on the Mallee Bird Community of the Murray Darling Depression Bioregion EEC, and a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water is not required.

### 7.6 Assessment for serious and irreversible impacts on biodiversity values

An impact is an SAII if it is likely to contribute significantly to the risk of a threatened species or ecological community identified as at risk of SAII. Threatened species and ecological communities (entities) at risk of SAII are listed by the NSW Government and identified on the DPE website, on the *Threatened Biodiversity Data Collection* (TBDC) database and by the BAM-C. One candidate species credit species, Thyme Rice-Flower (*Pimelea serpyllifolia* subsp. *serpyllifolia*), is identified as an SAII entity. However, the targeted, threatened species surveys conducted in October of 2021 did not identify this species or show any presence within the development site. As a result, it has been identified that there are no entities at risk of SAII on the site.



### 8 Impact summary

### 8.1 Impacts on native vegetation and TECs or ECs (ecosystem credits) offsets

The development impacts requiring offsets for native vegetation impacts for related case 00024930 (existing consent area) are outlined in Table 25, and for related case 00025590 (outside existing consent area) in Table 26. These impacts are mapped in Figure 13.

Vegetation Zone	PCT Name	TEC	lmpact area (ha)	Current VI score	Future VI score	Biodiversity risk weighting	Credits required
15 Zone 1 CA	PCT 15 Black Box open woodland wetland with chenopod understorey	No	0.55	57.1	0	1.75	14
58 Zone 3 CA	PCT 58 Black Oak Western Rosewood open woodland	No	3.4	24.2	0	1.75	36
58 Zone 4 CA	PCT 58 Black Oak Western Rosewood open woodland	NO	1.9	40.8	0	1.75	35
170 Zone 5 CA	PCT 170 Chenopod sandplain mallee woodland/shrubland	No	3.1	49.5	0	1.50	58
143 Zone 7 CA	143 Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland	No	1.4	34.2	0	1.50	19

#### Table 25. Native vegetation impacts requiring offset (related case 00024930)

#### Table 26. Native vegetation impacts requiring offset (related case 00025590)

Vegetation Zone	PCT Name	TEC	Impact area (ha)	Current VI score	Future VI score	Biodiversity risk weighting	Credits required
15 Zone 1 Outside CA	PCT 15 Black Box open woodland wetland with chenopod understorey	No	0.16	57.1	0	1.75	4
58 Zone 4 Outside CA	PCT 58 Black Oak Western Rosewood open woodland	No	0.29	40.8	0	1.75	5
58 Zone 2 Outside CA	PCT 58 Black Oak Western Rosewood open woodland	No	0.28	57.5	0	1.75	7
170 Zone 5 Outside CA	PCT 170 Chenopod sandplain mallee woodland/shrubland	No	0.36	49.5	0	1.50	7

Zone 8 (PCT 58), Zone 10 (PCT 170), and Zone 6 (PCT 252) do not require an offset as the vegetation integrity was not  $\ge$  20 (where a PCT does not represent a TEC) as per 9.2.1 of the BAM. The development impacts not requiring offsets for native vegetation impacts for related case 00024930 (existing consent area) are outlined in Table 27, and for related case 00025590 (outside existing consent area) in Table 28. These impacts are mapped in Figure 13.

Tahle 27	Native	venetation	impacts	not	requiring	an	offcet	(related	case	00024930
iuble 27.	nutive	vegetation	impucts	ποι	requiring	un	UJJSEL	lieinten	cuse	00024950

Vegetation Zone	PCT Name	TEC	Impact area (ha)	Current VI score
58 Zone 8 CA	PCT 58 Black Oak Western Rosewood open woodland	No	3.3	13.7



Vegetation Zone	PCT Name	TEC	Impact area (ha)	Current VI score
252 Zone 6 Outside CA	PCT 252 Sugarwood open woodland	No	1.7	14.2
58 Zone 8 Outside CA	PCT 58 Black Oak Western Rosewood open woodland	No	0.67	13.7
170 Zone 10 Outside CA	PCT 170 Chenopod sandplain mallee woodland/shrubland	No	0.3	3.3

Table 28. Native vegetation impacts not requiring an offset (related case 00024930)

### 8.2 Impacts on threatened species and their habitat (species credits)

As described in Section 4.2 targeted surveys were conducted in October of 2021. The results of the targeted surveys identified that no species requiring further assessment were present for related case 00024930 (existing consent area) and for related case 00025590 (outside existing consent area). No species credits are required for either related case and no species are assumed to be present.

### 8.3 Impacts that do not need further assessment

There has been historic clearing of native vegetation and preliminary development of a waste and resource management facility within the development site. These areas do not contain native vegetation and do not require assessment for ecosystem credits. These areas are identified in Figure 13.



Figure 13. Mapped Mallee PCT's in assessment area and surrounding landscape



### 8.4 Proposed method to offset credit obligation

The proposed method to offset the credit obligation is to secure and retire credits from a third-party stewardship site or sites as per the "like-for-like" offset rules in Clause 6.2 of the *Biodiversity Conservation Regulation 2017*. If the credit obligation cannot be met in this manner, they will be secured in accordance with the variation rules. A payment to the Biodiversity Conservation Fund will be considered if the credit obligation cannot be secured from a third-party.



### 9 References

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# 10 Appendices



Appendix A: EPBC Protected Matters Search Tool - 10 km Buffer





Australian Government

Department of Agriculture, Water and the Environment

# **EPBC Act Protected Matters Report**

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 22/06/21 09:27:57

Summary <u>Details</u> <u>Matters of NES</u> <u>Other Matters Protected by the EPBC Act</u> <u>Extra Information</u> <u>Caveat</u> <u>Acknowledgements</u>



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

<u>Coordinates</u> Buffer: 10.0Km



### Summary

### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	25
Listed Migratory Species:	15

### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

2
None
24
None
None
None
None

### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	28
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

## Details

### Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	150 - 200km upstream
Riverland	100 - 150km upstream
The coorong, and lakes alexandrina and albert wetland	200 - 300km upstream

#### Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling	Endangered	Community may occur
Depression Bioregions		within area
Buloke Woodlands of the Riverina and Murray-Darling	Endangered	Community may occur
Depression Bioregions		within area
Buloke Woodlands of the Riverina and Murray-Darling	Endangered	Community may occur
Depression Bioregions		within area
River Murray and associated wetlands, floodplains and	Approval Disallowed	Community may occur
groundwater systems, from the junction with the		within area
Darling River to the sea		
River Murray and associated wetlands, floodplains and	Approval Disallowed	Community may occur
groundwater systems, from the junction with the		within area
Darling River to the sea		
River Murray and associated wetlands, floodplains and	Approval Disallowed	Community may occur
groundwater systems, from the junction with the		within area
Darling River to the sea		

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri		
Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Manorina melanotis		
Black-eared Miner [449]	Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within
		area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat
		may occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Critically Endangered	Species or species habitat
		may occur within area
		·····,
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Extinct within area
Polytelis anthopeplus monarchoides		
Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat
		likely to occur within area
Rostratula australis		
Australian Painted Spine [77037]	Endangered	Species or species habitat
	Lindangered	known to occur within area
Fish		
Bidyanus bidyanus		
Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat
		known to occur within area
One tangen and a loss flow instilling		
Craterocephalus fluviatilis	Tudougorod	Creation or organize hebitat
Multay Hardynead [56791]	Endangered	likely to occur within area
Galaxias rostratus		
Flathead Galaxias, Beaked Minnow, Flat-headed	Critically Endangered	Species or species habitat
Galaxias, Flat-headed Jollytail, Flat-headed Minnow	, C	likely to occur within area
[84745]		
Maccullochella macquariensis		
Trout Cod [26171]	Endangered	Species or species habitat
		may occur within area
Maccullochella peelii		
Murray Cod [66633]	Vulnerable	Species or species habitat
	Valitorabio	known to occur within area
<u>Macquaria australasica</u>		
Macquarie Perch [66632]	Endangered	Species or species habitat
		may occur within area
Frogs		
Litoria raniformis		
Growling Grass Frog Southern Bell Frog Green and	Vulnerable	Species or species habitat
Golden Frog, Warty Swamp Frog, Golden Bell Frog	Vaniorabio	known to occur within area
[1828]		
Mammals		
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared	Vulnerable	Species or species habitat
Bat [83395]		likely to occur within area
Phascolarctos cinereus (combined populations of Old N	$VSW$ and the $\Delta CT$	
Koala (combined populations of Queensland New	Vulnerable	Species or species habitat
South Wales and the Australian Capital Territory)	Vallerable	may occur within area
[85104]		,
Plants		
Lepidium monoplocoides		
Winged Pepper-cress [9190]	Endangered	Species or species habitat
		may occur within area
Selenum kersense		
<u>Julanum Karsense</u>	Vulnorobla	Spacing or apprice h-Lit-t
	Plasienuv	opecies or species habitat
		may occur within alea
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murrav	Vulnerable	Species or species habitat
Swainson-pea [6765]		likely to occur within area

Name	Status	Type of Presence
<u>Swainsona pyrophila</u> Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species * Species is listed under a different scientific name on th	ne EPBC Act - Threatened	[Resource Information] Species list.
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
<u>Motacilla flava</u> Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		<b>.</b>
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		On a size an ana size habitat
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<u>Calidris ferruginea</u>		<b>.</b>
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<u>Calidris melanotos</u>		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis		
Red-necked Stint [860]		Species or species habitat known to occur within area
Charadrius bicinctus		
Double-banded Plover [895]		Species or species habitat known to occur within area
Gallinago hardwickii		<b>.</b>
Latham's Shipe, Japanese Shipe [863]		Species or species habitat may occur within area
Limosa lapponica		Chasica ar anacias habitat
Bar-tailed Godwit [844]		known to occur within area
Limosa limosa Block tailad Codwit [845]		Species or species hebitat
Black-tailed Godwit [645]		known to occur within area
Numenius madagascariensis	Critically Endepared	Creation or on original habitat
Eastern Curiew, Far Eastern Curiew [847]	Critically Endangered	may occur within area
Tringa glareola		Creation or anapian habitat
wood Sandpiper [829]		known to occur within area
Tringa nebularia		Onceine en en els bables
Common Greensnank, Greensnank [832]		known to occur within area
Tringa stagnatilis		Province or encoder bable t
warsh Sanopiper, Little Greensnank [833]		species or species nabitat known to occur within area

### Other Matters Protected by the EPBC Act

Commonwealth Land		[Resource Information]
The Commonwealth area listed below may indicate the the unreliability of the data source, all proposals should Commonwealth area, before making a definitive decision department for further information.	presence of Commonwea l be checked as to whethe on. Contact the State or To	alth land in this vicinity. Due to r it impacts on a erritory government land
Name		
Commonwealth Land - Australian Telecommunications Defence - KAIRIVU BARRACKS - MILDURA	Corporation	
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on t	he EPBC Act - Threatene	d Species list.
Name	Threatened	Type of Presence
Birds		
Actitis nypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likelv to occur within area
<u>Ardea ibis</u>		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<u>Calidris ruficollis</u> Red-necked Stint [860]		Species or species habitat known to occur within area
Charadrius hisinatus		
Double-banded Plover [895]		Species or species habitat known to occur within area
<u>Charadrius ruficapillus</u> Red-capped Plover [881]		Species or species habitat known to occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<u>Himantopus himantopus</u> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
<u>Limosa limosa</u>		
Black-tailed Godwit [845]		Species or species habitat
		known to occur within area
Merons ornatus		
Rainbow Bee-eater [670]		Species or species habitat
		may occur within area
		·
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat
		may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat
		may occur within area
Design for the second line line line		
Recurvirostra novaenollandiae		Creating or organize hebitat
		known to occur within area
<u>Rostratula benghalensis (sensu lato)</u>		
Painted Snipe [889]	Endangered*	Species or species habitat
		known to occur within area
Stiltia isabella		
Australian Pratincole [818]		Species or species habitat
		known to occur within area
Tringa glareola		
Wood Sandpiper [829]		Species or species habitat
		known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat
		known to occur within area
Tringa stagnatilis		
<u>Innya staynatiis</u> Marsh Sandniner, Little Greenshank [833]		Spacies or spacies habitat
ואמוסון סמותקוףכו, בוגופ טופכווסומות נסססן		known to occur within area

### **Extra Information**

State and Territory Reserves	[Resource Information]
Name	State
Kings Billabong Park	VIC
River Murray Reserve	VIC
Invasive Species	[Resource Information]

### Invasive Species

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area

#### Name

Anas platyrhynchos Mallard [974]

Carduelis carduelis European Goldfinch [403]

Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]

Passer domesticus House Sparrow [405]

Sturnus vulgaris Common Starling [389]

Turdus merula Common Blackbird, Eurasian Blackbird [596]

#### Mammals

Canis lupus familiaris Domestic Dog [82654]

Capra hircus Goat [2]

Felis catus Cat, House Cat, Domestic Cat [19]

Lepus capensis Brown Hare [127]

Mus musculus House Mouse [120]

Oryctolagus cuniculus Rabbit, European Rabbit [128]

Rattus rattus Black Rat, Ship Rat [84]

Sus scrofa Pig [6]

Vulpes vulpes Red Fox, Fox [18]

#### Plants

Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]

Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Carrichtera annua Ward's Weed [9511]

#### Status

### Type of Presence

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

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Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat may occur within area

Species or species habitat may occur within

Name	Status	Type of Presence
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		area Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilife Boneseed [16905]	ra	Species or species habitat likely to occur within area
Cylindropuntia spp. Prickly Pears [85131]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [1346	36]	Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodend Willows except Weeping Willow, Pussy Willow Sterile Pussy Willow [68497]	ron & S.x reichardtii <i>ν</i> and	Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, Horse Nettle, Silver-leaf Nightshade, Tomato White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf- Trompillo [12323]	White Weed, -nettle,	Species or species habitat likely to occur within area
Nationally Important Wetlands		[Resource Information]
Name		State

VIC

Kings Billabong Wetlands

## Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and

- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers
- The following groups have been mapped, but may not cover the complete distribution of the species:
  - non-threatened seabirds which have only been mapped for recorded breeding sites
  - seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

## Coordinates

-34.12638 142.19865

### Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Department of Land and Resource Management, Northern Territory -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbarium -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbarium -Australian National Herbarium, Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Australian Tropical Herbarium, Cairns -eBird Australia -Australian Government - Australian Antarctic Data Centre -Museum and Art Gallery of the Northern Territory -Australian Government National Environmental Science Program -Australian Institute of Marine Science -Reef Life Survey Australia -American Museum of Natural History -Queen Victoria Museum and Art Gallery, Inveresk, Tasmania -Tasmanian Museum and Art Gallery, Hobart, Tasmania -Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

© Commonwealth of Australia Department of Agriculture Water and the Environment GPO Box 858 Canberra City ACT 2601 Australia +61 2 6274 1111 Appendix B: Previous Development Consent





26-28 Adelaide Street WENTWORTH NSW 2648 PO Box 81 WENTWORTH NSW 2648 Our Reference: HH:DOC/17/1166 Your Reference: DA15/134 Contact: Health & Planning Division Phone: 03 5027 5027 Date: 24 January 2017

Mr Peter Kozlowski Wentworth Shire Council PO Box 81 WENTWORTH NSW 2648

Email: <a href="mailto:council@wentworth.nsw.gov.au">council@wentworth.nsw.gov.au</a>

Dear Peter

### DA15/134 BURONGA LANDFILL BORROW PIT / PITS ARUMPO ROAD LOT 1 DP 1037845 WENTWORTH

I refer to your development application regarding the above mentioned property. Development consent has now been granted subject to conditions. Please read the attached notice of determination and conditions contained within schedule 1 carefully to ensure your obligations in regard to this consent are adhered to.

If you require any further information please contact the Health & Planning Division on Tel: (03) 5027 5027.

Yours faithfully

KEN ROSS DIRECTOR HEALTH & PLANNING ATTACHMENT

WENTWORTH B	Health & Planning Division 26- 28 Adelaide Street Po Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027	Notice of Determination of a Development Application issued under the Environmental Planning and Assessment Act 1979
MRE COUNC'	council@wentworth.nsw.gov.au	Section 81(1)(a)
Our Ref:		DOC/17/1166
Development	application no:	DA15/134
Applicant nan	ne:	Wentworth Shire Council
Applicant add	lress:	PO Box 81 WENTWORTH NSW 2648
Owner name:		Wentworth Shire Council
Owner addres	55:	PO Box 81 WENTWORTH NSW 2648
Land to be de	veloped:	Arumpo Road Lot 1 DP 1037845 Wentworth
Type of appro	oved development:	Buronga Landfill Borrow Pits
Determinatio	n:	In accordance with Section 80 of the EP&A Act 1979 your application has been granted subject to conditions.
Conditions of reasons	granting consent and	The conditions imposed on the consent in accordance with Section 80A of the EP&A Act 1979 and the reason for imposition of those conditions are attached as Schedule 1.
Review of det	ermination	Section 82A of the EP&A Act 1979 provides that the applicant may request Council review a condition(s) of the development consent. Any such request for a review of the determination by Council must be lodged with Council within six (6) months (as provided by Sec 97 of the Act)
Right of appea	al of determination:	<ul> <li>An applicant who is dissatisfied which the determination of their development application (including a determination on a review under Section 82A) may appeal to the Land and Environment Court within 6 months after;</li> <li>a) the date on which the applicant receives this notice of determination or review, or</li> <li>b) the date on which the application is taken to have been determined.</li> <li>(refer to Sec 97 of the EP&amp;A Act).</li> </ul>
Date of deter	mination:	24 January 2017
Date from wh	ich consent operates:	24 January 2017 Note - If granted subject to a condition that the consent is not to operate until the applicant satisfies a consent authority with respect to a particular condition then the date from which the determination operates must not be endorsed on the application until that condition

has been satisfied.

Date on which consent lapses:	23/01/2022 at midnight (refer to Sec 95 and 95A of the EP&A Act)
Building Code of Australia building classification	Nil
Details of any review by Planning Assessment Commission	N/A
<b>Integrated development</b> approval bodies that have given general terms of approval in relation to the development as per section 93 of the EP&A Act	N/A
Rights of appeal of objectors	N/A
<b>Other approvals</b> List Local Government Act 1993 approvals granted under S 78A(5)	N/A

Signed	KEN ROSS DIRECTOR HEALTH & PLANNING under delegation on behalf of the Shire of Wentworth	
Date	24 January 2017	
Note 1	If there is any discrepancy between the approved plan attached to this determination and th conditions in Schedule No 1 to this determination, then the conditions override the plan. A conditions listed in Schedule No 1 must be complied with to comply with this consent	
Note 2	Schedule 2 contains advisory notes which assists in compliance with conditions listed on Schedule 1.	
Note 3	This approval relates to development consent only and before any building, demolition or subdivision works are carried out a construction certificate must be obtained.	

### DA15/134 BURONGA LANDFILL BORROW PIT / PITS ARUMPO ROAD LOT 1 DP 1037845 WENTWORTH

### SCHEDULE 1

### PRESCRIBED CONDITIONS

1.	The Proponent shall comply with the prescribed conditions of approval under Clause 98 of the Environmental Planning and Assessment Regulation 2000, in relation to the requirements of the Building Code of Australia.
2.	<ul> <li>A sign must be erected in a prominent position on any site on which building work, subdivision work or demolition work is being carried out:</li> <li>(i) Showing the name, address and telephone number of the principal certifying authority for the work, and</li> <li>(ii) Showing the name of principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and</li> <li>(iii) Stating that unauthorized entry to the work site is prohibited.</li> </ul>

### **GENERAL CONDITIONS**

3.	<ul> <li>The development hereby authorised shall be carried out strictly in accordance with the conditions of this approval and stamped approved documents listed below</li> <li>Locality &amp; Zoning Map by Aurecon</li> <li>Conceptual Site Plan by Geolyse 214455 01C_E01 Dated 14 July 2015</li> <li>Review of Environmental Factors - Vegetation Removal Map by Ece Tunali Page 14 of 17</li> <li>Statement of Environmental Effects by Greenedge Environmental W1602 Dated 23 June 2016</li> <li>NOTE: Where there is inconsistency between the Environmental Impact Statement and these conditions, the conditions of this approval shall apply.</li> </ul>
4.	Approval is for the quarrying and extraction of material for landfill covering.
5.	Without the further consent of the Wentworth Shire Council, in writing, this permit shall lapse and have no force or effect unless the use or development hereby permitted is substantially commenced within 5 years of the date of this permit.
6.	To ensure Aboriginal objects identified in the Aboriginal Cultural Heritage Assessment are not harmed during the construction of the proposal, an Aboriginal Heritage Impact Permit (AHIP) in accordance with Part 6 of the National Parks and Wildlife Act 1974 will need to be obtained from the Office of Environment and Heritage. Works must not commence until the AHIP is sought and granted. The AHIP application must be accompanied by appropriate documentation and mapping as outlined on page 6 of Applying for an Aboriginal Heritage Impact Permit, Guide for Applicants (OEH 2011). Consultation with the Aboriginal community undertaken as part of an AHIP application must be in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010. All works undertaken must be in accordance with the conditions of the AHIP.
7.	If any Aboriginal object is discovered and/or harmed in, on or under the land, the proponent must:

	<ul> <li>a) not further harm the Aboriginal object</li> <li>b) immediately cease all work at the particular location</li> <li>c) secure the area so as to avoid further harm to the Aboriginal object</li> <li>d) notify the Office of Environment and Heritage (OEH) as soon as practicable on 131555, providing any details of the Aboriginal object and its location, and</li> <li>e) not recommence any work at the particular location unless authorised in writing by OEH.</li> </ul>
8.	No removal of gravel and fill or disturbance of vegetation outside of the designated work area will be permitted without the written approval of the Wentworth Shire Council.
9.	Operations within the worksite shall be carried out in accordance with the requirements of the NSW Workcover Code of Practice for excavation work.
10.	Quarrying and ancillary activities must be carried out in a manner that will minimise emissions of dust from the site.
11.	<ul> <li>The beneficiary of this consent must ensure that any plant and equipment used on site, or in connection with the project is:</li> <li>a) Maintained in a proper and efficient condition; and</li> <li>b) Operated in a proper and efficient manner.</li> </ul>
12.	<ol> <li>A sign must be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is being carried out:         <ul> <li>a) Stating that unauthorised entry into the work site is prohibited;</li> <li>b) Showing the name of the principal contractor (or person in charge of work site), and a telephone number at which that person may be contacted at any time for business purposes and outside working hours; and</li> <li>c) Showing the name, address and telephone number of the Principal Certifying Authority for the work.</li> </ul> </li> <li>Any sign must be maintained while building work or demolition work is being carried out, but must be removed when the work has been completed.</li> </ol>
13.	The work undertaken must satisfy applicable occupational health and safety and construction safety regulations, including any WorkCover Authority requirements to prepare a health and safety plan. Site fencing must be installed sufficient to exclude the public from the site. Safety signs must be erected that; warm the public to keep out of the site, and provide a contact telephone number for enquiries. Further information and details regarding occupational health and safety requirements for construction sites can be obtained from the internet at www.workcover.nsw.gov.au
14.	The beneficiary of this consent must ensure that all necessary licences, permits and approvals are obtained and kept up-to-date as required throughout the life of the project. No condition of this approval removes the obligation for the beneficiary of this consent to obtain, renew or comply with such licences, permits or approvals.

15.	In addition to meeting the specific performance criteria established under this approval,		
	the beneficiary of this consent must implement all reasonable and feasible measures to		
	prevent and /or minimise any harm to the environment that may result from the		
	construction, operation or decommissioning of the project.		

#### CONDITIONS FROM AGENCIES

Office of Environment & Heritage - have provided advisory notes. These are attached in their entirety and therefore form part of this determination.

#### **REASONS FOR CONDITIONS**

- a) To ensure compliance with the terms of the Environmental Planning and Assessment Act.
- b) To ensure work is sustainable and that an appropriate level of provision of amenities and services occurs within the Shire and to occupants of lots.
- c) To minimise environmental impact and impact on public assets, degradation of natural resources and to enhance amenity.
- d) To provide for a quality environment, safe and efficient movement of people and to ensure public safety and interest.

Health & Planning Division 26-28 Adelaide Street PO Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027	Application for Development made under the Environmental Planning and Assessment Act 1979
Council@wentworth.nsw.gov.au	$\frac{1}{2} \frac{1}{2} \frac{1}$
FEES & CHARGES	11021292 1310 A
DA No. Assessment No.	Receipt No. Date
Lodgement Fee 😓 🏹 🔿 🔿 Plan	Reform Fee $ \mu_0\rangle$ & Advertising Fee
Job No: 1410-1140 Job No: 1410	No: 9915-5910 Job No: 1410-1050
PART A - APPLICANT'S DETAILS	
<sub>Name/s</sub> Peter Kozlowski	
Company Name (if applicable) Wentwort	h Shire Council
Postal Address PO Box 81 Wentwort	h, NSW 2648
Contact No. 03-5027 5027	Alternate No.
Email peter.kozlowski@wentworth	.nsw.gov.au
I apply for approval to carry out the development as o	described in this application. I declare that all the information in this application and
Signature/s	77/6/16
Signature/s	
PART B - PROPERTY DETAILS	
Lot/ Section / DP Numbers can be found on the Rates property adjacent to the proposed site.	Notice or Certificate of Title for the land. In relation to mooring sites, Part B relates to the
Street No. Street Name	Arumpo Road
Town/Locality Buronga	Postcode 2739
Lot No/s LOt 1 Secti	on DP No/s 1037845
Swimming Pool       Use of Land/ building       Other – Please specify	Demolition     Additions / Alterations to Dwelling       Demolition     Subdivision       Deferred Commencement     Mooring Site
Detailed description of development	
The proposed area will be used as bo to use as daily cover material to bury t	rrow pits to provide soil to Buronga Landfill's waste operations the waste, disposed and also interim and final cover material.
Existing development / use – e.g. existing dwe	Iling, vacant land Vacant Land
Total estimated cost (inclusive GST) \$220	0,000

PART D - OWNER'S DETAILS		
Details are the same as Part A – App	licant's Details (Note: All ov	wners are still required to sign the form)
Name/s		
Company Name (if applicable)		
Postal Address		
Contact No	Alternati	e No
Email	Alternation	. 10.
Email	na via email <b>?</b> 🔲 Voc	
As owner/s of the land to which this application re		the development described in this application. I/we also
authorise:	perty for the nurnose of site inspec	tione:
<ul> <li>Council to make copies of all the docume proposal</li> </ul>	ents for the purpose of determining	g the application or to people who may be affected by the
Note:	et cian	
<ul> <li>If you are signing on the owner's behalf</li> </ul>	as their legal representative, you m	nust state the nature of your legal authority and attach
<ul> <li>If the owner is a company, a current ASI</li> </ul>	corney, executor, trustee, company Cextract must be supplied as docu	director) mentary evidence and application must be signed by 2
<ul> <li>directors.</li> <li>If the land is Crown Land, consent will be</li> </ul>	e required from NSW Trade & Inves	stment – Crown lands. Please refer to separate attachment
Landowner's Consent: Landowner's con	ent application.	Var 1 1. 1.1
<sub>Name</sub> Peter Kozlowski	Signature	Date 27/6/6
Name	Signature	Date
If more than two signatures are required	please attach a separate do	ocument.
PART E - SUBDIVISION		
No. of Lots: Existing		Proposed
Are you proposing to install a new road/	s? 🗌 Yes 🔳 No	If yes, how many?
Will this be a staged development?	🗌 Yes 🔳 No	If yes, how many?
Description of stages		
	· · · · · · · · · · · · · · · · · · ·	
PART F - OTHER APPROVALS		
I require consideration as Integrated Deve	elopment 🗌 Yes 📗	No If yes, include Attachment A
I require consideration as a Mooring Site	Yes	No If yes, include Attachment B
I require a Construction Certificate (CC) to Construction Certificate Application Form	be lodged at the same time	as the development application. If yes, include
construction certaireate Application Form	. Yes	No
PART G -	ENVIRONMENTAL IMPACT	
----------	----------------------	--

One of the following must be completed for all applications

or

Statement of Environmental Effects (SEE) – refer Attachment C

Environmental Impact Statement (EIS) - Designated Development Only

Is your proposal on land, that is, or part of critical habitat? Or is your proposal likely to have a significant effect on threatened species, populations, ecological communities or their habitats?

Yes – Please attach a Species Impact Statement

No – Please explain in the Statement of Environmental Effects

#### PART H - DISCLOSURE OF POLITICAL DONATIONS AND GIFTS

Under Section 147 of the Environmental Planning and Assessment Act 1979, any reportable political donations to a councillor and / or any gift to a Councillor or Council Employee within a two (2) year period before the date of this application must be publicly disclosed.

Are you aware of any person with a financial interest in this application who made a reportable donation or gift within the last two (2) years?

Yes – Please complete the Political Donations and Gifts Disclosure Statement and lodge it with this application (available from the Council website)

No – In signing this application | undertake to advise the Council in writing if I become aware of any person with a financial interest in this application who has made a political donation or has given a gift in the period from the date of lodgement of this application and the date of determination.

NOTE: Failure to disclose relevant information is an offence under the Act. It also an offence to make a false disclosure statement.

#### PART I - SUPPORTING INFORMATION

To enable assessment of your application, Council requires the following supporting information. Please note, if the information is not provided this may lead to your application being rejected or delayed.

3 x A3 copies of each of the following plans for approval

- o Floor Plan
- o Site Plan
- o Elevation Plan
- 3 copies of the BASIX Certificate

Completed Statement of Environmental Effects (refer Part G above)

NOTE: If both the applicant and owner are happy to receive all correspondence via email, only 1 set of plans needs to be submitted with application. However if hard copies are required, submit 3 copies.

#### Privacy and Personal Information Protection Notice

The personal information provided on this form is collected by Wentworth Shire Council for the purposes of processing this application by Council Employees and other authorised persons. This form will be stored within Council's record management system and may be available for public access and/or disclosure under various NSW Government legislation.



Health & Planning Division 26- 28 Adelaide Street Po Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027

council@wentworth.nsw.gov.au

# **Development Application**

Notes for completing a Development Application

#### FEES & CHARGES

There are two fees that are payable on lodgement of this application. These are:

- Lodgement Fee This is a fee charged by Council that is set by the NSW Government, which is aimed at covering a portion of Council's costs for the processing of the application.
- Advertising Fee Charged in accordance with NSW Legislation for Designated and Integrated Developments.

A schedule of fees are available on the Wentworth Shire website under the Council Business Tab. Alternatively you can call Council's Health & Planning Division on 03 5027 5027.

#### PART A - APPLICANT'S DETAILS

Anyone can apply for approval; it does not necessarily have to be the owner of the land; however the owner will still need to provide consent in Part D – Owner's Details. Please complete the details of the person who is applying for this consent.

NOTE: It is the applicant's responsibility to provide Council with any additional details that may be requested.

#### PART B ~ PROPERTY DETAILS

This section asks you to provide details on the land where the development / building work is to be situated. These details are available on your rates notice or a Certificate of Title.

NOTE: Not all properties have a section number.

#### PART C - DEVELOPMENT DETAILS

Select from the list the most appropriate description of your development. Note: you can select more than one option.

Provide a detailed description of your proposal including any details such as building works, earthworks and any demolition work to be carried out. If there is not enough room, please attach a separate document.

The cost of the project should include but not limited to building construction, building materials, landscaping, drainage, fencing, labour and drainage but not include the cost of the land.

#### PART D ~ OWNER'S DETAILS

The owner of the land is generally the people/ company listed on the Title to the Land. All owners listed on the title must sign the application form giving consent to the proposed development / building works. If there is not enough room, please attach a separate document.

If the owner is a Company/ partnership etc, then evidence of role of signatories is to be supplied in the form of an Company Extract from the ASIC website.

#### PART E ~ SUBDIVISION

Only complete this section if your development is a subdivision.

#### PART F - OTHER APPROVALS

You can apply for other approvals at the same time as lodging your Development Application. If you require on of these approvals, please complete the appropriate paperwork and submit with your DA.

Note: Additional fees may apply for the relevant approval. Contact Council's Health & planning Division on 03 5027 5027 if you are unsure.

## PART G -- ENVIRONMENTAL IMPACT

Environmental Impact is an important part of the application and must be completed in order for you development application to be assessed. Council has developed a Statement of Environmental Effects to assist you in preparing this *information*.

#### PART H - DISCLOSURE OF POLITICAL DONATIONS & GIFTS

This section must be completed by applicant and owners. If you selected yes, you will need to fill out the Political Donations and Gifts Disclosure Statement and lodge it with this application.

#### PART I -- SUPPORTING INFORMATION

Most applications will require a Site Plan, Floor Plan and Elevations. Below is a guide to assist in what information is required to be submitted with your development application.

Site Plan	A site plan is a birds-eye view of the existing and proposed development on the site and its position in relation to boundaries and peighbouring developments.						
	North point and scale						
	Street name and number						
	Name and contact details of who prenared the plans						
	Incrition of						
	o property boundaries and						
	<ul> <li>any existing physical and natural features e.g. building, vegetation, driveways</li> </ul>						
	etc						
	<ul> <li>Existing easements and/or utility services e.g. water, sewer, stormwater</li> </ul>						
	drains, discharge points etc						
	<ul> <li>Existing and proposed structure/s and/or additions</li> </ul>						
	<ul> <li>Vehicle access and car parking</li> </ul>						
	<ul> <li>New vehicle crossings</li> </ul>						
	<ul> <li>Site dimensions (length, width and site area)</li> </ul>						
	<ul> <li>Relative location of adjoining buildings</li> <li>Existing and proposed site ground levels and floor levels</li> <li>Contour lines of site and spot levels at all corners of the building</li> <li>Extent of ant cut and fill to be carried out</li> </ul>						
							<ul> <li>Swimming Pools must show pool fencing, gates, reduced height levels (RLs) reduced to existing/proposed levels, location of filters/pumps and backwash connections.</li> </ul>
						Floor Plans	<ul> <li>A floor plan is a birds-eye view of your existing and/or proposed layout of rooms within the development.</li> <li>Existing Internal layout (required for alterations and additions)</li> <li>Proposed internal layout</li> <li>The above plans should include: <ul> <li>Room uses, wall/partitions, areas and dimensions</li> <li>Location of stairs and essential fire safety measures (if any)</li> <li>Floor levels and steps in floor levels (RLs)</li> <li>Wall structure type and thickness</li> <li>Calculations of all existing and proposed floor areas</li> </ul> </li> </ul>
Elevation Plans	<ul> <li>Elevation plans are a side on view of your proposal that shows all 4 sides (north, south, east and west).</li> <li>Height of existing and proposed structure/s and/or additions</li> <li>Existing and proposed surface finishes e.g. brick wall, tile, colourbond roof</li> </ul>						
	Location and heights of windows						
	<ul> <li>Levels for roof ridge, floor and ceiling (expressed as Reduced Levels (RLs) or levels to AHD</li> </ul>						

Roof Pitch

PART I – SUPPORTING INFORMATION CONTINUED				
BASIX Certificate	<ul> <li>A BASIX Certificate is required for:         <ul> <li>all new habitable buildings</li> <li>alterations and additions over \$50,000</li> <li>swimming pools and spas with a capacity of 40,000 litres or more</li> </ul> </li> <li>For further information or to apply visit: <u>www.basix.nsw.gov.au</u></li> </ul>			
Statement of Environmental Effects	• A template version is available to be filled out, refer to Part G Environmental Impact			
NOTE:				

- All plans are to be drawn to scale and provided in A3 size (where possible).
- If both the applicant and owner are happy to receive all correspondence via email, only 1 set of plans needs to be submitted with the application. However if hard copies are required, submit 3 copies.

# Statement of Environmental Effects: Borrow pits for Buronga Landfill Cover





Buronga Landfill For Wentworth Shire Council

# greenedge

Business name	Green Edge Environmental P/L	
ABN	17 707 655 926	
Postal address	c/o Springton Post Office, Springton SA 5235	
Principle Point of contact	Chris Alderton	
Email and	chris@geenvironmental.com.au	
Mobile	0438 345 109	

Rev	Purpose of document	Author	Reviewer	Issue date
A	Draft report for internal review	C. Alderton	L, Alderton	12 April 2016
B;	Draft report for client review	C. Alderton	C. Alderton	15 June 2016
0	For lodgement with DA	C. Alderton	C. Aldertan	23 June 2016

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# **Executive Summary**

The Buronga Landfill is located on Arumpo Road, approximately 28km east of Wentworth. Access to the proposed site is via the sealed Arumpo Road and service road into the landfill (refer to Appendix A).

The proposed project site is for the development of borrow pits to provide landfill cover for the existing landfill and then be converted to landfill cells for future use. The proposal will allow for the continued operations and management of the existing facility. It is expected based on the current level of demand that the cells will be used for landfill until the year 2053. The site is located in the municipality of Wentworth, and referred to as Lot 1 DP1037845. The land is freehold owned by the Wentworth Shire Council (WSC).

The objective of this proposal is to develop soil borrow pits to be used at the adjacent landfill site as landfill cover, to adhere to the Environmental Protection Licence conditions. The borrow pits created would be converted to landfill cells for future expansion of the landfill site.

The proposed location of the borrowing is in previously disturbed area, with black oak, mallee and hopbush requiring removal. The groundcover species, cannonball, poverty bush and common heliotrope and agricultural weeds dominate the site. The operation will be undertaken in various stages over the lifespan of the project.

Site preparation will involve removing trees and shrubs by mechanical grubbing. Topsoil (where applicable) will be windrowed for re-spreading across the top of the landfill site when it is full. During the borrowing process, the read loam soil will be ripped by a Cat D6 dozer and a front end loader (938) will load the soil directly onto a tip truck and trailer. No crushing or processing is required. Minimal stockpiling will occur, and only as required.

The following table summarises the potential impact of the project, following a thorough on-site assessment and various database searches on threatened species and cultural heritage. Overall, the level of impact is expected to be low and this is further reduced through the implementation of mitigation measures summarised in Section 4.

Section	Potential Impact	Summary of Impacts
4.1	Natural resource use	Removal of borrow material
4.2	Hydrology and geomorphology	No impact
4.3	Erosion and sedimentation	No impact
4.4	Surface water	No impact
4.5	Groundwater	No impact
4.6	Soils	Removal and stockpile of topsoil for respreading, borrow material for landfill cover
4.7	Matters of NES	No impact
4.8	Flora	Removal of vegetation, no impact on threatened species

#### Summary of potential impacts

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4.9	Fauna	No impact on critical habitat for threatened species
4.10	Weeds and pests	No impact
4.11	Heritage	Unlikely impacts to unknown sites and objects based on desktop and on site assessment. AHIP will be gained for the open site located as part of the due diligence process.
4.12	Air quality	Some vehicle emissions and dust from borrowing activity, will not cause problems due to low population density
4.13	Socio and economic	No adverse impacts
4.14	Transport	No public roads to be used for carting activities
4.15	Noise and vibration	Use of machinery to extract, load and cart borrow material
4.16	Bushfire hazards	No impacts
4.17	Chemical and Hazardous Substance	No impacts, none stored on site, oils, grease, fuel
4.18	Waste Minimisation	No impacts
4.19	Stormwater Management	No off-site impacts

The cumulative environmental impacts from the proposal will be minimal. As stated throughout Section 4 of this Statement of Environmental Effects, each identified impact has been assessed for its potential threat to the environment. Mitigation measures will help minimise the impact the proposal will have on the study area as well as off-site impacts.

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# APPENDICES

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# 1.0 The proposal

# 1.1 Locality

The Buronga Landfill is located on Arumpo Road, approximately 28km east of Wentworth. Access to the proposed site is via the sealed Arumpo Road and service road into the landfill (refer to Appendix A).

The proposed project site is for the development of borrow pits to provide landfill cover for the existing landfill and then be converted to landfill cells for future use. The proposal will allow for the continued operations and management of the existing facility. It is expected based on the current level of demand that the cells will be used for landfill until the year 2053. The site is located in the municipality of Wentworth, and referred to as Lot 1 DP1037845. The land is freehold and owned by the Wentworth Shire Council (WSC).

# 1.2 Objective of the proposal

The objective of this proposal is to develop soil borrow pits (extraction of soil) to be used at the adjacent landfill site as landfill cover, to adhere to the Environmental Protection Licence conditions. The borrow pits created would be converted to landfill cells for future expansion of the landfill site. Up to five additional borrow/cells are proposed, covering an area of 43.82ha (Appendix A).

Table 1 outlines the proposed project characteristics.

Cell no	Cell area (ha)	Estimated commencement	Operational period	Comments
Опе	8.73	2015/2016	To June 2020	Part of existing landfill
Two	7.21	2019/20	July 2020to June 2026	Staged development as landfill cover for existing landfill.
Three	7.22	2025/26	July 2026 to June 2032	Cover material for cell one (existing landfill)
Four	6.22	2031/32	July 2032 to June 2040	Staged development as landfill cover for existing landfill.
Five	8.19	2039/40	July 2040 to June 2048	Staged development as landfill cover for existing landfill.
Six	6.25	2047/48	July 2048 to June 2053	Staged development as landfill cover for existing landfill.

Table 1:	Characteristics	of the	proposed	project

# 1.3 Estimated costs and commencement

The project will cost in the order of \$220,000 (ex GST) and cell three to be used as landfill cover is proposed to commence in mid-2016.

# **1.4** Description of borrow operations

The proposed location of the borrow pits is in a previously disturbed area, with black oak, mallee and hopbush requiring removal. The groundcover species, cannonball, poverty bush and common heliotrope and agricultural weeds dominate the site. The operation will be undertaken in various stages over the lifespan of the project.

Site preparation will involve removing trees and shrubs by mechanical grubbing. Topsoil (where applicable) will be windrowed for re-spreading across the top of the landfill site when it is full. During the borrowing process, the red loam soil will be ripped by a Cat D6 dozer and a front end loader (938) will load the soil directly onto a tip truck and trailer. No crushing or processing is required. Minimal stockpiling will occur, and only as required.

The soil will be progressively removed in small sections, working in an orderly pattern. The site will be dug down to between 5 and 9m deep.

# 1.5 Site lay out plans

The site layout is presented in Appendix A along with coordinates for each corner of the proposed cells. All mapping coordinates are GDA 1994, MGA Zone 54.

# 1.6 Site preparation

Site preparation for the proposed development will consist of:

- formally marking the proposed development area (including `no go' zones) using flagging or bunting
- marking trees to be retained outside of proposal area
- grubbing trees and shrubs that will not be retained in the proposal area, staged to ensure no soil erosion occurs
- stripping and windrowing of topsoil as required for each stage
- installing 'truck entering' signs and general safety signs.

# **1.7** Infrastructure considerations

No permanent infrastructure will be required on site.

## 1.8 Rehabilitation

Other than ensuring erosion does not occur to the cell wall, and a safe and gentle slope (1:2 batters) is achieved, no rehabilitation is proposed as the borrow pits will become landfill cells.

# **1.9** Previous and existing operations

The site has been subject to historical grazing, wood cutting and quarrying activity. These activities no longer occur and the area has been fenced (security and six-strand stock fence).

# green. j.

# **1.10** Consideration of the alternatives and justification

All viable alternatives have been considered, including:

- trucking in borrow material from other areas
- using old soil quarries from other properties
- finding new sites in new locations and importing to Buronga landfill.

All above options have been considered and costed. The preferred option is presented in this SEE. The option relevant to this proposal is favoured, as it:

- has a good supply of borrow material
- will have minimal impact on the immediate and surrounding environment
- will not cause impacts to threatened flora or fauna
- will enable soil to be extracted and used near to where it is required and allow for future landfill expansion
- the site adheres to the siting restrictions of the Environmental Guidelines: Solid Waste Landfills, Second edition 2016 (EPA, 2016)

No other existing or likely future uses or activities on or near the site would be disadvantaged by this proposal. The land is zoned for the purpose of waste disposal. The land was purchased by the WSC for this purpose. The proposal will not affect any world heritage properties, national heritage places, wetlands of international importance (Ramsar sites) or Commonwealth marine areas.

# 2.0 Planning context

# 2.1 Purpose of this report

This Statement of Environmental Effects (SEE) has been prepared by Green Edge Environmental on behalf of WSC, which is the proponent and the consent authority under the Wentworth Local Environmental Plan 2011 (Reg 1.6) and Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of the SEE is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail protective measures to be implemented.

The description of the proposed works and associated environmental impacts have been undertaken in context of the Environmental Planning and Assessment Regulation 2000, the *Threatened Species Conservation Act 1995* (TSC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This SEE helps to fulfil the requirements of Section 79C of the EP&A Act that WSC examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

# 2.2 Legislation and approvals required

The WSC is the consent authority to which this SEE will be lodged. The proposed location is in south-western New South Wales.

The overarching state legislation in relation to this activity is the *Environmental Planning and Assessment Act 1979 (EP&A Act)* and Environmental Planning and Assessment Regulation 2000. The activity is required for the operation and management of the existing licenced waste facility and is not listed under schedule 3 of the Environmental Planning and Assessment Regulation 2000, therefore not designated development.

The *Mining Act 1992* does not apply to this proposal as under the Mining Regulations (2012), schedule 1, soil is not a listed mineral.

An EPA licence under the protection of the *Environment Operations Act 1997*, is currently in place (EPL 20209).

The *Native Vegetation Act 2003* (NV Act) regulates the clearing of native vegetation in NSW. All clearing of remnant native vegetation or protected regrowth requires landholders to seek approval by obtaining a Property Vegetation Plan (PVP) from Local Land Services. WSC will work with the Western Local Lands Service to ensure appropriate offsets are in place utilising their existing offset area.

The development complies with the requirements of the *Fisheries Management Act 1994*, including the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A.

The *Threatened Species Conservation Act 1995* (TSC Act) lists a number of factors to consider when deciding whether there will be a significant impact on threatened species, populations or ecological communities and their habitats.

A Species Impact Statement (SIS) is required when the level of determined significance is 'likely'. As stated in Section 4, the proposal is not likely to significantly impact on a

threatened species, population or ecological community. Therefore, the proposal does not require approval under the TSC Act, or the completion of a SIS.

The National Parks and Wildlife Act 1974 (NPW Act), administered by the Office of Environment and Heritage (OEH), is the primary legislation for the protection of some aspects of Aboriginal cultural heritage in New South Wales.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. There are a number of defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place. One of the defences is that the harm was carried out under an Aboriginal Heritage Impact Permit (AHIP).

This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely, but as an isolated scatter was found a cultural heritage assessment adhering to the *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* and an AHIP is required (refer to section 4.11).

Under the Federally administered *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions which are likely to have a significant impact on matters of National Environmental Significance (NES) require approval from the Commonwealth Minister for Environment and Heritage. Matters of NES include:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

No matters of NES will be impacted upon by the proposed project.

The objectives of the *Water Management Act (2000)* are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations. One key aim is to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna. This act will not be triggered as the water will be extracted through existing water licences.

# 2.3 Relevant policies

The State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) aims to assist in the effective delivery of public infrastructure across the NSW. This is achieved by improving certainty and regulatory efficiency through a consistent planning assessment and approvals regime for public infrastructure and services, and through the clear definition of environmental assessment and approval processes for public infrastructure and services facilities.

The Infrastructure SEPP 2007 is applicable as the projects will assist in maintaining public infrastructure:

Under Clause 121 Development without consent-general states

(3) Development for the purpose of the recycling of construction and demolition material, or the disposal of virgin excavated natural material (as defined by the *Protection of the Environment Operations Act 1997*) or clean fill, may be carried out by any person with consent on land on which development for the purpose of industries, extractive industries or mining may be carried out with consent under any environmental planning instrument.

# 2.4 Local environmental plans

### Wentworth Local Environmental Plan (LEP) 2011

The site is located within the Wentworth local government area and as such the Wentworth LEP 2011 applies. Under the LEP, WSC is the determining authority. Applicable sections of the LEP include:

### Cultural Heritage Conservation

Clause 5.10 of the LEP specifies the requirements of the consent authority in relation to impacts on areas of cultural and heritage significance. This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely (refer to section 4.11).

#### **Biodiversity Conservation**

Clause 7.4 of the LEP specifies the consent authority must consider any adverse impacts from the proposal on the following:

- the condition, ecological value and significance of the fauna and flora on the land
- the importance of the vegetation on the land to the habitat and survival of native fauna
- any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land
- any likely adverse impact on the habitat elements providing connectivity on the land.

An assessment of the likely impacts of the proposal is located in Section 4.

#### **Draft Western Local Strategic Plan**

The State Strategic Plan and the Western Local Strategic Plan (in draft) will assist Local Land Services achieve its vision of resilient communities in productive healthy landscapes. To achieve this vision, Local Land Services needs to align all of its work with its mission of being a customer-focused business that enables improved primary production and better management of natural resources. The goals of the Plan include:

- Self-reliant, adaptive and prepared communities
- Productive, biosecure and sustainable primary industries operating in resilient landscapes
- Effective, efficient and integrated service delivery underpinned by collaboration, adaptive management and local decision making

The strategies that underpin these goals are around supporting land managers capacity to improve land management and enterprise viability, collaborate with industry and government to adapt to climate change, involve local people in decision making to drive continuous improvement in the services, policies and projects and an adaptive approach to planning, implementation and service delivery Other than the implementation of the NV Act, the Local Lands Service has no regulatory authority on this project.

# 2.5 Relevant guidelines

A number of guidelines were consulted during the preparation of this SEE including:

- Environmental Guidelines: Solid Waste Landfills, Second edition, NSW EPA (2016)
- Agricultural Issues for Extractive Industries Development Factsheet (Department of Primary Industries)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft, 2004, Department of Environmental and Conservation)
- Threatened Species Assessment of Significance Guidelines (DEH, undated) http://www.environment.nsw.gov.au/threatenedspecies/tsaguide.htm

# 2.6 Zoning

Under the Wentworth LEP, the proposed project area is zoned Special Purpose Zone - Infrastructure (SP2). Under this zone, 'waste or resource management facility' means a waste or resource transfer station, a resource recovery facility or a waste disposal facility.

# 2.7 Determining authority

Under the Wentworth Local Environmental Plan 2011 - Reg 1.6, the determining authority is the WSC.

# 2.8 Stakeholder consultation

The following relevant stakeholders have been consulted on the proposal and their recommendations and requirements have contributed to the development of the SEE, where applicable, including:

- NSW Office of Environment and Heritage
- Local Lands Service Western
- Wentworth Shire Council

# 3.0 Location

# 3.1 Site description

The proposed project area is located on land that has been historically used for grazing, wood cutting and quarrying. The area is located to the east of the Arumpo Road, approximately 2.5km north of the Silver City Highway.

Two vegetation types occur on site which meet the Plant Community Type criteria, including:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116)

These PCT's are mapped in Appendix A.

# 3.2 Land systems and geology

The proposed project is located within the Murray Basin Geological province. Quaternary material covers almost all of the area. Quaternary alluvial deposits comprise the riverine plain. Scattered aeolian (windblown) deposits also occur throughout (Cunningham *et al* 1992).

The Murray Basin is a shallow depression filled with marine and terrestrial sediments to a maximum depth of 600m over the last 50-60 million years. Shallow seas have moved back and forth across the plains several times, leaving traces of parallel beach ridges and limestone sediments under the dunefields. At one stage, the coast reached as far inland as Balranald (OEH, 2011).

Sandy surface sediments have been extensively reworked into dunes and sandplains that have blown onto the Cobar peneplain. Some dunes have consistent east-west linear patterns, others are parabolic, suggesting differences in vegetation cover, sand supply or age. The Darling River and streams in the Riverina have cut through the sands and constructed numerous overflow lakes such as the Sayers Lake system and the abandoned pleistocene channels and basins of the Willandra Lakes complex (OEH, 2011).

Saline groundwaters have formed salt basins in many places where the sandplain or dune topography intersects the water table. All lakes and swamps have well-formed lunettes on their eastern margins that record evidence of climate change and human occupation. A few bedrock ridges rise above the sandplains as isolated ranges (OEH, 2011).

The proposed project area is gently undulating with a gentle slope towards the east. The site is on a slight north-south ridge and the elevation across the site is between 37 and 44m Australian Height Datum (AHD).

# 3.3 Hydrology and geomorphology

No creeks, streams or waterways run through the proposed site. The proposed activity will not impact on the hydrogeology and geomorphology of the site.

# 3.4 Soil

Soils in the depositional basin are deep red sands with variable sandy profiles under dunes, and gradational profiles in the sandplains. Most soils have a moderate to high level of calcium carbonate in the profile (ANRA, 2009).

Sandplains contain deep calcareous loams to loamy sands. These are associated with sandy red-brown duplex soils. Limestone nodules are exposed in some areas (ANRA, 2009).

Soils and vegetation differ according to the landform. On the dunefields red, brown and yellow calcareous sands occur with more clayey materials in the swales. On sandplains the soil tends to be heavier with brown gradational or texture contrast profiles, and mallee is found only on sandy rises (OEH, 2011).

Vegetation communities on site are linked to soil type. The deep red loams support the Black oak community and the heavier loam over clay soil support the mallee communities. To the east, outside of the project area, is a Black box community on silty sand over riverine clay.

# 3.5 Climate

The annual average minimum temperature is 10.3 °C, monthly values varying from 4.3°C during July (the lowest on record is -4.4°C) to 16.5°C during January. There are four nights per annum when the temperature falls below 0°C. The annual average maximum temperature is 23.6°C - monthly values vary from 15.2°C in July to 31.9°C in January (the highest on record is 50.8°C). There are, on average, 77 days per annum when the temperature exceeds 30°C, including 30 hot days when the temperature rises above 35°C (BOM, 2012).

The mean annual rainfall for the Wentworth area is 292mm (refer to Table 2). The lowest rainfall on record is 113mm and the highest on record is 705mm. Rainfall reliability in the area is generally very low (BOM, 2015).

	Jan	Feb	Mar	Apr	Ма	Jun	Jul	Au	Sep	Oct	Nov	Dec
Mean monthly rainfall (mm)	21.1	20.3	18	18.5	25.6	22.9	26.4	26.7	27.8	30.6	24	23.4
Highest monthly rainfall (mm)	92.2	100.9	128.2	120.4	86.3	82.2	59.4	74.8	88.3	120.6	129.9	181.2
Lowest monthly rainfall (mm)	0	0	0	0	0	0	0.6	1.2	3	0	0	0
Highest daily rain (mm)	3.6	3.1	3.4	4.2	6.8	7.9	9.3	9	7.6	7.1	5.5	4.3

## Table 2: Mildura Airport Rainfall Data

# 4.0 Environmental impacts and management

This section outlines the environmental impacts of extracting soil for landfill, covering the existing landfill and converting the borrow areas to landfill cells for future use.

# 4.1 Natural resource use

The natural resource to be won is soil, which is required to be used for cover on the nearby existing landfill. Under the EPL held by WSC, the landfill is to be covered each night. The borrow areas will then be converted to landfill cells for future use.

### 4.1.1 Mitigation measures

- Borrow pit sites to be marked out using permanent markers indicating 'no go zones'
- The development will be staged, removal of trees and stripping of topsoil will only occur as required based on the demand level for cover material
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Staff trained in best practice management in earthworks to minimise impacts on non-target natural resources

# 4.2 Hydrology and geomorphology

No creeks, streams or waterways run through the proposed project site. The nearest permanent natural water supply is the Gol Gol Creek, which is approximately 2km south east, and the Murray River, approximately 4.2km to the south west of the site. Due to the distances from these water sources and the shallow depth over which earthworks will occur, no impacts to the hydrology and geomorphology of the surrounding environment are expected.

#### 4.2.1 Mitigation measures

- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)
- Adhere to the Environmental Protection Licence (20209) conditions and reporting requirements.

# 4.3 Erosion and sedimentation

The proposal is unlikely to cause erosion down slope, due to the gentle slope in topography of the surrounding land. To minimise erosion, topsoil will only be stripped as required to develop the borrow pits. During borrowing, controls such as sediment fences will be employed as required. Borrow pit walls will be developed so a safe and gentle slope (1:2 batters) is achieved

The existing access track will be maintained by spreading gravel (if required) to protect the soil during carting activity to minimise fugitive dust.

#### 4.3.1 Mitigation measures

Borrow pit sites to be marked using permanent markers indicating 'no go zones'

- Temporary sediment control structures shall be maintained at all times during borrowing and checked, repaired, replaced or cleaned out after any significant rainfall event
- Staff trained in best practice management in erosion and sedimentation control
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)

# 4.4 Surface water

No creeks, streams or waterways run through the proposed project site. The proposal will not impact on any Ramsar listed wetlands.

No hazardous materials will be stored on site and no sewerage facilities will be established that could impact on surface water flows, should they occur.

The water to be used on site for dust suppression and earthworks will come from existing WSC water licence supplies.

Most plant and equipment will be serviced either at the WSC depot off site, or at another designated location. Contingency plans adhering to relevant Australian standards and guidelines will be developed to deal with any spills that may occur. Machinery will be checked daily to ensure that there are no leakages of oil, fuel or other liquids.

#### 4.4.1 Mitigation measures

- Daily pre-start machinery checks will be made for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian standards and guidelines and conforming to leading practice
- All vehicles to be serviced off-site
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)

# 4.5 Groundwater

The site is situated within the Murray Geological Basin, which is located within the Murray-Darling surface water drainage basin. The Murray Geological Basin comprises up to 600 m of Cenozoic sedimentary deposits with basin contours showing dominant north east trending troughs and ridges.

The main depositional centre is known as the Renmark Trough bounded to the west by the Hamley Fault, separating it from a smaller depression to the west. The Neckarboo Ridge is a basement high located east of the Darling River. The site is situated on the eastern flank of the Renmark Trough, west of the Neckerboo Ridge (in GHD, 2012).

The site is underlain by the Lower Remark Group aquifer hosted by fluvio-lacustrine sediments comprising fine to medium grained quartz sand and carbonaceous silt and clay. The regional groundwater flow direction in the vicinity of the site is expected to be in a south westerly direction towards the Murray River. Recharge to the aquifer is typically from the basin margins, with groundwater flow being towards the basin depocentre in the vicinity of Renmark (in GHD, 2012).

Aquifer yields are generally high and commonly exceed 5 L/s. This reflects significant thicknesses of interbedded fine to medium-grained micaceous quartz sands in the fluvial sequences. A search of the NSW groundwater database identified aquifer yields only over 50 L/s are estimated for the central basin, due to partial filling of the troughs by medium to coarse quartz sands of the Warina Sand basal deposit (GHD, 2012).

Groundwater in the Lower Renmark Group is suitable for stock use only, with typical salinities between 11,000 and 13,000 mg/L total dissolved solids (TDS). In this area, recharge is mostly via bed leakage from the Darling River further to the north (in GHD, 2012).

A search of the NSW Natural Resource Atlas database was conducted identifying groundwater bores within 2 km of the site (by GHD on 1 December 2009) and is presented in Table 3. A total of five boreholes were listed within 1 km, and a further 20 bores 1 - 2 km from the site. Based on the information available, a total of nine boreholes were considered, details of which are summarised in Table 3.

Number	Approx RL.	BH Depth (mbgl)	Water level (mbgl)	Water level (RL)
GW088479	40.5	61	7.37	33.13
GW087083	39	20	9.29	29.71
GW088168	40	10.5	nd	na
GW087039	40	11	nd	na
GW087074	40	14	nd	na
GW087038	40	11	nd	na
GW087328	40	16	nd	na
GW087325	45	14	nd	па
GW088305	35	21	1.54	33.46

#### Table 3: Groundwater Well Data

All boreholes considered within the vicinity of the site were registered as monitoring wells, suggesting that they are not used for groundwater abstraction to any significant degree. These boreholes vary in depth from 10.5 to 61.0 metres below ground level (mbgl). Information on water levels was only available for three of the boreholes and varied from 1.5 to 7.4 mbgl (RL29.71 to RL33.46). Note that the majority of the borehole RLs (and hence the RLs of the water levels) are based on limited topographical information and are only accurate to +/- 5 m (GHD, 2012).

Geolyse (2015) undertook a hydrogeological assessment based on the data provided in GHD (2012) of the Buronga landfill and made the following conclusions:

Based on Geolyse's review of existing hydrogeological assessments and available groundwater monitoring data for the Buronga Landfill, this assessment finds that sufficient information exists to demonstrate that groundwater impacts have not yet been detected, and can be managed such that any future impact can be minimised. Conclusions from the GHD Geotechnical Investigation demonstrate that during groundwater monitoring in 2010 and 2012 there was no indication of existing leachate migration into the off-site groundwater. In addition, the GHD Engineering Report identifies a thick, low permeability clay layer (undisturbed, 3.3 x 10-10 m/s) that forms an effective aquitard beneath the landfill. It is also noted material can and will be sourced on-site to provide a capping layer that will meet EPA's criteria of 1 x 10-8 m/s).

Further, the comparison of groundwater data obtained by GHD to data reported in the 2013-14 Annual Return (for EPL 20209) indicates that changes observed in groundwater quality parameters are likely due to natural fluctuations in regional groundwater quality, as opposed to existing leachate migration into off-site groundwater.

Appropriate leachate minimisation and management measures are already identified in the Buronga Landfill LEMP; these measures are implemented at the Buronga Landfill to mitigate the risk of leachate contaminating groundwater aquifers below the site, and to manage any groundwater contamination should it occur.

Based on the above conclusions, this assessment adequately addresses the requirements of condition U5.1 of EPL 20209 as:

• No adverse impacts to groundwater have been identified in this assessment and given that the site has been operating as a landfill for several years (since 1934), it is unlikely that leachate is emanating from the existing unlined Buronga Landfill and adversely impacting on groundwater; and

• There are adequate leachate minimisation and management measures implemented at the landfill to mitigate the risk of adverse impacts to groundwater, and to manage any groundwater contamination.

Based on Geolyse (2015) review no groundwater impacts are expected.

#### 4.5.1 Mitigation measures

- Daily pre-start machinery checks for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian Standards and Guidelines and conforming to leading practice
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

## 4.6 Soils

All of the proposed project area has been disturbed due to continuous grazing by livestock, rabbits, and timber removal to facilitate grazing and for fencing materials. More recently, quarrying activity in the north-eastern section has occurred. The material to be won consists of suitable borrow material required to adhere to the EPL.

The topsoil will be managed to ensure that on completion of borrowing, topsoil can be re-spread on the landfill capping and rapid germination of the seed store can occur. Regularly servicing machinery off-site, adhering to the WSC's refuelling policy and

ensuring a spill kit is on-site at all times will ensure that existing soil retained on site will be free from contamination.

### 4.6.1 Contamination

The existing soil is not known to be contaminated and no new contamination is expected as a result of undertaking the proposed activity.

### 4.6.2 Acid sulphate soils

There are no areas that are subjected to periods of sustained inundation followed by drying which can lead to the production of acid sulphate soils. When potential acid sulphate soils are disturbed or exposed to oxygen, the iron sulphides are oxidised to sulfuric acid and the soil becomes strongly acidic (usually below pH 4). These soils are then called actual acid sulphate soils and they have a pH of less than 4.0 (Department of Environmental Resources Management, 2009).

### 4.6.3 Mitigation measures

- Staff to be trained in best practice management in soil conservation and management
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- A spill kit will be permanently attached to the portable fuel cart, which is brought on to site each day
- All machinery to be serviced off site
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Borrow material will only be extracted and used as required
- Borrowing will only occur during suitable conditions e.g not on days of rain, high wind or flooding.

# 4.7 Matters of National Environmental Significance

An Environmental Protection and Biodiversity Conservation (EPBC) Act Protected Matters Search Tool report was generated for the study area on a 5km buffer. The report indicated:

- no World Heritage Areas near the proposed site
- no items of National Heritage Places near the proposed site
- the study site is located upstream from three (3) wetlands of international importance
- no Commonwealth Marine areas near the proposed site
- potential for two (2) threatened ecological communities to exist within the proposed site
- potential for sixteen (16) threatened species to occur in the vicinity of the proposed site
- potential for eight (8) migratory species to occur within the vicinity of the proposed site.

Further assessments undertaken as part of this project revealed that no matters of national significance will be impacted upon, and therefore, no referral under the EPBC Act is required.

# 4.8 Flora

#### 4.8.1 Bioregion and PCT type

The proposed project site is located in the Murray Darling Depression Bioregion of the Lower Murray-Darling Catchment.

According to the NSW Native Vegetation Classification and Assessment Project (NSWVCA), two vegetation communities occur on-site:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116).

Details of this PCT are shown in Table 4.

РСТ	Dominant canopy spp	Main associated spp	Landscape position	Characteristic mid-storey spp	Characteristic groundcover spp	Other diagnostic features
LM108	Black Oak (Casuarina pauper), Western Rosewood (Alectryon oleifolius subsp. canescens)	Sugarwood (Myoporum platycarpum subsp. platycarpum), Pittosporum angustifolium	On level to undulating sandplains, sandy rises and interdune swales.	Wilga ( <i>Geijera</i> <i>parviflora</i> ), Silver Cassia (Senna form taxon 'artemisioides'), <i>Senna</i> <i>eremophila,</i> <i>Exocarpos</i> <i>aphyllus</i> , Thorny Saltbush ( <i>Rhagodia</i> <i>spinescens</i> ), Black Bluebush ( <i>Maireana</i> <i>pyramidata</i> ), <i>Maireana</i> <i>brevifolia</i>	Sclerolaena diacantha, Austrostipa nitida, Speargrass (Austrostipa scabra subsp. scabra), Zygophyllum apiculatum, Polycalymma stuartii, Tetragonia moorei, Salsola tragus,	Mid-high (about 7 m high) low open woodland or isolated clumps of trees. Occurs on calcareous earths (pH >7) of red to red-brown loam, sand and texture contrast soils. Widely distributed in the far south- western NSW mainly in the Murray Darling Depression Bioregion.
LM116	White Mallee (Eucalyptus dumosa), Glossy- leaved Red Mallee (Eucalyptus oleosa), Snap and Rattle (Eucalyptus gracilis), Red Mallee (Eucalyptus socialis), Narrow- leaved Red Mallee	White Cypress Pine ( <i>Callitris</i> <i>glaucophylla</i> ), Slender Cypress Pine ( <i>Callitris</i> <i>gracilis</i> subsp. <i>murrayensis</i> ), Western Rosewood ( <i>Alectryon</i> <i>oleifolius</i> <i>subsp.</i> <i>canescens</i> ), Bulloak ( <i>Allocasuarina</i> <i>luehmannii</i> ), Black Oak	On aeolian sandplains or in inter- dune plains or swales.	Chenopodium curvispicatum, Pearl Bluebush (Maireana sedifolia), Maireana georgei, Black Bluebush (Maireana pyramidata), Maireana pentatropis, Maireana brevifolia, Maireana erioclada, Sugarwood (Myoporum platycarpum	Ruby Saltbush (Enchylaena tomentosa), Atriplex stipitata, Zygophyllum apiculatum, Zygophyllum aurantiacum, Dissocarpus paradoxus, Chenopodium desertorum subsp. desertorum	Bull mailee woodland or open mailee shrubland most usually about 8 m tall. Occurs on calcareous red- brown, sandy- loam or loamy clay soils, sometimes containing limestone nodules.

#### Table 4: PCT characteristics

green

(Eucalyptus	(Casuarina	subsp.	
leptophylla)	pauper)	platycarpum),	
		Acacia	
		microcarpa,	
		Silver Cassia	
		(Senna form	
		taxon	
		'artemisioides'),	

#### 4.8.2 Threatened species

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed project site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife (refer to Appendix B)
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report (refer to Appendix B).

No threatened flora species were identified from a 5km<sup>2</sup> radius database search.

#### 4.8.3 Threatened communities

The above-mentioned databases were also searched for threatened communities. Four threatened communities were listed, including:

- Acacia loderi shrublands
- Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions
- Bulloak Woodlands of the Riverina and Murray-Darling Bioregions

None of these communities occur at the proposed project site or will be impacted upon by the proposal.

#### 4.8.4 Flora site assessment

A general flora assessment was conducted across the proposed project site and the surrounding area on 18 February 2016 by Chris Alderton (B App Sci). The half-day assessment, adhering to Table 5.1 Survey Effort (DEC, 2004), focused on areas of likely higher vegetation values and active searches of likely habitat for reptiles and small mammals. Weather conditions were a clear sky, maximum temperature of 30°C and no wind.

According to the DEC field survey methods (DEC, 2004), the study area was 'random stratified' assessment based on vegetation type, aerial imagery information and the site assessment. The survey method undertaken is described as a 'stratified ramble assessment', where the whole site was assessed, with particular focus on areas of higher quality habitat (older trees with potential for nests and hollows, better quality

vegetation) that could be potentially impacted upon. Two vegetation types occur within the study site. The stratification units included (refer to Appendix A):

- Chenopod sandplain mallee woodland
- Black oak western rosewood open woodland
- Black box open woodland

The study area does form part of a corridor linking the black box woodlands to the Mallee between the Gol Gol Lake and The Mourquong Swamp. There are other connections between these landscape features so the connectivity value is lower than if there were no other linkages. Hollow and nest bearing trees were observed within the study area and mitigation activities prior to removal should be adhered to (Section 4.8.5). The vegetation condition on-site was observed as 'low' according to DEC (2004).

The flora assessment revealed no vegetation species; populations or communities, which are of local, regional or state conservation significance (refer to Table 5).

Scientific name	Common name	Threatened/Status
Acacia homalphylla	Yarran	No
Acacia oswaldi	Umbrella wattle	No
Acacia victoriae	Prickly acacia	No
Alectryon oleifolius	Western rosewood	No
Allocasuarina pauper	Black oak	No
Atriplex stipitata	Bitter saltbush	No
Callitris glaucophylla	White Cypress-pine	No
Chenopodium melanocarpum	Black Crumbweed	No
Dissocarpus parodoxa	Cannon ball	No
Eucalyptus largiflorens	Black box	No
E. socialis	Pointed Mallee	No
Enchylaena tomentosa	Ruby saltbush	No
E. gracilis	Yorrell	No
Lysiana exocarpi ssp. exocarpi	Harlequin mistletoe	No
Marieana brevifolia	Yanga Bush	No
Marieana sedifolia	Peal bluebush	No
Myporum patycarpum	Sugarwood	No
Nicotiana glauca	Native Tobacco	No

#### Table 5: Flora Species recorded on-site

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Scientific name	Common name	Threatened/Status
Pittosporum angustifolium	Native apricot	No
Rhagodia spinescens	Hedge saltbush	No
Sclerolaena diacantha	Grey copperburr	Νο
Solanum esuriale	Quena	No
Zygophyllum apiculatum	Common Twin leaf	No

# Denotes introduced species

### 4.8.5 Mitigation measures

- Borrowing site to be marked out using permanent markers indicating `no go zones'
- Species profiles to be kept on-site of threatened species that have potential to inhabitat the site
- Prior to removal of vegetation, trees shall be checked for fauna that may be present and if found, individuals shall be relocated by suitably trained and accredited persons.

## 4.9 Fauna

#### 4.9.1 Threatened species

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed project site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife (refer to Appendix B)
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report (refer to Appendix B).

None of these species were recorded during site assessments on 18 February 2016.

Table 6 lists the fauna species with state and national conservation significance that have the potential to occur within the study area. The column in Table 6 headed 'comment', identifies the suitability of the site for the particular species, such as for habitat utilisation, nesting/burrowing requirements, food and water requirements and the vegetation type preferred by the species. Five of those species have 'potential habitat' so have been assessed for significance, as per the Threatened Species Assessment Guidelines (DECC, 2007) (Appendix B).

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Class	Common name	Species name	State	National	Comment
Aves	Freckled Duck	Stictonetta naevosa	V		No potential habitat, prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree.
Aves	Spotted Harrier	Circus assimilis	v		Potential habitat
Aves	Little Eagle	Hieraaetus morphnoides	v		Potential habitat
Aves	Square tailed-kite	Lophoictinia isura	v		Potential habitat
Aves	Curlew Sandpiper	Curlew Sandpiper	E	CE	No potential habitat, it generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts
Aves	Major Mitchell's Cockatoo	Lophochroa leadbeateri	V		Potential habitat
Aves	Purple-crowned Lorikeet	Glossopsitta porphyrocephala	V		Potential habitat
Aves	Black-chinned Honeyeater	Melithreptus gularis gularis	v		Predicted to occur at this location, unlikely habitat requirements on site. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark ( <i>Eucalyptus</i> <i>sideroxylon</i> ), White Box ( <i>E. albens</i> ), Inland Grey Box ( <i>E.</i> <i>microcarpa</i> ), Yellow Box ( <i>E. melliodora</i> ), Blakely's Red Gum ( <i>E. blakelyi</i> ) and Forest Red Gum ( <i>E. tereticornis</i> ).
Aves	Gilbert's whistler	Pachycephala inornata	V		Unlikely habitat, the Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer.
Aves	Australian Painted Snipe	Rostratula australis	E	E	No potential habitat prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses,

#### Table 6: Listed Fauna Species

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Class	Common name	Species name	State	National	Comment
					lignum/low scrub.
Mammal	Spotted-tailed Quoll	Dasyurus maculatus	v	E	No potential habitat and not known from this region.
Amphibia	Southern Bell-frog	Litoria raniformis	E	v	No potential habitat

#### 4.9.2 Fauna site assessment

A general fauna assessment was conducted across the proposed area, including nearby areas of intact vegetation, by Chris Alderton (B App Sci). The assessment also focused on the access to the site and surrounding habitats. It was noted that nests and hollows exit with in the area proposed to be removed. To minimise impacts a staged approach to vegetation clearing will be undertaken, that is only vegetation required to be removed is and not all cells at once. The three-step process as outlined in Section 4.9.3 shall be used at all times to minimise disturbance to birds and other hollow dwelling species.

The fauna assessment revealed no species; population or communities, which are of local, regional or state conservation significance (refer to Table 7). The number of species recorded on site was average for the timing of the assessment, weather conditions, quality of habitat foraging areas, food and water sources.

Scientific name	Common name	Threatened
Columba livia domestica	Pigeon	No
Corvus bennetti	Little Crow	No
Eolophus roseicapilla	Galah	No
Gymnorhina tibicen	Australian Magpie	No
Manorina melanocephala	Noisy Miner	Νο
Ocyphaps lophotes	Crested Pigeon	No
Psephotus varius	Mulga Parrot	Νο
Ctenotus sp.	Stripped Skink	No

	Table	<b>7:</b> 1	Fauna	species	recorded	on	site
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#### 4.9.3 Mitigation measures

- Borrow pits and stockpiles are to be examined prior to work starting each day to remove any reptiles or other fauna that may be within the work site
- Profiles of threatened species that have potential to inhabit the site will be kept on site.
- A three step tree removal process should be undertaken where:
  - 1. the tree is hit with a hard object (ie sledge hammer or excavator bucket), five minutes before the tree is brought to the ground
  - 2. The tree is felled and left to remain in place overnight to allow any animals to escape
  - 3. The felled tree is removed to the stockpile location for rehabilitation at a later date.

# 4.10 Weeds and pests

Weed and pest animal assessments were conducted within the proposed borrow area on 18 February 2016, recording weed and pest attributes by Chris Alderton (B App Sci). Twelve weed species were observed and three introduced fauna species refer to Table 8 which also lists the species status.

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Scientific name	Common name	Status
Carrichtera annua	Wards Weed	
Centaurea calcitrapa	Star thistle	
Cucumis myriocarpus	Paddy melon	
Datura Spp.	Downy thorn-apple	
Heliotropium europaeum	Common heliotrope	
Lycium ferocissimum	African Boxthorn	Class 4 - Locally controlled, WoNS
Marrubium vulgare	Horehound	Class 4 – Locally controlled
Nothoscordum inodorum	Onion weed	
Psilocaulon tenure	Match-head Plant	
Salvia verbenaca	Wild Sage	
Schinus sp.	Peppercorn	
Tribulus terrestris	Caltrop	
Columba livia domestica	Pigeon	
Oryctolagus cuniculus	European Rabbit	
Bos sp.	Cattle	

#### Table 8: Weed and pest observed

#### 4.10.1 Mitigation measures

- Machinery will be washed down off-site prior to entering the proposed borrow areas to ensure it is weed free
- The WSC weeds officer to monitor the area regularly.

# 4.11 Heritage

A site inspection was conducted 18 April 2016 by Sarah Watts from Sunset Archaeological Services who holds a Bachelor of Archaeology with Honours. The site inspection included participation by Noel Johnston and Rodney Lawson of the Barkindji community.

The site inspection involves a pedestrian survey which progressed on north to south transects from the western side of the project area to the eastern side. Participants were spaced between 1.5 to 4 meters apart during the physical survey providing a detailed survey of approximately 80% of the project area. Visibility during the survey varied between 50 to 80 % with the poorer areas of visibility being those around the existing trees due to leaf litter and denser low lying vegetation while the open cleared land (western side) provided great visibility with the only hindrance being small patches of grasses and ground vegetation.

The western side of the project area appears to have only been disturbed by grazing animals and rabbits during warren preparation. While the eastern side of the project area has been significantly disturbed during loam extraction and later motor bike riders. It was noted there was significant amount of rubbish on the ground surface and eroding out of the soil on the eastern side suggesting repetitive ground disturbances. There are mature trees throughout the project area but none of these trees showed any signs of Aboriginal cultural scarring.

At the conclusion of the onsite inspection only one site was discovered, Buronga Landfill Artefact Scatter 1, at co-ordinates E610565 N 6223164 Zone 54 and consisted of a sandstone core split in two. A site card was lodged with NSW Office of Environment and Heritage and an AHIP should be gained for this site.

The assessment did not reveal any other areas where conservation activities to protect cultural heritage material are required. Historical quarrying in the north-east corner of the project area provides an indication of subsurface conditions.

The Murray River is located approximately 4.2km south west of the project site, which would have provided a permanent water supply and the Gol Gol Creek and lakes would have filled intermittently only during times of a high river and emptied back to the river on flood recession. The proposed borrow area did not contain features that the Aboriginal monitors believed warranted further investigation.

An Aboriginal Heritage Information Management System (AHIMS) database search was undertaken of the lot and DP, with a 1km buffer (refer Appendix C). Two Aboriginal sites were recorded north of the proposed borrow area, both open sites.

The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010) was reviewed to determine if an Aboriginal Heritage Impact Permit (AHIP) is required. Section 8 of this document provides a flow chart of the due diligence process.

This project has assessed that impacts to any unknown cultural heritage sites of significance is unlikely, but as an isolated scatter was found, therefore, a cultural heritage assessment adhering to the Code of Practice for Archaeological Investigation of Aboriginal objects in NSW and an AHIP is required.

As outlined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, a number of assessments and tests have been undertaken to ensure no harm is caused to places of Aboriginal significance.

This code sets out the reasonable and practicable steps that individuals and organisations need to take in order to:

- 1. identify whether or not Aboriginal objects are, or are likely to be, present in an area.
- 2. determine whether or not their activities are likely to harm Aboriginal objects (if present).
- 3. determine whether an AHIP application is required.

In following the generic due diligence process, the following processes have occurred (refer to Table 9)

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Step	Guide	Response
<i>1a. Will the proposed activity disturb the ground surface or any recorded culturally modified trees?</i>	Review project footprint in relation to the AHIMS search to determine whether the proposed activity will disturb the ground surface or involve vegetation clearance including lopping.	Yes - move to step 2a(i)
2a(i). Search the AHIMS database and determine whether any Aboriginal sites have been recorded in or within 1000 metres of the project area.	If not already undertaken, undertake 'basic' AHIMS search of the project area with a 1000 metre buffer of the project area Lot and DP. Append AHIMS basic search results	Two sites - <b>go to step 2a(ii)</b>
2a(ii). Obtain copies of AHIMS records	If not already undertaken from step 2, undertake 'extensive' AHIMS search of the project area with a 1000 metre buffer of the project area Lot and DP. Append AHIMS extensive search results ⊠ Map project area and all AHIMS results using GDA94 latitude and longitude data. If not already undertaken at step 2 above, map AHIMS results and append ⊠ Request and review copies of all site cards within the searched area. Append all site cards ⊠	Number of Aboriginal objects in the searched area: Two Aboriginal Sites In all instances, go to step 2a(iii)
<i>2a(iii). Review other sources of information to determine whether Aboriginal objects are likely to be present in the project area?</i>	If you are aware of other sources of information, you need to use these to identify whether or not Aboriginal objects are likely to be present in the project area. Previous studies Previous reports Previous archaeological surveys Review relevant Local Environmental Plan, notably Schedule 5 and maps Other Append results	As a result of step 2a(iii), are there likely to be additional Aboriginal objects or areas of Aboriginal cultural heritage sensitivity present in the project area? Yes - describe nature, extent and significance below. Go to step 2b An Aboriginal Cultural Heritage Assessment (ACHA) was undertaken in around 2000 and a second in 2010 at a Gypsum Mine nearby at the Mourquong Lake which did not locate any cultural heritage assets. An ACHA was undertaken in 2008 at the Australian Vintage Winery waste water expansion site which also did not located are areas of CH significance.

# Table 9: Due diligencce process

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		An ACHA was conducted in 1992 for National Parks and Wildlife by J.L. Craib. The study included the area between Wentworth and Gol Gol with part of the study focusing on Lake Mourquong. During the survey along the eastern lunette of Lake Mourquong only two pieces of chipped stone were discovered, a silcrete core and a quartz flake. No cultural heritage was discovered within the survey areas on the western margins of the lake.
		Describe the expected nature, extent and significance of the Aboriginal objects and/or areas of Aboriginal cultural heritage sensitivity.
		As previous studies concluded the higher frequency of cultural heritage sites are likely to be found within one kilometre from a fresh water source. As the activity area is 1.7 kilometres from the Gol Gol Lake and 500 meters from Lake Mourquong there is a possibility of finding Aboriginal cultural heritage. The cultural heritage most likely to be found include hearths, lithic scatter, scarred trees, shell deposits and ancestral burials.
<i>2b. Having regard to landscape features, are Aboriginal objects likely to be present in the project area?</i>	Is any part of the proposed activity on land that is not disturbed land <u>and</u> : Within 200 metres of waters?	No boxes checked and reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the project area - no further due diligence
	On a ridge top, ridge line or	required. Proceed with caution There are no features present within the project area which are likely to contain Aboriginal Cultural heritage.
	headland? 🔲 Within 200 metres below or above a cliff face? 🔲	
	Within 20 metres of, or in a cave, rock shelter, or a cave mouth?	
	Append mapped results	
3. Can you avoid harm to the object or disturbance of the landscape feature?	Where, as a result of step 2a(i, ii, iii) you think it is likely that there are Aboriginal objects present in the project area, describe whether you can avoid harm to those objects.	Due diligence site assessment recommended.
	Where you have checked any boxes in step 2b above, describe whether you can redesign the project area to avoid the landscape feature(s).	
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4. Engage heritage consultant to undertake visual inspection and desktop assessment for the purposes of due diligence.	Undertake a desktop assessment of Aboriginal heritage. This must consider the project area as a whole, not just the particular area(s) where Aboriginal object(s) have been recorded on AHIMS or where landscape features are located. At a minimum this should include existing knowledge of Aboriginal cultural heritage from previous reports or studies, including any reports from AHIMS. Append results of the desktop assessment Undertake a visual inspection of the project area to determine whether Aboriginal objects are present, or likely to be present in the project area. Ground truth recorded Aboriginal objects in and adjacent to the project area. The visual inspection must be undertaken by a person with expertise in locating and identifying Aboriginal objects, i.e., a consultant with appropriate qualifications, or an Aboriginal person or landholder with experience in locating and identifying Aboriginal objects. Append results of the visual inspection	No - no further due diligence required. Proceed with caution A site inspection was conducted 18 April 2016 by Sarah Watts from Sunset Archaeological Services who holds a Bachelor of Archaeology with Honours. The site inspection included participation by Noel Johnston and Rodney Lawson of the Barkindji community. The site inspection involves a pedestrian survey which progressed on north to south transects from the western side of the project area to the eastern side. Participants were spaced between 1.5 to 4 meters apart during the physical survey providing a detailed survey of approximately 80% of the project area. Visibility during the survey varied between 50 to 80 % with the poorer areas of visibility being those around the existing trees due to leaf litter and denser low lying vegetation while the open cleared land (western side) provided great visibility with the only hindrance being small patches of grasses and ground vegetation. The western side of the project area appears to have only been disturbed by grazing animals and rabbits during warren preparation. While the eastern side of the project area has been significantly disturbed during loam extraction and later motor bike riders. It was noted there was significant amount of rubbish on the ground surface and eroding out of the soil on the eastern side suggesting repetitive ground disturbances. There are mature trees throughout the project area but none of these trees showed any signs of Aboriginal cultural scarring. At the conclusion of the onsite inspection only one site was discovered, Buronga Landfill Artefact Scatter 1, at co-ordinates E610565 N 6223164 Zone 54 and consisted of a sandstone core split in two (refer Appendix D).
Step 5. Further investigations and impact assessment	Step 5 must be undertaken by a person with expertise in Aboriginal cultural heritage management.	A cultural heritage assessment adhering to the Code of Practice for Archaeological Investigation of Aboriginal objects in NSW and an AHIP is required.

#### 4.11.1 Other cultural heritage

The State Heritage Register (NSW Environment and Heritage) database was used to determine if any areas of historic value were located on or nearby the proposed project site. There are no other known cultural heritage sites within the proposed project area. This was to be expected due to the remoteness of the proposed project area and the lack of visible remnants located through the on site assessment.

#### 4.11.2 Mitigation measures

- Follow the contingency plan outlined in Appendix E
- If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:
  - 1. Not further harm the object
  - 2. Immediately cease all work at the particular location

3. Secure the area so as to avoid further harm to the Aboriginal object 4. Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location

5. Not recommence any work at the particular location unless authorised in writing by OEH.

#### 4.12 Air quality

The nearest residence and receptor is located more than 1.2km south-west of the borrow site and the nearest public road is approximately 200m west. Given the remoteness from any residence or public road, there will be no impact from the expected minor raised dust that may occur from time to time during heavy vehicle movements and plant operation.

The key performance indicator will be no complaints or raised dust received at the residences over 1.2km away. Ongoing monitoring will occur visually by dust observed around the residences. Records of increased dust will be kept and recorded with the property's rainfall records. The response mechanism will be to stop activity causing dust if possible or to mitigate using sprayed water. Compliance will be enforced by the onsite WSC team leader.

Practices associated with earthworks that could affect air quality include bush fire, exhaust emissions from vehicles and plant and windblown dust during operational periods. To mitigate dust, rock will be applied to the road between the borrow pit and the landfill as required to minimise raised dust from transport activities.

Where dust becomes an issue, despite the laying of crushed rock, water may be sprayed over the tracks.

#### 4.12.1 Mitigation measures

- No burning of timber or other combustible materials will occur on-site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in firefighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions will be kept within manufacturers standards
- Roads between the borrow pit and landfill will be maintained to the WSC quality standards allowing efficient and safe operation

• Borrowing/carting operations will cease if severe wind conditions are present.

#### 4.13 Socio and economic

The objective of this proposal is to secure a source of cover material to allow the landfill to operate within its licence conditions. This borrow material will allow local residences to continue to use the landfill. The beneficiaries of this proposal will be local residents and businesses as they will able to continue to dispose of their rubbish and recycle products to ensure that there is as little harm to the environment as possible.

#### 4.13.1 Economic

The expected cost of the development is approximately \$220,000 by the time the borrow pits are operational. Additional costs include the maintenance of plant and equipment required for borrowing and carting cover material.

The operation will employ local drivers and operators throughout the life of the landfill. The economic returns to the local economy will be by way of income through employment. The flow-on effects are important to the Wentworth, Dareton and Buronga areas.

#### 4.13.2 Social

The proposal will not disadvantage any individuals or communities, and consultation with all known affected groups has been undertaken.

As required by any construction site in NSW, appropriate signage will be placed around the borrow area, including truck turn in, PPE and general safety signs. Due to the shallow depth of the borrow pit, no safety fencing will be required.

#### 4.13.3 Impact on the community

Although the character of the area would be slightly affected, by minimising the extent of the impact and undertaking rehabilitation, there would be minimal long-term impacts.

#### 4.13.4 Visual impact

The proposed borrow areas will have low visual impact due to the screening of native vegetation between the Arumpo Road and the project area. The Borrow areas will be converted in to landfill cells and repurposed. Ongoing rehabilitation of the existing landfill will occur once it is full.

#### 4.13.5 Mitigation measures

- Appropriate signage as required under legislation and adherence with best practice management
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.14 Transport

The proposed project will utilise existing tracks from the Arumpo Road to the borrow site. No trucks will be required to use the Arumpo Road (or any other road network) for carting borrow material between the borrow site and the landfill.

A bulldozer, front end loader, two tip trucks and up to two light vehicles will be required.

This project will be undertaken with adherence to relevant legislation and best practice management.

It is expected that a contractor and/or WSC staff will travel to the site each day (up to two light vehicles) between 6.30am and 7.30am. There may be up to 25 truck movements per day and the contractor/WSC staff will leave the site between 4pm and 6pm each evening. The impact of these additional short-term vehicle movements will not impact the existing traffic mix, consisting of local landholders, travellers and stock carting transport.

#### 4.14.1 Mitigation measures

- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.15 Noise and vibration

The main source of noise may arise from the use of heavy machinery to extract and load borrow material; and trucks to cart the material between sites. Considering the distance of the project area from the nearest residence (receptor) is over 1km away; and the hours of operation (7am to 6pm Monday to Friday and 8am to 12noon Saturday), any noise created will not cause a significant detrimental impact on the surrounding land users.

Table 10 is adapted from Bassett Acoustics (2007) in the Northern Expressway Noise and Vibration Technical Paper, which predicts noise levels without mitigation in urban environments. In rural environments, 50dB is acceptable. Noise decreases with distance, so with the nearest receptor 1km away the predicted dB will be well below acceptable limits.

Plant type	7m	25m	50m	100m	200m
Front end loader	88	77	71	65	59
Large Bulldozer	92	81	75	69	63
Road truck	83	72	66	60	54
Crushing plant	91	80	74	68	62

Table	<b>10: Predicted</b>	dB(A)	noise	levels	at vari	ious dis	tances
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Major sources of ground vibration include bulldozers (ripping), front end loaders and truck movements during work. Vibrations generated from construction and earthmoving activities are expected to be similar in magnitude as those generated from the operation of similar equipment to be used.

Ground vibration impacts at specific levels of magnitude may either:

- disturb occupants of buildings
- disturb contents of buildings by rattling, shaking or movements

• affect structural integrity of a building.

Table 11 indicates the approximate vibration levels that may be expected for various vibration sources (Bassett Acoustics, 2007). Due to the nearest receptor being over 1km away, no vibration is expected due to the large distance between activity and receptor.

# Table 11: Approximate generated ground vibration levels (mm/s) for various sources

Activity	Typical levels of ground vibration
Hydraulic rock breakers	4.5mm/s @5m
	1.30mm/s @10m
	0.4mm/s @20m
	0.10mm/s @50m
Bulldozer	1-2mm/s @5m (approx.)
	2mm/s @15m
	>0.3mm/s@<30m
Truck traffic (irregular surfaces)	0.1-2.0mm/s at footings of buildings 10-20m from a road way

#### 4.15.1 Mitigation measures

- Plant and equipment serviced and using manufacturers specified mufflers
- Borrowing operations to occur on site only during business hours (7am-6pm Monday to Friday and 8am -12pm Saturday).

#### 4.16 Bushfire hazards

Due to the nature of the proposal and the composition of vegetation species at the site, it is highly unlikely that the vegetation would carry a fire. The wide spacing of individual trees and the limited amount of dry matter of grass species present (due to the arid climate and grazing) would not be conducive to the spread of fire.

No bushfires are known to have spread through the area in the last 25 years.

#### 4.16.1 Mitigation measures

- No burning of timber or other combustible materials will occur on site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in firefighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions to be kept within manufacturers standards
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.17 Chemical and hazardous substance management

No hazardous substances will be stored on site. Limited hazardous substances will be brought on site, in particular fuels and lubricants, eg. oil, grease and distillate, as the fuel for heavy equipment will be transported as required on utility, trailer or fuel truck. Best management practices will be followed when these substances are transferred and in use as stipulated by WSC work practices. Empty containers will be taken off the site and suitably disposed of to landfill or for recycling.

#### 4.17.1 Mitigation measures

- Staff trained in best practice in chemical and hazardous substance management
- All vehicles and machinery to be regularly serviced, be in good working order and emissions to be kept within manufacturers standards
- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles serviced off-site
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- No fuels or lubricants to be stored on site
- In the event of unexpected breakdown of heavy machinery on the site, the spill kit will be used to prevent leakage of petroleum products to the soil - should soil contamination occur, soil will be removed to a licensed facility as per EPA guidelines
- Any discarded oils, worn machinery parts, damaged tyres, broken hoses or empty containers will be removed to a waste storage area on the day they are generated.

#### 4.18 Waste minimisation and management

The work site will operate in a tidy, rubbish-free state. Any wastes generated will be contained and removed from the site for recycling or safe disposal. No environmental problems are anticipated with the disposal of potential waste.

#### 4.18.1 Mitigation measures

Staff will be trained in best practice in all areas of earthworks.

#### 4.19 Stormwater management

The WSC has a stormwater management plan in place, which will be implemented throughout the life of the project. The aim of this plan is to ensure that all stormwater is retained on-site and there are no off-site impacts. The plan includes measures for maintaining current roads and borrow areas. Due to the porous nature of the loamy soil, stormwater infiltrates quickly through the soil profile and rarely causes a problem.

#### 4.19.1 Mitigation measures

- Maintain current stormwater management plan
- Install cut-off drains as required
- Install silt fences and erosion control as required
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015).

#### 4.20 Cumulative environmental impacts

The cumulative environmental impacts of the proposal will be minimal. As stated throughout Section 4, each identified impact has been assessed for its potential threat to the environment. Mitigation measures will help minimise the impact on the proposed project area, as well as off-site impacts.

#### 4.21 Summary of mitigation measures

A range of mitigation measures will be put in place to ensure the proposal has minimal impact on the environment, both on site and off site, including:

- Daily pre-start machinery checks for leaks of oil, fuel or other liquids
- Contingency plans will be in place to deal with spills, adhering to relevant Australian Standards and Guidelines and conforming to leading practice
- The development will be staged, removal of trees and stripping of topsoil will only occur as required based on the demand level for cover material
- No machinery, fuels, oils, chemicals, hazardous substances or other earthmoving equipment will be stored within the borrow site when not in use
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- Adhere to the Buronga Landfill Landfill Environmental Management Plan (WSC, 2015)
- Staff to be trained in best practice management in soil conservation and management
- Staff inducted on refuelling procedures, which will be stored with refuelling equipment
- A spill kit will be permanently attached to the portable fuel cart, which is brought on to site each day
- All machinery to be serviced off-site
- Supervision of earthworks will be undertaken by a suitably qualified/experienced person as per WSC policies
- Borrow material will only be extracted and used as required
- Borrowing will only occur during suitable conditions e.g not on days of rain, high wind or flooding
- Borrowing site to be marked out using permanent markers indicating 'no go zones'
- Species profiles to be kept on-site of threatened species that have potential to inhabitat the site
- Prior to removal of vegetation, trees shall be checked for fauna that may be present and if found, individuals shall be relocated by suitably trained and accredited persons.
- Machinery will be washed down off-site prior to entering the proposed borrow areas to ensure it is weed free
- The WSC weeds officer to monitor the area regularly
- Borrow pits and stockpiles are to be examined prior to work starting each day to remove any reptiles or other fauna that may be within the work site
- Profiles of threatened species that have potential to inhabit the site will be kept on site.

- A three step tree removal process should be undertaken where:
  - 1. the tree is hit with a hard object (ie sledge hammer or excavator bucket), five minutes before the tree is brought to the ground
  - $\circ$   $\,$  2. The tree is felled and left to remain in place overnight to allow any animals to escape
  - 3. The felled tree is removed to the stockpile location for rehabilitation at a later date.
- Follow the contingency plan outlined in Appendix E
- If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:
  - 1. Not further harm the object
  - 2. Immediately cease all work at the particular location
  - 3. Secure the area so as to avoid further harm to the Aboriginal object
  - 4. Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location
  - 5. Not recommence any work at the particular location unless authorised in writing by OEH
- No burning of timber or other combustible materials will occur on-site
- All plant and equipment will be equipped with fire extinguishers
- Staff shall be trained in fire fighting techniques in the event of a bushfire, or fire on plant or equipment
- All vehicles and plant will be regularly serviced, be in good working order and emissions will be kept within manufacturers standards
- Roads between the borrow pit and landfill will be maintained to the WSC quality standards allowing efficient and safe operation
- Borrowing/carting operations will cease if severe wind conditions are present.
- Appropriate signage as required under legislation and adherence with best practice management
- Plant and equipment serviced and using manufacturers specified mufflers
- Borrowing operations to occur on site only during business hours (7am-6pm Monday to Friday and 8am -12pm Saturday).
- Maintain current stormwater management plan
- Install cut-off drains as required
- Install silt fences and erosion control as required
- Staff trained in best practice in chemical and hazardous substance management
- No fuels or lubricants to be stored on site
- In the event of unexpected breakdown of heavy machinery on the site, the spill kit will be used to prevent leakage of petroleum products to the soil - should soil contamination occur, soil will be removed to a licensed facility as per EPA guidelines
- Any discarded oils, worn machinery parts, damaged tyres, broken hoses or empty containers will be removed to a waste storage area on the day they are generated.

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## 5.0 Risk Management

Table 12 provides an overview of the risks associated with the proposed project. The table should be read down the left hand side column to identify the issues at the site and then the activities, processes or facilities are listed across the top of the table.

The table has been completed using a risk assessment of low (L), medium (M) and high (H) and not applicable (n/a).

#### HPRM Ref: DOC/16/9975

W1602

	Weeds and pests	Fauna	Flora	Solis	Groundwater	Surface water	Erosion and sedimentation	Floodplain and riparian habitat	Hydrology and geomorphology	Natural resources use	Tssue
x	$\overline{r}$	e	3	3	r.	ē	r.	E	5	х	Land preparation, vegetation & topsoil
•	e	e	e.	x	e:	e	e	r	10	r:	All quarrying activities including earth moving
~	e.	-	3	z	e:			e	÷	e	Mine development and mining, surface &
-	r	-	r	3	~	e	~	r	÷		Use/maintenance of roads, tracks and
ŗ.	r	٠	٣	-	•	r		۴	r	٠	Waste rock emplacement management
-	$\overline{\mathcal{D}}$	-	$\overline{\mathcal{T}}$	1	5	۲	1	ŝ	1	ŝ	Mineral processing facilities and operations
۴	7	Ŧ	÷.	r	e'	9	r	ñ	٣	٣	Dre/product stockpiling and handling
N.	n/a	n/a	n/a	n/a	n/a	ala	n/a	n/a	7/a	n/a	Tailings impoundment management
5	ŝ.	•	r	r.	r.	÷.	1	Ξ.	x	ž	water management of including storm event
17	5		e.,	æ	5	(F	<i></i>		5	e	Hazardous materials & Dig fuel, handling/spills
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sewerage
-	•		e	-	٣	e.	·r-			r	Other infrastructure use and operation
<del>+</del> -:	e.	-	ir.	-	r:	e	-	F		e	Rubbish disposal
r	5	÷.	e	÷	$\tilde{\mathcal{C}}^{i}$	(r	5	Ē.	x	5	Rehabilitation activities
٣	e.	٣	Ţ.	r	٣	e.	£	ŝ	٣	5	Rehabilitation maintenance, pending
٣	$\overline{\tau}$	٣	r.	r	7	ΞĒ.	~	Ē	-	r.	Rehabilitated land and

# Table 12: Environmental Risk Identification Matrix

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Legend	Stormwat	Waste mid	Chemical substance	Bushfire h	Noise and	Transport	Socio and	Air quality	Issue
- L=Low, M=med	er management	timisation and mgt	and hazardous management	uzards	vibration		economic		
lum, n/	15	Ē	e	c	r.	E.	r.	π	Land preparation, vegetation & topsoil
a not a	er.	•	æ	<i>.</i>	٣	E.	•	<i>n</i>	All construction activities including earth moving
pplicabl	٣		r	.e	e.	5	ie.		Mine development and mining, surface &
ñ	٣	e		e	:r=-	e	٠	r	Use/maintenance of roads, tracks and
	-	ë	~	۴	e	F	r	×	Waste rock emplacement management
	٣	ē.	5	5	5	5	7	30	Mineral processing facilities and operations
	٣	5		(ŋ	r	Ĕ.	٣	Ċ	Ore/product stockplling and handling
	n/a	n/a	n/a	n/a	n/a	n/a	7/2	n/a	Tailings Impoundment management
	٣	ŕ	7	۲	٣	r.	٣	۴	water management including storm event
	Ē	r		r	r.	ē	e.	π.	Hazardous materials & fuel, handling/spills
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sewerage
	r	ĸ	r	. e	æ.	٣	*	e	Other infrastructure use and operation
	•	۰	-	r		r	( <b>1</b> 7)		Rubbish disposal
	е.	*	•	(e	*	i.e	•	#	Rehabilitation activities
	ir.	r.		Se.	r.	r,	r	٣	Rehabilitation maintenance, pending
	٠	ŝ	. E	÷	F	ē.	e	5	Rehabilitated land and remaining features

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Activity, Process or Facility

HPRM Ref: DOC/16/9975

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## 6.0 Summary of impacts and conclusions

Table 13 summarises the potential impact of the project, following a thorough on site assessment and various database searches on threatened species and cultural heritage. Overall, the level of impact is expected to be low and this is further reduced through the implementation of mitigation measures summarised in Section 4.

Section	Potential Impact	Summary of Impacts
4.1	Natural resource use	Removal of borrow material
4.2	Hydrology and geomorphology	No impact
4.3	Erosion and sedimentation	No impact
4.4	Surface water	No impact
4.5	Groundwater	No impact
4.6	Soils	Removal and stockpile of topsoil for respreading, borrow material for landfill cover
4.7	Matters of NES	No impact
4.8	Flora	Removal of vegetation, no impact on threatened species
4.9	Fauna	No impact on critical habitat for threatened species
4.10	Weeds and pests	No impact
4.11	Heritage	Unlikely impacts to unknown sites and objects based on desktop and on site assessment. AHIP will be gained for the open site located as part of the due diligence process.
4.12	Air quality	Some vehicle emissions and dust from borrowing activity, will not cause problems due to low population density
4.13	Socio and economic	No adverse impacts
4.14	Transport	No public roads to be used for carting activities
4.15	.15 Noise and vibration Use of machinery to extract, load and cart material	
4.16	Bushfire hazards	No impacts
4.17	Chemical and Hazardous Substance	No impacts, none stored on site, oils, grease, fuel
4.18	Waste Minimisation	No impacts
4.19	Stormwater Management	No off-site impacts

Table 13: Summary of	potential impacts
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#### 7.0 References

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# Appendix B: Assessment of significance and threatened species searches

### Assessment of significance for borrow pit development adjacent to Buronga Landfill

#### Introduction

This assessment of significance is part of the review of environmental factors, 28km west of Wentworth, NSW. The proposed borrow pit location is located north of the existing licence landfill known as Buronga Landfill.

The objective of this proposal is to secure a source of borrow material (soil) to be used for daily cover as required under the landfills environmental protection licence. The proposal is to extract borrow material up to 13m deep across up to five (5) new cells. The proponent is the Wentworth Shire Council (WSC).

In respect to terrestrial biodiversity values, the area has been modified (grazing, vegetation clearing, and quarrying) and contains the species commonly found in such environments, including native grasses, rangeland groundcover and introduced species.

The proposed works occur within the WSC municipal area and within the Local Lands Service - Western. The proposed borrow site is located in the Murray Darling Depression Bioregion.

According to the NSW Native Vegetation Classification and Assessment Project (NSWVCA), the vegetation at the site is classified as:

- Black Oak Western Rosewood open woodland on deep sandy loams of Murray-Darling Depression and Riverina Bioregions (Benson 58 or plant community type LM108)
- Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170 or plant community type LM116).

A database search was undertaken on 9 February 2016 of the NSW Environment and Heritage (BioNet Atlas of NSW Wildlife) and the Department of the Environment websites to identify threatened species that may be found within the proposed quarrying site as listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment and Heritage BioNet Atlas of NSW Wildlife
- Department of the Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report

The following threatened species have potential to occupy the site and have triggered a seven part assessment of significance:

- Spotted Harrier (Circus assimilis)
- Little Eagle (*Hieraaetus morphnoides*)
- Square tailed-kite (Lophoictinia isura)
- Major Mitchell's Cockatoo
   (Lophochroa leadbeateri)
- Purple-crowned Lorikeet (Glossopsitta porphyrocephala)

#### Spotted Harrier (Circus assimilis) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Spotted Harrier is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – Spotted Harrier is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

(g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Little Eagle (Hieraaetus morphnoides) (Vulnerable - NSW))

(a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. The species occupies open eucalypt forest, woodland or open woodland. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Little Eagle is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Little Eagle is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

# (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Square tailed-kite (Lophoictinia isura) (Vulnerable- NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A - The Square tailed-kite is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Square tailed-kite is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

## (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Major Mitchell's Cockatoo (Lophochroa leadbeateri) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Major Mitchell's Cockatoo is found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the southwest Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Major Mitchell's Cockatoo is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Major Mitchell's Cockatoo is not considered an endangered ecological community, but a single species.

(d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

# (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

## (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act* 1995 Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Purple-crowned Lorikeet (Glossopsitta porphyrocephala) (Vulnerable - NSW)

# (a) In the case of a threatened species, state whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the boxironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. Due to the large habitat range of the species, the lifecycle is not likely to be disrupted such that a viable local population is likely to be place at risk of extinction.

# (b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A – The Purple-crowned Lorikeet is not considered an endangered population at this location.

(c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

N/A – The Purple-crowned Lorikeet is not considered an endangered ecological community, but a single species.

# (d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

# (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Due to the small nature of the proposal and no habitat observed on site, the proposal is not cause fragmentation or isolations from other foraging/hunting habitats. The habitat proposed to be modified is not critical to the long term survival of the species.

## (e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat was observed on site, therefore will not have an adverse effect on critical habitat (either directly or indirectly).

# (f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan has not been developed for this species but recovery actions are outlined under the Saving Our Species program.

# (g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The action constitutes part of the following key threatening processes as listed in the *TSC Act 1995* Schedule 3:

• Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process)

#### Conclusions

The assessment of significance for:

- Spotted Harrier (Circus assimilis)
- Little Eagle (*Hieraaetus morphnoides*)
- Square tailed-kite (Lophoictinia isura)
- Major Mitchell's Cockatoo (Lophochroa leadbeateri)
- Purple-crowned Lorikeet (*Glossopsitta porphyrocephala*)

revealed that the potential impacts of the proposal on these threatened species are extremely unlikely and where there could be potential impacts they will be very low. Potential minor impacts resulting from the proposed quarry are not expected to increase the likelihood of a threatened or endangered species becoming extinct.

The assessment of significance for these threatened species does not trigger the requirement for a species impact statement (SIS). The proposal is deemed to be non-significant for the assessed

species. In determining the significance of the proposed works on threatened species, the following matters were taken into consideration:

- implementation of the proposed works, including pre construction, construction, operation and maintenance phases
- activities to be undertaken in the area following the proposed works
- all direct and indirect impacts, on and off site impacts through all phases
- the frequency and duration of each known or likely impact/action
- the total impact which can be attributed to that action over the entire geographic area affected initially and over time
- the sensitivity of the receiving environment
- the degree of confidence with which the impacts of the action are known and understood.

#### References

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## EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 07/02/16 21:47:15

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates Buffer: 5.0Km

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#### Summary

#### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the <u>Administrative Guidelines on Significance</u>

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities;	2
Listed Threatened Species:	16
Listed Migratory Species:	8

#### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans;	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

#### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves.	None	
Regional Forest Agreements:	None	
Invasive Species:	24	
Nationally Important Wetlands:	None	
Key Ecological Features (Marine)	None	

#### Details

#### Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information ]
Name	Proximity
Banrock station wetland complex	150 - 200km upstream
Riverland	100 - 150km upstream
The coorong, and lakes alexandrina and albert wetland	200 - 300km upstream

#### Listed Threatened Ecological Communities

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans. State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
River Murray and associated wetlands, floodplains and groundwater systems, from the junction with the Darling River to the sea	Approval Disallowed	Community may occur within area
Listed Threatened Species		[Resource Information ]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Manorina melanotis		
Black-eared Miner [449]	Endangered	Species or species habitat may occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Extinct within area
Polytelis anthopeplus monarchoides		
Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Craterocephalus fluviatilis		

Murray Hardyhead [56791]

Endangered

Species or species habitat likely to occur within area

[Resource Information ]

Name	Status	Type of Presence
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Frogs		
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Phascelarctos cinereus (combined populations of Qld,	NSW and the ACT)	
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Plants		
Lepidium monopiocoldes Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area
Solanum karsense		
Menindee Nightshade [7776]	Vulnerable	Species or species habitat likely to occur within area
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species		[ Resource Information ]
* Species is listed under a different scientific name on t	he EPBC Act - Threatene	d Species list.
Manual	There is a part of the	Town of Decartains
Name	Inreatened	Type of Presence
Name Migratory Marine Birds	Threatened	Type of Presence
Name Migratory Marine Birds Apus pacificus	Threatened	Type of Presence
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678]	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus	Threatened	Species or species habitat likely to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flaxa Yellow Wagtail [644] Migratory Wetlands Species	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flaxa Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea ibis	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat known to occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874]	Threatened	Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea lbis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874] Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Threatened	Type of Presence         Species or species habitat         likely to occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area         Species or species habitat         known to occur within area         Species or species habitat         may occur within area         Species or species habitat         may occur within area         Species or species habitat         Species or species habitat
Migratory Marine Birds Apus pacificus Fork-tailed Swift [678] Migratory Terrestrial Species Merops ornatus Rainbow Bee-eater [670] Motacilla flava Yellow Wagtail [644] Migratory Wetlands Species Ardea alba Great Egret, White Egret [59541] Ardea ibis Cattle Egret [59542] Calidris acuminata Sharp-tailed Sandpiper [874] Gallinago hardwickii Latham's Snipe, Japanese Snipe [863] Tringa nebularia		Species or species habitat likely to occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat known to occur within area Species or species habitat may occur within area Species or species habitat likely to occur within area Species or species habitat likely to occur within area

Listed Marine Species	and the second second	Resource information
<ul> <li>Species is listed under a different scientific nan</li> </ul>	ne on the EPBC Act - Threa	tened Species list.
Name	Threatened	Type of Presence
Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret (59542)		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucodaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Merops ornatus		
Rainbow Bee-eater (670)		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula henobalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

#### Other Matters Protected by the EPBC Act

#### Extra Information

#### Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba Ilvia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris		
Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula		
Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris		
Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus		
Goat [2]		Species or species habitat likely to occur within area
Felis catus		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis		
Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus		
House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus		
Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides		
Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area

Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish

Species or species

Name Status	Type of Presence
Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Carrichtera annua	habitat may occur within area
Ward's Weed [9511]	Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera	
Boneseed [16905]	Species or species habitat likely to occur within area
Cylindropuntia spp.	
Prickly Pears [85131]	Species or species habitat likely to occur within area
Lycium ferocissimum	
African Boxthorn, Boxthorn [19235]	Species or species habitat likely to occur within area
Opuntia spp.	
Prickly Pears [82753]	Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii	
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]	Species or species habitat likely to occur within area

#### Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties. Wetlands of International and National Importance. Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the gualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans. State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations: bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

#### Coordinates

-34.12239 142.20254

#### Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Parks and Wildlife Commission NT, Northern Territory Government -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbanum -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbanum -Australian National Herbarium, Atherton and Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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greenedge

# Appendix E: Cultural Heritage Contingency Plan
HPRM Ref: DOC/16/9975

greenedge

## Appendix D: Artefact Scatter 1 – site card

## STILL BEING PROCESSED NOT YET AVAILABLE



#### AHIMS Web Services (AWS) Extensive search - Site list report

Your Rel/PC Number : Buringe Lendfil 2 Client Scivice (D: 220235

Siteff	SlicName	Datam	Zonc	Easting	Northing	Context	Site Status	Sitefeatares	SiteTypes	Septerts
10-3-0022	Disconga Lisan Pir.1	SDA	34	611120	62231039	Open site	Valid	Artiefact: T		
	Contact Search	Recorders	Tini	Cipsile Er	irth			Periolis	2493	
96-3-69793	Barrings Louis Pit 2	GDA	54	611900	6723676	Opensite	Valid	Artelact 1		
	Contact Searle	Recordera	Time	e Caprale fia	cth			Ecculta	3495	

Report generated by AHMS Web Service on 12/04/2016 for Chris Alderton for the following area at Lot : 1, DP,DP1037045 with a Buffer of 1000 meters. Additional Infe: BEF, Number of Aboriginal Sites and Aboriginal objects found is 2. This internation is not paramined to be free from their error examine. Offer of December and December (9756) and its explores and low buffers for any or they are manifer and on the inferences and componences of area at the transmiss.

Netlati

#### If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of
  practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

#### Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are
  recorded as grid references and it is important to note that there may be errors or omissions in these
  recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.



## AHIMS Web Services (AWS) Search Result

Purchase Order/Reference Buronga Landfill 2 Client Service ID : 220335

Chris Alderton

c/o Springton Post Office Springton South Australia 5235 Attention: Chris Alderton Email: chris\_alderton@hotmail.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot: 1, DP:DP1037845 with a Buffer of 1000 meters, conducted by Chris Alderton on 12 April 2016.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

2	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Date: 12 April 2016

greenedge

# Appendix C: AHIMS Database Search

NSW Endangered Ecological Communities

Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (\* rounded to 0.1Å\*; \*\* rounded to 0.01Å\*). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Public Report of all Valid Records of Communities in selected area [North: -34.05 West: 142.14 East; 142.24 South: -34.15] returned 0 records for 3 entities. Report generated on 9/02/2016 9:57 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	N5W status	Comm. status	Records	info
Community		1		Acacia loderi shrublanda		Acacia loderi shrublands	E3		P	i
Community				Acacia metvillei Shrubland in the Riverina and Murray-Darling Depression bioregions		Acacia melvillei Shrubland in the Riverina and Murray- Darling Depression bioregions	E3		ĸ	i
Community				Sandhill Pine Woodland in the Riverina, Murray- Darling Depression and NSW South Western Slopes bioregions		Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	63		P	1

#### NSW threatened and endangered fauna

Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Å\*; \*^ rounded to 0.01Å\*). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Public Report of all Valid Records of Animals in selected area [North: -34.05 West: 142.14 East: 142.24 South: -34.15] returned a total of 1.096 records of 177 species. Report generated on 9/02/2016 9:54 PM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	
Animalia	Amphibia	Hylidae	3207	Litoria raniformis	Southern Bell Frog	E1,P	v	1	H
Animalia	Aves	Anatidae	0214	Stictonetta naevosa	Freckled Duck	V,P		1	
Animalia	Aves	Accipitridae	0218	Circus assimilis	Spotted Harrier	V,P		3	-
Animalia	Aves	Accipitridae	0225	Hieraaetus morphnoides	Little Eagle	V,P		2	1
Animalia	Aves	Accipitridae	0230	AALophoictinia isura	Square-tailed Kite	V,P,3		1	
Animalia	Aves	Rostratulidae	0170	Rostratula australis	Australian Painted Snipe	E1,P	E	4	-
Animalia	Aves	Scolopacidae	0163	Calidris acuminata	Sharp-tailed Sandpiper	p	C,J,K	1	
Animalia	Aves	Scolopacidae	0161	Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	1	
Animalia	Aves	Cacatuidae	0270	ALophochroa leadbeateri	Major Mitchell's Cockatoo	V,P,2		2	1
Animalia	Aves	Psittacidae	0259	^^Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V,P,3		1	i
Animalia	Aves	Meliphagidae	8303	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		8	i
Animalia	Aves	Pachycephalidae	0403	Pachycephala inornata	Gilbert's Whistler	V,P		5	
Animalia	Mammalia	Dasyuridae	1008	Dosyurus maculatus	Spotted-tailed Quoll	V,P	E	1	

# Contingency plan in the event of Aboriginal material being found

Aboriginal object is discovered and/or harmed in, or under the land, while undertaking earthwork activities, the proponent must:

1. Not further harm the object;

2. Immediately cease all work at the particular location;

3. Secure the area so as to avoid further harm to the Aboriginal object;

 Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location; and

5. Not recommence any work at the particular location unless authorised in writing by OEH.

HPRM Ref: DOC/16/9975

greenedge

Appendix F: Site Photos





# **REVIEW OF ENVIRONMENTAL FACTORS**

Name of Project: Buronga Landfill Borrow Pits

Plan Registration Numbers:

Lot 1, DP1037845



Document Prepared by Ece (Izzy) Tunali

Plan Registration Numbers: Lot1, DP1037845

### **Description of Activity**

 Location of activity: (include planning control / zoning of site) Wentworth Shire Council, NSW Arumpo Road, Gol Gol, Wentworth, NSW. Lot 1, DP1037845

Arumpo Road, Gol Gol, Wentworth, NSW. Lot 1, DP1037845 Planning Zone SP2, Special Purpose Zone 2-Infrastructure (Waste or Resource Management Facility) adjacent to Lots 197 & 212 DP 756946

2. Description of activity (including all temporary and ancillary works)

(a). Use of proposed waste cells as borrow pits to supply cover material for the Buronga Landfill Waste Operations

3. Have environmental safeguards and mitigation measures been developed for the activity?

No impacts on environment is expected

- 4. List the attached plans, maps, photographs and diagrams of the site. Buronga Landfill Proposed Site Layout showing waste cells which will be used as borrow pits, which is the subject of this DA.
- 5. Estimated cost of activity and planned time of commencement:
  - \$200,000+ GST
  - Works are scheduled to commence November 2015

#### 6. Reasons for the activity:

Buronga Landfill is running out of covering material so we need to adopt the proposed waste cells as a burrow pits to maintain cover material.

It is an EPA requirement to daily cover the waste, disposed at the landfill as well as interim cover.

# Are there any alternatives other than the preferred option? No

**Does the current LEP and/or REP affect the activity?** No

# Please select the relevant approval bodies that have been consulted through this process or those that require consultation.

- Wentworth Shire Council
- NSW EPA
- 7 Site Conditions (include existing road conditions, present traffic and forecast traffic)

The subject site is located approximately 5 km from Victorian/ New South Wales border. It is located about 2.5 km North on the Arumpo Road from the Silver City Highway turnoff. The subject land is adjacent to the existing waste management facility, located within the existing Special Purpose Zone 2 (SP2)-Infrastructure (Waste or Resource Management Facility), and is separated from sensitive land uses. The surrounding road system has the capacity to cater for the traffic movements associated with the development

#### 8. Project Design

See attached plans

#### 9. Access

Access will be via the Service Road from the Arumpo Road

#### Existing Environment

### 10. Site Description:

The subject area has been purchased by Council, which is around 117 hectares of land to the north of the existing Landfill site, as future expansion. This Land is zoned SP2 under Wentworth Local Environmental Plan 2011 (Wentworth LEP) which allows for landfill and waste management uses.

The site also consists of a former mining site located to the east of the proposed borrow pits.

The proposed borrow pits site is set within a rural landscape predominantly comprising of agricultural land uses and scattered remnant native vegetation. Land surrounding o the subject site is not developed and currently acts as a buffer between the site and surrounding uses and activities.

The nearest farmland is located approximately 500 m to the south-west of the site, Lake Gol Gol is located approximately 1.5 km to the east and an industrial site is approximately 450 m to the west. There are a few residential dwellings along Arumpo Road with the nearest residence being located over 800 m to the south-west of the subject site.

Arumpo Road adjoins the western boundary of the subject site. A small unsealed road runs along the northern boundary of the subject site beginning at Arumpo Road travelling north before turning east and then running south within the eastern boundary of the subject site

#### 11. Surrounding Land Use:

Buronga Landfill- Crown Lands

#### 12. Soil Type:

Sandy loam and clay

#### 13. Climate:

• Temperate, Semi-arid.

#### 14. Flora and Fauna:

- The proposed development area includes some native and non-native vegetation which are classified as Black Box and Chenopod Mallee. During excavation activities these will be removed and transported to landfill.
- None of the threatened species identified in EPBC Protected Matters Search are expected to occur within the work zone as activities will be restricted to the areas already classifies as SP2

### 15. Cultural Heritage within or adjacent to property (including Aboriginal Heritage);

• Please see attached records of heritage search. Works will immediately cease if an item of Cultural Heritage is found.

#### 16. Is the activity to be carried out on / near a wetland community or bushfire prone.

- No. Buronga Landfill is not an identified wetland community and is not listed on the Directory of Important Wetlands.
- Bushfire prone zone area coverage ratio is 51%. Please see attached map.

#### Impact Assessment

Physical and Chemical Impacts:

- Is the activity likely to impact on soil quality or land stability? No
- Is the activity likely to affect a water body, watercourse or wetland or natural drainage system?

  No
- Is the activity likely to change flood regimes, or be affected by flooding? No
- Does the proposal involve the use, storage, or transport of hazardous substances, or the use or generation of chemicals which may build up residues in the environment? No
- Does the activity involve the generation, or disposal of gaseous, liquid or solid wastes or emissions? No
- Will the activity involve the emission of dust, odours, noise, vibration, or radiation in the proximity of residential / urban areas or other sensitive locations?

Yes – noise and vibrations will be produced at the site, however, it will be contained within normal construction tolerances.

• Will the activity increase the erosion hazard at the site? No

### **Biological Impacts**

Is any vegetation to be cleared or modified?

Vegetation to be cleared in association with excavation works for the soil provision from the proposed waste cells. It will include clearing of a mix of nonnative and native species. Vegetation removal associated with works will be predominately introduced species, being black box tress and Chenopod Mallee shrubs. There will also be the removal of some shrubs and dead trees.

- Is there potential for any known threatened flora and/or fauna species to occur in close proximity to the site or the locality? None known
- Is the activity consistent with any applicable recovery plans or threat abatement plans?
   N/A
- Is the activity likely to affect any conservation agreement entered into under the National Parks and Wildlife Act 1974 applied to the land in which the activity relates? No
- Has the activity considered the effect on any wilderness area (see *Wilderness Act 1987*) in the locality?
   No known impacts / no known wilderness area

Community Impacts:

- Is the activity likely to affect existing community services or infrastructure?
- Does the activity affect sites of importance to the local or broader community for their recreational or other values of access to these sites? No
- Is the activity likely to have an impact on economic factors, including impacts on employment, industry and property value? No
- Is the activity likely to have an impact on the safety of the community? No
- Is the activity likely to cause a bushfire risk? No
- Does the activity affect the visual or scenic landscape?
   No
- Is the activity likely to cause noise, pollution, visual impacts, and loss of privacy, glare or overshadowing to members of the community?

Yes, noise – within construction tolerances.

 Is the activity likely to affect the use of, or the community's ability to use, natural resources?

#### Natural Resources Impacts

Is the activity likely to result in the degradation of any NPWS conservation area?

No

Note: Refer to the Plan of Management for that conservation area if the activity will impact it.

#### **Aboriginal Cultural Heritage Impacts**

IF AN ABORIGINAL SITE OF SIGNIFICANCE IS IDENTIFIED, PLEASE STOP WORK IMMEDIATELY AND CONSULT THE LOCAL LALC AND OFFICE OF ENVIRONMENT AND HERITAGE

• Does the proposal affect areas subject to Native Title Claims? None Known

### Other Cultural Heritage Impacts

- Is there an impact on places, buildings, landscapes or moveable heritage items?
   No
- Is any vegetation or cultural landscape value likely to be affected (e.g. gardens and settings, introduced exotic species, or evidence of broader remnant land uses)?

# IF THE PROPOSED ACTIVITY IS LIKELY TO AFFECT AQUATIC SPECIES AND THEIR HABITATS PLEASE FILL IN THE DETAILS BELOW.

• What is the name of the adjacent watercourse(s)? Lake Gol Gol is located approximately 1.5 km to the east of the subject site

Description of works to be undertaken including methods of construction, and timing and duration of works:

- Please identify the obstructions to fish passage temporary and permanent.

  N/A
- Please describe the aquatic habitat conditions at the site particularly riparian and aquatic vegetation, water depth, permanence of water flow and snags in the vicinity of the proposed works. N/A
- Please identify the potential impacts upon aquatic and riparian habitats (both temporary and permanent) N/A
- What are the proposals to mitigate the impacts upon riparian and aquatic vegetation and aquatic habitat?
   N/A
- What are the potential impacts upon water quality of the proposed works? N/A.
- What are the proposals to mitigate the impacts upon water quality? N/A
- What aquatic species (including threatened species, populations and ecological communities) are known to occur within the locality? N/A

### Summary of Impacts

Please summarise the main impacts of the activity

The proposal results in no unacceptable impacts. There will be positive impacts as a result of this development.

1-Environmentally, capping is essential for the degeneration of the waste disposed at Buronga Landfill. Therefore proposal would contribute to the sustainable development of the site.

2-Financially, Council does not need to pay to import soil to Buronga Landfill for their waste procedures.

3-Proposal is consistent with relevant planning instruments and policies

• What are the benefits of such an activity?

The proposed modifications would improve the function and operation of the Buronga Waste Management Facilities therefore considered to maintain the public interest.

#### Declarations

The environmental impact of the proposed activity has been examined, considered and assessed in accordance with the requirements of the *Environmental Planning and* Assessment Act 1979

- No significant impact on the existing environment
- No significant impact pending further information
- REF refused as impact on environment is significant

Comments

Éce (122y) Tunali Waste Project Monager

Name of Assessing Officer

/ flan

Signature of Assessing Officer

Appendix A: Buronga Landfill and Proposed Borrow Pits Concept Drawing



#### Legand

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Cadastre Zone Boundary Subject Lanc SP2 RU1 Infrastructure Zone Primary Production Zone LOCALITY & ZONING Buronga, NSW





Appendix B: AHIMS Search Results Buronga Landfill and Proposed Borrow Pits



#### AHIMS Web Services (AWS) Search Result

Purchase Order/Reference : PO Client Service ID : 18761

Date: 27 August 201:

Ece Tunali 26-28 Adelaide Street

Wentworth 2648 Attention: Ece Tunali

recentlying the Tanton

Email: waste.officer1@wentworth.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot: 1. DP:DP1037845 with a Buffer of 50 meters, conducted by Ece Tunali on 27 August 2015.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

#### If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

#### Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are
  recorded as grid references and it is important to note that there may be errors or omissions in these
  recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

<sup>3</sup> Marist Place, Parramatta NSW 2150 Locked Bag 5020 Parramatta NSW 2220 Tel. (02) 9585 6380 Fax: (02) 9873 8599

Appendix C: Vegetation Removal Map



## Appendix D: BURONGA LANDFILL AND PROPOSED BORROW PITS-BUSH FIRE ZONING MAP



Appendix C: BAM Field Sheets



Assessor(s) Initials	Date	e A	rea (ha)	PCT N	umber		Zon	e Numbe	r	Plot Abbre	viation		
TIM SE HR	8/4/	21		15				1		0	ı		
Within 20 x 2	0 m plot		Species Na	ame	Foli- age	Abund.			Func	tion			
Species Name	Foliage	Abund.						W	ithin 20 x	x 50 m plot			
Eucolistus laugelion	68	1B	TG					Tree DB	1	Count			
Roepens apic	5	300	FG					80+ cm					
Dissocalpus on	18	40	SG					50 - 79 cn	n				
Atriplex stippian	1.	40	SG					30 - 49 cn	n				
Endulary tometica	0.5	20	SG					20 - 29 cn	n				
Rotu Poly	0.2	20	SG					10 - 19 cn	n	1/////	ml		
Salevolaen diac	0-)	20	56					5 - 9 cm	1	1	Z		
Sclevolaein pend	0.2	40	SG:					Tree Re	egenerati	ion <5 cm			
Chenapadium sta	0.1	10	S'F					Hollo	w Bearin	g Trees	X		
1									Lo	gs	No.		
56	3.1	-190						W	ithin 20 x	c 50 m plot			
56	3.1	7	16.5					Total	Length	>10cm diam	,		
TG	8	1	16					7.5 m	Col	BIL			
FG	5		1 Ber					5 2	7 0.5				
	10 A								0.5				
							_						
							Foli	age Cove	r: Record	orded as either Decima			
							to th	is than 1% Ne nearest	, whole 5% if >5	Numbers up 5% cover.	to 5%, d		
							1:	Decimals Whole Nu	(0.1, 0.2 umbers (	2, 0.3) 1. 2. 3)			
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			Bare Ground	d Cover	35	3	5	20	45	65	40		
			Cryptogam	Cover	10	5	70	2	10	20	184		
			Rock Co	ver	$\wedge$		2	0	0	0	0		
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Assessor(s) Initials	Date	e A	rea (ha) PCT	Numb	er	Zo	one Numbe	r F	Plot Abbre	viatio
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Within 20 x	20 m plot		Species Name	Foli-	Abu	nd.		Funct	ion	
Species Name	Foliage	Abund.					W	ithin 20 x	50 m plot	
Euralyptus large	10	2	TG				Tree DBH	1	Count	
Each Mague tomb	5	100	SG				80+ cm			
Dissbraudus auro	T	70	SÆ				50 - 79 cn	n		
Steward of the	1	50	SG-				30 - 49 cn	n 17	,	
R. I. Pali	0.1	20	C.G			-	20 - 29 cm	$\frac{1}{1}$		
Chen a Portune Son	02.1	2	S G				10 - 19 cn	n     /	1	
Solar politica spil	21	IA	FA			-	5 - 9 cm		1	
SUIGH-UNA (SUPIR)	9 0 1	10	10				Tree Re		n <5 cm	
51-	110	102				-	Hollo	w Bearing		-
56	1.2	190	$C_{1,,r}$				TIONO		nees	ET
30	1.6	5					14/	ithin 20 v	50 m plat	1.1%
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						to	the nearest	5% if >5%	% cover.	
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			Chintogam Cover		1	20	75	20	5	54
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			KOCK COVER	E	>	0	0		0	
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Within 20 x 2	0 m plot		Species	Name	Foli-	Abu	ınd.			Funct	ion				
Species Name	Foliage	Abund.			-34			1	W	ithin 20 x .	50 m plot				
Eucalyptus landoll	5	1	TG						Tree DBH	1	Count				
Endedacin tomed	1	30	SG						80+ cm						
Scleviaria part	Z	300	SG						50 - 79 cm	1 /		1			
Sclevolaeus diar	0.5	50	SG						30 - 49 cm	ו ו		1			
Dissocarpup burg	0.5	20	SG						20 - 29 cm	ז ו <u>ו</u>		1			
Roepern abic	D.1	5	FG						10 - 19 cm	n j		1			
AFK Dles Stipertute	0.1	15	SG						5 - 9 cm						
Maineuva previsiona	DZ	15	SG						Tree Re	generatio	n <5 cm	X			
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			Litter	Cover	6	5	30	0	70	90	90	69			
			Bare Grou	nd Cover	30	2	6	0	10	2	5	21.4			
			Cryptoga	m Cover	e	9	2	5	Ø	0	0	1			
			Rock	Cover	C	)	C	>	0	:0	0	Õ			
			We	eds	Foli	age	Abu	und.	We	eds	Foliage	Abund.			
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Within 20 x 2	0 m plot		Species I	Name	Foli-	Abu	ind.	515	S. 19	Funct	ion	
Species Name	Foliage	Abund.			age			-	W	ithin 20 x .	50 m plot	
Encalyptus largef!	25	2	16						Tree DBH	•	Count	
Mairean burlif.	5	50	SG	94					80+ cm			
Encluderen toman	5	100	SG	5 I I					50 - 79 cm	י 1	1	2
Rodpeva april	5	300	FG	£					30 - 49 cm	ו ו		1
Alordler stippiter	1-	50	SG						20 - 29 cm	ו י		1
Dissocarpus gum	1	50	SG						10 - 19 cm	ו		
Roly Poly	1	50	SG.						5 - 9 cm			
Scletolania Alita	1	100	SG						Tree Re	egeneratio	n <5 cm	×
Sclewlaery die	0.5	50	SG						Hollo	w Bearing	Trees	V
Chenopodium SHP	0.1	10	SG							Log	s	
Rhagodia spinesen	. 0-1	1	SG						Wi	ithin 20 x .	50 m plot	
0 1									Total	Length >	10cm diam	
SG	14.7	461							25	M Coui	nt	
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Assessor(s) Initials	Date	A	rea (ha)	РСТ	Numbe	er	Zon	e Numbe	er 🛛	Plot Abbr	eviation
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<sup>1</sup> Within 20 x 2	20 m/plot		Species I	Name	Foli- age	Abund.			Fun	ction	
Species Name	Foliage	Abund.		~				И	ithin 20	x 50 m plot	
Rhagodia Simos	8	80	56					Tree DB	H	Count	
Dissocardi san	m 3	200	SU	1				80+ cm		1	1
Enclustacon tom	1	50	50	1				50 - 79 ci	n		
Sclotlain diacant	0.5	30	56	S				30 - 49 ci	n	11111	6
Roly Polon	01	1D	56	-				20 - 29 cr	n /	11/11	5
Therander	3.1	5	56					10 - 19 cr	n j	1/1	4
I annia brevitoli	D-1	10	SG					5 - 9 cm		1.00	,
Encaliptustaria	c. 15	9	T6					Tree R	egenera	tion <5 cm	X
Mielden lances Pak	1 .	2	SG					Holld	w Beari	ng Trees	V
Frecaron Saddy lle	1	1	SG					1.2	Lo	ogs	jer so e
Austro douthor a	0.1	20	66					И	ithin 20	x 50 m plot	
Sclensland news	0-3	20	56					Total	Length	>10cm dian	n.
Vitudinia	0.1	l	Fb						2	9	
Austrostilla	0-1	1	66	-			~	1.5	21	511	) ~
							] _	1 _	2,1	0,16,	210
TG	15						] 4	-, >			
SG	13-1	10									
66	0.2	Z			3		Foli	age Cove	r: Recor	ded as eithe	r Decimals
FG	0.1	1					to th	ne nearest	5% if >	5% cover.	10 5%, 0
						· · · · · · · · · · · · · · · · · · ·	:	Whole N Nearest .	umbers ( 5% (5, 1	(1, 2, 3) 10, 15)	
							Abu	ndance:	Recorde	d as either C	ounts if
							<i>less</i>	than 10, c	r estima	ted in interva	als when
								Counts (	1, 2, 3	)	
							] -	Estimate	s Interv	als' (100, 20	0, 300)
					Ve	getation	Integ	grity - Fu	nction		
			Within five	1m2 plot	<u>s</u>		P	lot Numbe	er .		Average
				,	1		2	3	4	5	Sum
			Litter C	Cover	7	0 7	70	60	80	20	60
			Bare Grou	nd Cover	2	0 2	0	20	15	75	30
			Cryptogar	n Cover	0	> (	>	0	0	0	0
			Rock C	over	0	) (	2	0	0	0	0
			Wee	ds	Folia	age Ab	und.	We	eds	Foliage	Abund.
			Schimus	barbu	1.0.	1	50				2.0
			Wirin N	on flo	23	2	00	HT	*		
			Chill 1	Jecol	0.	2	0		-		
			Med, ferra	m Jarn	DO.	1 2	0	HT			
			- 5		1						
									5		

Assessor(s) Init	ials	Date	A	rea (ha)	РСТ	Numbe	er		Zon	e Numbe	r   F	Plot Abbre	viation
TM, SE, MI,	OB	31/031	121 2	0 ×50	58					2		a	
Within .	20 x 2	0 m plot		Species	Name	Foli- age	Abu	nd.			Funct	ion	1.00
Species Name	LF	Foliage	Abund.							W	ithin 20 x .	50 m plot	
Belah	TG	5	3							Tree DBH	1	Count	
hopera Apiculate	FG	02	6'0							80+ cm			
Sclerolena cisar	SG	15	200							50 - 79 cn	n  \		
Moporum	56	0.3	1							30 - 49 cn	n 111		V
BRENifolia	SG	8	30							20 - 29 cn	n 11		
Austro Stipa	CaG	2	620							10 - 19 cm	י   נו(I		
Salsola train	56	0.1	5							5 - 9 cm			
Dissocurpus	56	0.5	30							Tree Re	egeneratio	n <5 cm	X
Rhad Spin	367	0.5	6							Hollo	w Bearing	Trees	$\checkmark$
Tomentosa	55	0.5	10								Log	s	
been Alexhioum	FG	Ort:	2							W	ithin 20 x :	50 m plot	
		11-2	2							Total	Length >	10cm diam	
24-7	56	25-2	212	\$G =	7				H	TT JUN	Let	1.	15
	FG	0.3	62										
	T6-	5	1	-	2								
	56	24.7	7	66 -									
	F6	0.3	2										
	66	2	1						Folia	age Cover	r: Recorde	d as either	Decimals
									to th	e nearest .	, whole N 5% if >5%	umbers up % cover.	to 5%, oi
									-	Decimals Whole NL	(0.1, 0.2, Imbers (1,	0.3)	
									-	Nearest 5	5% (5, 10,	15)	
									Abu	ndance: A	Recorded a	as either Co	ounts if
									less i	than 10, o	r estimate	d in interva	ls when
									- 10.	Counts (1	(, 2, 3)	20. )	
									-	Estimates	"(10, 20, . "Intervals	30) 5' (100, 200	), 300)
				-									
						Ve	getati	ion I	integ	prity - Fur	nction		
				Within five	1m2 plot				Р	lot Numbe	r		Average
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1112 0100	1		2		3	4	5	Sum
				Litter	Cover	30	3	85	5	70	20	70	63
				Bare Grou	nd Cover	32	>	15	-	-15	35	15	22
				Cryptoga	m Cover	0		0		0	0	0	0
				Rock (	Cover	0	)	0		0	0	0	0
				Wee	eds	Folia	age	Abu	nd.	We	eds	Foliage	Abund.
				Onion 3	Lees	KG.	1	8					
				Arabian	grass	× 0.8	3	40	>				
				D Must	and	K ().	1	20	3				

Assessor(s) Initials		Date A		Area (ha) PCT	Numbe	r	Zone Numb	er	Plot Abbreviation					
TM, SE, MI, DB		31/03 20		0 × 50 58			2		B					
Within 20 x 2		?0 m plot		Species Name	Foli- age	Abund.		Fund	Function					
Species Name	LF	Foliage	Abund.				Within 20 x 50 m plot							
Belah Casuarin	TG	15	10				Tree DB	H	Count					
Tomentosa	SG	12	20				80+ cm	1						
Ropera Apicula	FG	0.5	80				50 - 79 c	:m						
Rhag spin	59	2000	3				30 - 49 c	.m 11	1					
ANA/	1	1-71	11	/			20 - 29 c	m M		V				
CLEGAR	The	At 1	Sec	2			10 - 19 c	m IN	Hr ILH'II					
Isocar Aug formobility	SG	2:	100				5 - 9 cm	5-9 cm						
Slue Bush Brenthi	SG	0.1	7				Tree R	Tree Regeneration <5 c						
Hrider Denhibush	5 SG	0.1	8				Holl	ow Bearin	a Trees	X				
terester Etention	2	NOV	8					Lo	as					
electrono Autentocusa	SG	15	300	,			И	Vithin 20 x	50 m nlot					
alsola fatiz	56	0.1	E				Total Length >10cm diam			n				
ColliALacult	E	0 1					THE HIR AIM	IN AL	File in	×1 2				
tracus		2.03	7	C C -7			Mil Her Her	MOR		ni i ce				
114403	56	10 cr	1123				1							
	Th	15	300	1. 1.			_							
	EL	0.5					-							
	10	0.5	1				Foliago Cov	T-l'and the second s						
							if less than 1%, Whole Numbers up to 5%, or							
							to the nearest - Decimal	s (0.1, 0.2	% cover. 2, 0.3)					
							<ul> <li>Whole Numbers (1, 2, 3)</li> <li>Nearest 5% (5, 10, 15)</li> <li>Abundance: Recorded as either Counts if less than 10, or estimated in intervals when &gt;10.</li> <li>Counts (1, 2, 3, )</li> </ul>							
				-										
	_													
						_	- Estimate	25 (10, 20,	5) 1, 20, 30)					
							- Estimate	Estimates 'Intervals' (100, 200, 300)						
			· · · · · · · · · · · · · · · · · · ·				-							
				Vegetation Tabe with Free star										
						Plot Number								
				Within five 1m2 plot	1		2 3	3 4		Average Sum				
				Litter Cover	100	~ 1	0 28	ie	10	ILC .				
				Bare Ground Cover	1	1	5 100	00		42.6				
				Cryptogam Cover				1	10	41.4				
				Rock Cover	p.30	M (				T.L A				
				Weeds	Folia			Weede		Abund				
				Wild Ama Law of			~	rolidge		Abund.				
				Mi non novel	10.1		< 1							
				A CITE A DOK MOST	3	_								
				Mt the 100 x	in m									
				Schimus Barbar	10.	12	o		_					
										6				

Assessor(s) Initials	Date A		rea (ha) PCT N		umber		Zone Number		r I I	Plot Abbreviation				
TM, SE, DB, HR	06/04/21			S	S.		3		3		a			
Within 20 x 2	Species Name Foli- Ab		Abu	nd.		Function								
Species Name	Foliage	Abund.	4						Within 20 x 50 m plot					
Casuarina Dampar	1	0	TG						Tree DBH	1	Count			
Roppica Aficulat	-1		FG						80+ cm					
Dissocard. & Paradox	20	1000	56						50 - 79 cm	1 1				
Sterdern Patentocuseus	200	2	SG						30 - 49 cm	1 1				
Marcine Real	1	6	56						20 - 29 cm	n l				
Palerollon Diraile	. 4	100	SF.					1	10 - 19 сп	1				
Tom la late	.1	10	SG						5 - 9 cm					
P he Pres	1	1	C.F.		-			-	Tree Re	egeneratio	on <5 cm	X		
Aviolan chiplate	.1	17	SG					Hollow Bearing Trees						
Mipler Stiphara	7	10						Logs						
C.C.	0.1	7	t					Within 20 x 50 m plot						
-30 EL	0.1	3101	10 J					Total Length >10cm diam						
 	7		100	-	-			11.16	Total		TOCHT GIGHT	1 contratant		
10	6		1.2					the	1	6	1134			
- Jai			1.6		-			1						
			-			_		1						
X		i					_	Foli	Decimale					
								if less than 1% to the nearest Decimals		, Whole N	Numbers up	to 5%, or		
							_			(0.1, 0.2)	% cover. . 0.3)			
									Whole Nu Nearest S	ımbers (1 5% (5, 10	, 2, 3) , 15)			
						_	_	Abundance: Recorded a less than 10, or estimated >10. - Counts (1, 2, 3) - Estimates (10, 20, 2). Estimates (10, 20, 2).		Recorded r estimate	as either Co ed in interva	ounts if als when		
							_							
	1									s (10, 20,	30)	1 200 1		
	1							- Estimates inte			5 (100, 200	, 300)		
	1													
			Vegetation				ion	Integrity - Function						
								Plot Number						
			Within five 1m2 plots		1	_		2	3	4	1 5	Average Sum		
			Litter (	over	1		- 7-		5			10		
			Bare Grou	nd Cover	100	× 60 50 × 60 50 × 70 5		0	DC	A.	0	11		
		-	Chyptogar		2					70		1211		
			Dock C	`over	N R			2	30	0		12.4		
	-		Wee	de	Foliage		Abr	<u>)</u>	O Ma		G			
			Wee	205			ADL	ina.	weeds		rollage	Abund.		
			W.14 100	<u>^</u>				Ø	н			·		
								_						
											_			
					1	- 1			1		1	1		
Assessor(s) Initials	Date	e, A	rea (ha)	PCT	Numb	er	1	Zon	e Number	P	lot Abbre	viation		
----------------------	----------	--------	--	-----------	-------	------	------	--------	-------------	--------------------------	---------------------	--------------------		
TM.SE HR	7/4/	21		4	58		1	-	3		6			
Within 20 x 2	0 m plot		Species	Name	Foli-	Abu	ind.		Cold a la	Functi	ion			
Species Name	Foliage	Abund.			dyc			1	W	thin 20 x s	50 m plot			
Selero Datarit.	30	2000	SF						Tree DBH		Count			
Selero diacant	5	200	56						80+ cm					
RoeDera aDir	0.1	2	FG						50 - 79 cm	1 1	-	1		
Dissocar Pus para	20	500	SG						30 - 49 cm	n d		1		
		2							20 - 29 cm	1				
56	55	2700							10 - 19 cm	1		-		
F6	0.1	1							5 - 9 cm					
•			56 - 1	ζ.				1	Tree Re	generatio	n <5 cm	0		
			54 -	F				1	Hollo	w Bearing	Trees	0		
								1		Logs				
								-	Wi	thin 20 x 5	50 m plot			
								-	Total	ength >	10cm diam			
			1					-	11	7 Cour	1t			
								8-	> 7.5	1.5	TI	2		
								1 '	2,20	, 4.	, >,/	, ∠		
						-	-	1						
								Foli	age Cover	Recorde	d as either	Decimals		
								if les	s than 1%	, Whole N	umbers up	to 5%, or		
								-	Decimals	(0.1, 0.2,	0.3)			
			·					1 :	Nearest 5	5% (5, 10,	15)			
									undamaar (	anardad -	a aith an C	unta if		
				-				less	than 10, of	r estimated	d in interva	unts il Is when		
								>10	Counts (1	(, 2, 3)				
								1 :	Estimates	(10, 20, . 'Intervals	30) :' (100. 20(	7. 300 )		
									2001110200	11120/14/2	(100) 200	,,		
						-	_							
			1. Star 1. Sta	2 3	Ve	geta	tion	Inte	arity - Fur	nction	1.1			
					T			F	lot Numbe	r		Augrage		
-			Within five	1m2 plot	5	1		2	3	4	5	Sum		
			Litter	Cover	11	2	5	5	7	5	170	15 ()		
			Bare Grou	ind Cover	B	0	G	Б	20	65	5	128		
			Cryptoga	m Cover	N	0	71	0	4D	20	0	2002		
			Rock	Cover	0	>		2	0	20	1	0.2		
			We	eds	Fol	iage	Ab	und.	We	eds	Foliage	Abund.		
			Sade		D	1	1							
			U			1								
					1-						· ·			
									-					

Assessor(s) Initials	Date	e 🖌	rea (ha)	PCT N	lumbe	er		Zon	e Number	P	lot Abbre	viation
TM SE DB, HR	06/04	121		58	2				3		С	
Within 20 x 2	20 m plot		Species	Name	Foli- age	Abu	nd.			Functi	on	112.1
Species Name	Foliage	Abund.			ugu			1	Wi	thin 20 x 5	50 m plot	
Scherolena Patentic	20	2000	SG						Tree DBH		Count	
D.36 Cashut	10	1000	SG						80+ cm		8	
Tomentaca		1	SF						50 - 79 cm			
								1	30 - 49 cm		X	
5(5	30.1	BOOT					_		20 - 29 cm			
									10 - 19 cm		<u> </u>	
			6	5				-	5 - 9 cm			
						1	_	-	Tree Re	aeneratior	ו <5 cm	X
	· · · · · · · · · · · · · · · · · · ·	· · · ·							Hollo	w Bearing	Trees	X
						1		19	Tione	Logs	11005	0
		i							Wi	thin 20 x 4	n nlot	
								-	Total	enath >	10cm diam	
							_			0	- br.	
		·										
	<u>.</u>					·		ł				
								Foli	ane Cover	- Recorde	d ac either	Necimale
								if les	is than 1%,	Whole N	umbers up	to 5%, or
						1		to tr	Decimals	(0.1, 0.2,	o cover. 0.3)	
								1 :	Whole Nu Nearest 5	mbers (1, % (5, 10,	2, 3) 15)	
							_	Abu less	ndance: A than 10, of	Recorded a	s either Co 1 in interva	ounts if Is when
					_			>10.	Countr (1	221		io mien
								-	Estimates	(10, 20, 1	30)	
								-	Estimates	'Intervals	" (100, 200	, 300)
								-				
						-	_					
							_		-	11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		
				1.1	Ve	getat	tion	Integ	grity - Fur	nction		516.9(5)
			Within five	1m2 plots	, <u> </u>	4		۲ 		r I a		Average Sum
				_		1		2	3	4	5	
			Litter (	Lover	10	)	Ś	5	5	10	5	/
			Bare Grou		17	0	7	<u>ن</u>	80	00	+0	1.6
			Cryptoga	m Cover				1	3	3		1.8
			ROCK C	over		-	C	)	0	0	6	0.2
			Wee	eds	Foli	age	Abi	und.	We	eds	Foliage	Abund.
	-		ARabian	grags	0.	1	10	୭				
			Sage		10	)	20	00				
			onion 1	need	4		Sa	Ő				
			Canel M	elon	0	·/		1				
			Barley o	yours	6		1					
			,									

Assessor(s) Initials	Date	e A	rea (ha)	PCT N	umb	er	7	Zone Number	r   P	lot Abbre	viation
TM SE HR	7/41	2.1		5	в			4		a	
Within 20 x 2	0 m plot		Species	Name	Foli- age	Abun	d.	1	Funct	ion	12,323
Species Name	Foliage	Abund.			-			W	ithin 20 x :	50 m plot	
Nairegna brev	115	15	SG					Tree DBH	1	Count	
Dissocardus AW	1 3	50	SG					80+ cm		0	1
Enchylanon Jom	2	10	SG					50 - 79 cm	1		/
Sclerelaener ment	5	200	SG					30 - 49 cm	1	1	
Repera april	0.1	2	F6					20 - 29 cm	1	1	
Adgrostipa scapre	0-1	5	66					10 - 19 cm	1	1	
Catotta	Ant	+0						5 - 9 cm	1		
Roly Poly	0.1	2	56					Tree Re	generatio	n <5 cm	X
Viltadina	0.1	10	FG					Hollo	w Bearing	Trees	- X
Selevalaen Macad	6. 0.7	30	56						Logs		
		207						Wi		50 m plot	
SI	253	3076						Total	Length >	10cm diam	
FG	0.2	X2						ر ر		t	
66	0-1	1									
			86 -6	3							
			Fir-	2							
			6.6 -	1							
							1	Foliage Cover	r: Recorde	d as either	Decimals
							-it	f less than 1% o the nearest .	, Whole N 5% if >5%	umbers up 6 cover.	to 5%, or
								- Decimals	(0.1, 0.2,	0.3)	
								- Nearest 5	5% (5, 10,	15)	
								hundance: A	Recorded a	ns either Co	ounts if
								ess than 10, of	r estimated	d in interva	ls when
							-1-	- Counts (1	(, 2, 3)		
								- Estimates - Estimates	5 (10, 20, . 5 'Intervals	30) :' (100, 200	n, 300)
										•	
			100	2.2	Ve	getatio	on Ir	ntegrity - Fur	nction	1.631	Margary
			Mithin Gue	1				Plot Numbe	r		Average
			willing five	1112 piols	1	L	2	3	4	5	Sum
			Litter (	Cover	4	0	2	60	1	25	25.6
			Bare Grou	nd Cover	4	0	80	, 10	98	70	59.6
			Cryptoga	m Cover	Ż	7	10	0	0	0	3
			Rock (	Cover	Ô	>	1	0	$\mathcal{O}$	0	0.2
			Wee	eds	Foli	age /	Abun	d. We	eds	Foliage	Abund.
			Onio	n Wes	1		150	2			
			Ster "	Thistle	3	·	300	>			
			Wild	sade	0.	.3	100				
			Areber	6 Crass	0.	2	100				
			Maltese n	Lockson	0.	Ĩ	10				

Assessor(s) Initials	Date		rea (ha)	PCT N	lumbe	r		Zone	e Number	r P	lot Abbre	viation
TM SE HA	7/41	21		5	8				4		6	
Within 20 x 2	0 m plot		Species I	Name 1	Foli- age	Abu	nd.			Functi	ion	
Species Name	Foliage	Abund.							W	ithin 20 x :	50 m plot	
Roenera apic	10	300	FG.						Tree DBH		Count	
Rhagodia spin	1	8	SG						80+ cm			
Mailcana brev.	1.	4	SG						50 - 79 cm	1 /	. / /	3
Dissocar Dus bif	5	200	SG						30 - 49 cm	n Í		
Schernlagen Dateri	20	IDOR	SG						20 - 29 cm	1		
Endylacha tom	1-	10	SG						10 - 19 cm	1		
Austinstin, scabru	0-1	1	66						5 - 9 cm			
Vittadina SPD	0:2	10	FG.						Tree Re	generatio	n <5 cm	
Casuanu panper	5	1	TG						Hollo	w Bearing	Trees	J
		5						1	1.321.5	Logs	s - Roya	-1 T 2 Y
5(7	7\$	180							Wi		50 m plot	
$F(\tau)$	10.2	30	2						Total I	Length >	10cm diam	
TG	5		56 - 1	5					2	9 m	ıt	
6-6	0.1	1	18-6 - T					7				
· · · · · · · · · · · · · · · · · · ·			"1 fr :					3	, 26			
			46 -	(								
								Folia	nge Cover	Recorde	d as either	Decimals
								to th	s than 1%, e nearest .	, Whole N 5% if >5%	umbers up 6 cover.	to 5%, or
		· · _ ·						-	Decimals Whole Nu	(0.1, 0.2, Imbers (1.	(0.3)	
								-	Nearest 5	% (5, 10,	15)	
	j j							Abui	ndance: k	Recorded a	as either Co	ounts if
								less t	than 10, oi	r estimated	d in interva	ls when
							-	-10.	Counts (1	, 2, 3)	20. 1	
								-	Estimates	'Intervals	30) 1 (100, 200	7, 300)
			Sec. 2		Veg	jetat	ion I	nteg	rity - Fur	nction	1000	i. cont
			Within five	1 m 7 plata				P	lot Numbe	r		Average
			willing the	Inz plots	1	10	2		3	4	5	Sum
			Litter C	Cover	9	5	5	-	3	90	90	56.6
			Bare Groun	nd Cover	0		90	)	96	Ó	0	37.2
			Cryptogar	n Cover	C	7	Ò		0	0	0	0
			Rock C	over	0	7	0		0	0	0	0
			Wee	ds	Folia	ige	Abu	nd.	We	eds	Foliage	Abund.
			Conion	Wed	1		57	>				
			Wild S	agr	2i		5	0				
			Arabian	avass	0.	1	E					

Assessor(s) Init	ials	Date	.	Area (ha)	PCT N	lumber		Zon	e Number	- F	Plot Abbre	viation
TM. SE, DB, HR		96/04			1.	20			5		۵	
Within .	20 x 2	0 m plot		Species	Name	Foli-	Abund.			Funct	ion	10.00
Species Name	LF	Foliage	Abun	d.		aye			W	ithin 20 x	50 m plot	
Dilla Angustifatium	SA	2.	50						Tree DBH		Count	
Roperon A Picula to	FG	S	300					-	80+ cm			
Rhaa Suin	S6-	F	4						50 - 79 cm	1		
Scie Folle Dianthen	SG-	ost	10						(30) - 49 cm	n an		
Tomentosa	S.G	0.7	30					1	20 - 29 cm	1 101	1	
Maeri Row	SG	-1	5					1	10 - 19 cm			
Scienticusau	SG-	24	10						5 - 9 cm			
O'SSONO (ALS Pando)	S:G-	29	10	)					Tree Re	generatio	n <5 cm	
Second	SG	- if	1						Hollo	w Bearing	Trees	1
Oleosa Eucaludus	TG-	15	4							Log	s	
Geostoppiq 2			0					-	Wi		50 m plot	
	SG	3.1	1	56.4					Total	Length >	10cm diam	
	16	25		3601				IVE	IHT II	Cort	1	
	F6-	5	i	16-1				201	200	<u>ii</u>		
				1 25 1		-						
												75
								1				
								Foli	age Cover	Recorde	ed as either	Decimals
								if les	ss than 1%	, Whole N	lumbers up % cover	to 5%, or
								-	Decimals	(0.1, 0.2,	0.3)	
								1 :	Nearest 5	imbers (1, 5% (5, 10,	, 2, 3) . 15)	
								1				
								less	than 10, of	r estimate	as either Co d in interva	ounts if Is when
								>10	Counts ( i	(23)		
									Estimates	(10, 20,	30)	1 200 1
			1					-	Estimates		5 (100, 200	, 300)
				_				-				
								-				
				and spa		Ver						
				Store and a	1.1	vege	etation	Inte	grity - Fui			82.13-1
				— Within five	1m2 plots	;		י ר				Average Sum
				Litter (	Covor	1	0	۲. ط	3	7	) jc	1.67
				Bare Crow		14	3)~	11	10	SO	5	55.6
				Cryptocry	m Cover			0	40	64	06	43.8
				Dork				<u></u>	5	5	5	5
				RUCK		E olio			0	0` odc	Eelin	0
				wee	SUS .	rollag	e AD	und.	we	eas	rollage	Abund,
				wiry no	en _	10	- 3	60	MI			
	_											
									· · · · · · · · · · · · · · · · · · ·			
							_					

Assessor(s) Init	ials	Date	e	Area (ha)	PCT N	umbe	er		Zon	e Number	P	lot Abbre	viation
TM, SE, OB, HR		06/04	1/4		170			-		5		8	
Within .	20 x 2	0 m plot		Species	Name	Foli-	Abu	nd.	ú. J	16,777	Functi	ion	Y
Species Name	LF	Foliage	Abur	d.		uge				W	thin 20 x :	50 m plot	
Dissocar Pus	S.G	2	100							Tree DBH		Count	
Sclewien Ritento cupus	SG-	50	boo	0						80+ cm			
Auctrosting scales	66	.4	46							50 - 79 cm	1		
Rhaddia Sp. n	SG	-	1							30 - 49 cm	1		
Magino Beer	SG-	-1	1							20 - 29 cm			
fomentoxa	50	- N	2							10 - 19 cm	1		
Roppers Apicular	FG	-1,	20							5 - 9 cm			
Deforme in Paisy	<b>F</b> 6-	91	20	,						Tree Re	generatio	n <5 cm	X
Pine,	TG	1	0							Hollo	w Bearing	Trees	X
											Logs	5	
	56	52.3	inte	th		-				Wi	thin 20 x 5	50 m plot	
	FG	0.2	WO)	2						Total I	.ength >	10cm diam	
	676	0.1	n.	St - 6						t no	Cour	)t	
	Th	2	D	16 -					-				
	ų_			16-7					i.				
				184	0								
									Folia	age Cover	Recorde	d as either	Decimals
								_	if les to th	s than 1%, he nearest .	. Whole N 5% if >5%	umbers up 6 cover.	to 5%, or
									-	Decimals Whole N	(0.1, 0.2,	0.3)	
									-	Nearest 5	% (5, 10,	15)	
		N						-	Abu	ndanca: (	acordod -	ac aithar C	ounto if
									less	than 10, of	r estimate	d in interva	als when
								-	>10. -	Counts (1	, 2, 3)		
									Ī	Estimates Estimates	(10, 20, . 'Intervals	30) :' (100, 20(	. 300)
				-								(	,,
								-					
					i producer de la compañía de la comp	Ve	oetat	ion I	Intec	arity - Fur	nction	12.23	1.00
						T			P	lot Numbe	r		Average
					1m2 plots	1		2	2	3	4	5	Sum
				Litter (	Cover	1	2	10	$\sim$	30	5	10	12
				Bare Grou	nd Cover	12/	· ·	25	40	7751	7A	40	11-0
	-			Civiptoga	m Cover			7	<sup>v</sup>	20	75	70	22
				Rock (	Cover			<u></u>	2	3	20	50	0
				Wee	ds	Foli	age	Abu	ind.	We	eds	Foliage	Abund.
				ulied these	fin-	. 1		1				- Julyo	
				Acus	Duri			10	2			· · · · · · · · ·	
				mabion	years	1			-				
		I		- 1 1.1.1 C -	Λ		-						
	_			Wild Sog	wood			D	<b>-</b>				
				Wild Sog	weed	-1		đ	1				
			-	Wild Sog Onion Hare	weed	-1			1				

Assessor(s) Initials	Date		Area (ha)	РСТ	Numb	ег		Zon	e Number		Plot Abbre	viation	
TM SE HR	7/4/	21		Mille	e 1-	70			5		6		
Within 20 x 2	0 m plot		Specie	s Name	Foli- age	Abu	ınd.	123	AN	Funct	tion		
Species Name	Foliage	Abun	d.						Wi	ithin 20 x	50 m plot		
Dissocarpos paral	3	150	S SG					1	Tree DBH		Count		
Eucalytan oleosa	5	10	TG						80+ cm				
Sclepplaena Devel	1	50	) SG						50 - 79 cm	)			
Roly Poly	0.1	5	SG						30 - 49 cm	1 <i>[</i> .	(1)	4	
Endurlage tom	0.3	10	SG						20 - 29 cm	1	0	3	
<i>J</i> '		(P)							10 - 19 cm	1 1	1/11	5	
56	4.4	200	4						5 - 9 cm		1	3	
TG	5	1	56 -	4					Tree Re	generatio	on <5 cm	X	
			16 -	1					Hollo	w Bearing	Trees	V	
	1							13X - 2		Log	IS		
									Wi	thin 20 x	50 m plot		
						-			Total I	.ength >	10cm diam		
									34 n	Cou	urt		
									17 8	15	>		
									1,01	1	, >		
											r.		
								if les	age Cover	Record	ed as either Numbers un	Decimals	
								to th	ne nearest	5% if >5	% cover.		
								-	Whole NL	imbers (1	, 2, 3)		
								-	Ivearest 5	% (5, 10	, 15)		
								Abu	ndance: A	Recorded	as either Co	ounts if	
								<i>less</i> >10.	tnan 10, oi	estimate	ea in interva	is when	
			_						Counts (1 Estimates	;, 2, 3) ; (10, 20,	30)		
			_						Estimates	'Interval	ls' (100, 200	, 300)	
			_										
			_										
								-					
			-		-		_			_			
			100 20		Ve	geta	tion	Integ	grity - Fur	nction	1		
			- Within fiv	re 1m2 plo	ts	1		۲ ۲		r A	1	Average Sum	
·		_	Litta	r Cover		<u> </u>	Ô	2	3	4	<b>D</b>	75 0	
			Rare Gr		4	0	0	4	75	00	10	12.8	
			Cryptor	am Cover	- 5	0	10	2	5	15	10	Ц	
			Rock	Cover		>	0	>	n	0	0		
			W	eeds	Fol	iage	Ah	und.	We	eds	Foliage	Abund	
			D. Jury A	the de		)	2	0			. sindye		
			()	voon lion	- 1	-		V	r( (				
					-			_					
									7				
					- 1 I			=					

Assessor(s) Initials	Date	A	rea (ha)	РСТІ	Number		Zon	e Numbe	r	Plot Abbre	viation
TM SE HR	714	21		117	0	6		5		d	
Within 20 x 2	20 m plot		Species	Name	Foli-	Abund.	6	15	Func	tion	
Species Name	Foliage	Abund.			uge			W	(ithin 20 )	x 50 m plot	
Maireaux brev	0.1	5	SG					Tree DB	н	Count	
Loepera apic	3	100	FG					80+ cm			
Enchularin tom	1	10	SG					50 - 79 cr	n		
Eurollyphus pleasa	5	4	TG					30 - 49 cr	n		
Sclerblaein diac	4	50	SG					20 - 29 cm	n	(	l
Dissocarps our	16	100	SG					10 - 19 cm	n  /,	11/11	19
Roly Poly	0.2	20	SG					5 - 9 cm		11	2
<u> </u>								Tree Re	egenerati	ion <5 cm	1
56	11.3	DKS	5					Hollo	w Bearin	g Trees	V
F6	3		56 -	Ŝ.				17 N N	Lo	gs	s 211 - 3
16	5	_1	- F& -					W	ithin 20 x	x 50 m plot	
			10 .	4			_	Total	Length	>10cm diam	
							_		2 m	int:	
							-	3,7,	2		
							-	1 8			
							-				
							Eali	ana Cava	Pasar	dad ac aith a	Desimals
							if les	age cove ss than 1%	h, Whole	Numbers up	to 5%, or
							to th	ne nearest Decimals	5% if >5 ; (0.1, 0.2	5% cover. 2, 0.3)	
	· · · · · · · · · · · · · · · · · · ·						- :	Whole Nearest	umbers ( 5% (5, 1)	(1, 2, 3) 0, 15)	
							-		1-7		
							Abu less	than 10, o	Recordeo or estimat	l as either Co ted in interva	ounts if als when
							->10	Counts (	1.2.3)	)	
								Estimate.	s (10, 20, s 'Interva	, 30) als' (100-201	1 300 1
								LStindte.	5 11101 14	<i>ns</i> (100, 200	, 500)
							-				
					Veg	etation	Inte	grity - Fu	nction	56. L (	-1-1-2
			Within five	1m2 plot	-		P	Plot Numbe	er		Average
			<i>within ne</i>	1112 0100	1		2	3	4	5	Sum
			Litter	Cover	3	6	0	30	95	5	38.6
			Bare Grou	and Cover	80	2	5	60	5	80	52
			Cryptoga	m Cover	5	C	)	5	0	0	2
			Rock	Cover	D	6	2	0	D	0	0
			We	eds	Folia	ge Ab	und.	We	eds	Foliage	Abund.
			C	>			-				
							_			_	
		_					_				
					-						
					1						

ha a

	Assessor(s) Initials	Date	A	rea (ha)	PCT N	lumber		Zоп	e Numbe	r F	Plot Abbre	viation
	TM SE HR	3/4/	21		25	2			6		a	
	Within 20 x 2	0 m plot		Species	Name	Foli- age	Abund			Funct	ion	
	Species Name	Foliage	Abund.						W	ithin 20 x .	50 m plot	
- 0	Dissocarpus ourn	6	500	SG					Tree DBł		Count	
pin	Scleiplasm perul	15	1000	SG					80+ cm			
stunt	Enchylaruntomants	- 0.5.	10	SG					50 - 79 cn	ו	1	1
	Maintereste brevit	0.1	/	SG					30 - 49 cn	ו ו		
	Musporum platyroop	1	0	TG					20 - 29 cm	1		
	01 101								10 - 19 cm	1		
	56	21.6	1351	4					5 - 9 cm			
	Tb								Tree Re	egeneratio	n <5 cm	$\times$
				S6 4					Holio	w Bearing	Trees	V
				70-1					1917 -	Log	5	
									W	thin 20 x :	50 m plot	
									Total	Length >	10cm diam	8
									9m	Cour	νt)	
									9			
									1			
								_				
						1.		_				
								- if les	iage Cover ss than 1%	Recorde , Whole N	d as either umbers up	Decimals to 5%, or
							_	to th	he nearest Decimals	5% if >5%	6 cover.	,
								-	Whole NL	imbers (1,	2, 3)	
									Nedlest 3	9% ( <i>3, 10,</i>	15)	
									Indance: H	Recorded a	as either Co	ounts if
								->10	ulali 10, 01 ].			IS WITET
									Estimates	(10, 20,)	30)	
									Estimates	'Intervals	<i>(100, 200</i>	1, 300)
				_				_				
								_				
								_				
								1			5 m	
						vege	tatio	n Inte	grity - Fur	ICTION		
				Within five	1m2 plots			7		r A	-	Average Sum
				l ittor (	Col lice to	1		2	3	4	5	
				Bara Crau	d Cover	10		70	10	15	20	19
					id Cover	10	- 6	20	50	70	10	64
				Cryptogar Dock C	n cover	10	A.	/	/	3	12	3.8
				ROLK	over	Collog		2	0	0		0
				/ /:	ds (	Fonag		buna.	we	eas	Foliage	Abund.
				A Fabia	Gruss	812		300				
				Onim	Weed	0.1		2.				
							_					
							_					
-												
												N
_												

	Assessor(s) Initials	Date	Ar	ea (ha)	PCT N	umber		Zone Number	r P	lot Abbre	viation
f.	TM SE , HR	3/4/	21		25	2		6		Ь	
Treeter	Within 20 x 2	0 m plot		Species N	lame	ioli- age Al	ound.		Functi	ion	
-	Species Name	Foliage	Abund,					W	ithin 20 x s	50 m plot	
Dire	Dissocarpus para	1D	500	SG				Tree DBH	I	Count	
Julips	Sclevolarin pars	30	2000	SG				80+ cm			
gu I	Hustro stipa saha	1	50	GG				50 - 79 cm	1		
12	1				1			30 - 49 cm	1		
	SG	40	2500	2				20 - 29 cm	ו ו		
	66			56 - 1	2			10 - 19 cm	1		
				176 -	L			5 - 9 cm			
								Tree Re	generatio	n <5 cm	X
								Hollo	w Bearing	Trees	X
									Logs		1.2
								Wi	thin 20 x s	50 m plot	
								Total	Length >	10cm diam	
								$\times$	Cour	1Ĉ	
						_					<u>1:</u>
						_					
								Faliana Cava	n Daaada	-	Destination
						-	/	f less than 1%	, Whole N	umbers up	to 5%, or
						-		to the nearest . - Decimals	5%	6 cover. 0.3)	
								<ul> <li>Whole Nu</li> <li>Nearest 5</li> </ul>	imbers (1, 5% (5, 10,	2, 3) 15)	
									1.4 - 4	~ ~	
						-	;	<b>Abundance:</b> H less than 10, o	Recorded a r estimate	as either Co d in interva	ounts if Is when
								>10. - Counts (1	1. 2. 3)		
						-		- Estimates	(10, 20, . Intervals	30) :' (100-20(	1 300 )
								Lotinates	, 1///0///4/2	(100, 200	, 500)
1											
ľ				5.5.17	-	Veget	ation I	ntegrity - Fu	nction		21 202
ľ								Plot Numbe	r		Average
[				within five .	tm2 piots	1	2	3	4	5	Sum
				Litter C	over	D	20	5	5	10	10
[				Bare Groun	d Cover	65	55	- 65	65	50	F0
[				Cryptogan	n Cover	20	28	) 25	25	35	25
[				Rock C	over	0	0	0	0	Ð	0
				Wee	ds	Foliage	Abur	nd. We	eds	Foliage	Abund.
				trab.	an levers	1	Tor	7			
				Onim	Weed	1	10	2			
L						1					
					L						
Ļ											

Fu Within 2 Tree DBH	Inction 20 x 50 m plot	in net se
Fu Within 2 Tree DBH	Inction 20 x 50 m plot	ALC PRAY
Within 2 Tree DBH	20 x 50 m plot	
Tree DBH		
80+ cm	Count	
our chi		
50 - 79 cm		
30 - 49 cm		
20 - 29 cm		
10 - 19 cm	2.54	
5 - 9 cm	s.t.	0
Tree Regene	ration <5 cm	0
Hollow Bea	aring Trees	
	Logs	
Within 2	20 x 50 m plot	
Total Leng	th >10cm diam	
$\bigcirc$	Count	
Foliage Cover: Red if less than 1%, Whit o the nearest 5% if - Decimals (0.1, - Whole Numbe, - Nearest 5% (5 Abundance: Recon less than 10, or estit >10. - Counts (1, 2, - Estimates (10, - Estimates 'Inte	corded as either ole Numbers up \$ >5% cover. 0.2, 0.3) rs (1, 2, 3) 5, 10, 15) ded as either Co mated in interva 3) 20, 30) ervals' (100, 200	Decimals to 5%, or punts if als when 0, 300)
Integrity - Functio	n	
Plot Number		Average
2 3	4 5	Sum
- 0 10	0 30	8.6
5. 3	5 20	16
0 95 5	0 30	73
0 0 0		0.2
und. Weeds	Foliage	Abund,
0		
D		
11		
O MI		
O MI		
O M1		
0 <u>M</u> 1		
	Abundance: Recor less than 10, or estil > 10. - Counts (1, 2, - - Estimates (10, - Estimates 'Inte Integrity - Functio Plot Number 2 3 - O 0 - O 0	Abundance: Recorded as either Colless than 10, or estimated in interval         less than 10, or estimated in interval         > 10,         - Counts (1, 2, 3)         - Estimates (10, 20, 30)         - Estimates 'Intervals' (100, 200         Integrity - Function         Plot Number         2       3       4         5       35       20         0       4       5         0       5       35         0       5       5         0       5       5         0       5       5         0       5       5         0       5       5         0       5       5         0       5       5         10       5       5         10       5       5         10       5       5

Assessor(s) Initials	Date	A A	rea (ha)	PCT N	lumbe	r	Zone	e Numbe	r F	lot Abbre	viation	
TM/ SE	5/7	/22		5	C			8		A		
Within 20 x 2	20 m plot		Species I	Name	Foli-	Abund.	1970	6	Funct	ion	10100	
Species Name	Foliage	Abund.			age		1	W	ithin 20 x .	50 m plot		
Oleana Dim	5	2.0	5.6-					Tree DB	-	Count		
Austrosting	0.2	20	66					80+ cm				
Austradulkhimi	0.3	30	6.6					50 - 79 сг	n	I.	_	
Nittadinia.	0.5	100	FG	-				30 - 49 cr	n			
Sclevalden dici	n0.2.	30	5.4					20 - 29 cm	n			
My oDorum Diator	1.	3	56					10 - 19 cr	n		155	
Ryphy S/D	0.1.	2	SG					5 - 9 cm			2	
Sclein obligvic	0.1	5	Site					Tree Re	egeneratio	n <5 cm	Ĩ	
Gunonbull	0.1	3	5.6					Hollo	w Bearing	Trees	Ö	
Dande							U VA	. V. A.	Log	s	E B	
		-					-	W	ithin 20 x :	50 m plot		
SG	6.5	6						Total	Length >	10cm diam		
FG	0.5	Ĩ						E	Cour	1Č		
p.f.	0.5	2					1					
				Image: Colling the second of the second o				age Cove s than 1% e nearest Decimals Whole N Nearest Nearest than 10, o Counts ( Estimate Estimate	<b>Cover:</b> Recorded as either De rest 5% if >5% cover. mals (0.1, 0.2, 0.3) le Numbers (1, 2, 3) rest 5% (5, 10, 15) <b>ce:</b> Recorded as either Cour. 10, or estimated in intervals nts (1, 2, 3) mates (10, 20, 30) mates 'Intervals' (100, 200, 3			
				Tue!	Veg	getation	Integ	<b>rity - Fu</b> lot Numbe	nction	N.	<b>.</b>	
			Within five .	1m2 plots	1		2 1	3	4	5	Average Sum	
			Litter C	Cover	/		/	/	2	5	2	
			Bare Grour	nd Cover		0 -	10	ID	15		21	
			Cryptogan	n Cover	E	0 7	0	RD	-12.	1	47.7	
			Rock C	Cover			2	5	0	0	1	
			Wee	ds	Folia	age Ab	und.	We	eds	Foliage	Abund.	
			Sade		14	2	00					
			Onion	Wed	1	7	50			-		
			Stake	worth	Z	1	-00					
			Dana	alum	1	). ] ]	Son					
			Mard	1	10-	1	50					
			180000	/ ka	C.P.	1	1 101					
								a				
			U.	_	I							

Assessor(s) Initials	Date	A	rea (ha)	PCT	lumbe	er	:	Zone	Numbe	r 📘	Plot Abbre	viation
TM/SE		5	17/22	58	2				8		B	
Within 20 x 2	0 m plot		Species I	Name	Foli- age	Abu	nd.	7		Func	tion	J. L. C.
Species Name	Foliage	Abund.			-90				W	ithin 20 x	50 m plot	
Khagodia Spin	0-5	10	56.						Tree DBH	1	Count	
R\$B '	0.2	5	56						80+ cm			
Sclend diamille	0.4	100	SG						50 - 79 cn	n		
Scherol obligicie	0-4	100	SG						30 - 49 cn	n		
Charley Winley	0.1	1	FG						20 - 29 cn	n		
Canny ball	0.1	10	SG						10 - 19 cn	n		
Maireava brev	0.1	2	SG						5 - 9 cm			
QUENA	0.4	100	F6						Tree Re	egeneratio	on <5 cm	0
Creepin #B	Dol	1	SG						Hollo	w Bearing	g Trees	07
Villachinia	0-4	100	FG					Logs				
Dodonea Visc	1.	N.	56					Within 20 x 50 m plot				
Auguostina Sci	011	10	66						Total	Length >	>10cm diam	
Selver			-still grow - So-						25 M	Cou	nt	
SG	2.8	8										
FG	0.9	3										
66	0-1	1										
								Folia	age Cover: Recorded as either Dec			Decimals
								to the	e nearest	5% if >5	% cover.	10 5%, 01
								-	Whole N	(0.1, 0.2 umbers (1	, 0.3) 1, 2, 3)	
								-	Nearest :	5% (5, 10	), 15)	
								Abui	ndance: /	Recorded	as either Co	ounts if
								less t >10.	than 10, o	r estimati	ed in interva	als when
								-	Counts (. Estimate	1, 2, 3) s (10. 20.	30)	
								-	Estimate.	s 'Interva	ls' (100, 200	7, 300)
		1.01										
				8 - ST - ST - ST	Ve	getat	ion I	nteg	irity - Fu	nction		
	r		Within five	1m2 plot.	5		-		lot Numbe	er	1 5	Average
			1 144	Courses	_	5	15		3	4	5	a
			Litter (	Lover	16	2	10	K	Q.	15	5.	4
			bare Grou	na cover	7	8	a		75	10	20	44.8
				Cover	0	<u>}</u>	0	1	0	5	C	1.2
	;		ROCK	over	Tel.			-4	2	S.A.	C	1.2
			Wee	us UG	FOI	age	ADU	nu.	we Li	reus	ronage	Abund,
			AVIAN IF	M//		La	10	~	11	+		
			1UXI	P. Land	2	- 7	20	200 41				
			Alur	1900	0	R	5	0				
			Rub	<u>1987</u>	1/2	-	-20	.0				
			Mall	harag_	1	2	120	20			-	
			nucen	<u> </u>	-	2	1.674	1.4				
					1			_				

Assessor(s) Initials	Date	) AI	Area (ha) PCT		umber		Zone I	Numbe	r I	Plot Abbre	viation
TM/SE	5/7/	2	Ĉ		8			8		C	
Within 20 x 2	20 m plot		Species Na	ame F	oli- A	ound.		100	Funct	tion	
Species Name	Foliage	Abund.						W	/ithin 20 x	50 m plot	
Pottosporm	0.5	4	SG			_	Tr	ee DBI	н	Count	
Austro danatora	5	1900	66				8	30+ cm			
Villadima	5	500	FG				50	- 79 cr	n		
Austrastipa	0.2	20	6-6-				30	- 49 cr	n		
Causenball	O.I.	10	SG				20	- 29 cr	n		
RSB	0.1	2	SG				10	- 19 cr	n		1
Sclevelace oblig	ł	100	SG-				5	- 9 cm			
Sclear land dial	1	100	SG					Tree R	egeneratio	on <5 cm	0
Aracia liquidade	De]	(	S.F.					Hollo	ow Bearing	g Trees	0
Atriplex Stipited	0.1	3	560				52		Logs		
Setara de								Within 20 x 50 m plo			
	1							Total	Length >	>10cm diam	
SF	2.9	7					1		COCou	nt	
F6	5	i									
66	5.2	2									
0.0							1				
							1				
							Foliag	e Cove	r: Record	led as either	Decimals
		· · · · · · · · · · · · · · · · · · ·	if less than 1% to the nearest		6, Whole   5% if >5	<i>Vumbers up % cover.</i>	to 5%, oi				
		· · · · · · · · · · · · · · · · · · ·					- <i>L</i>	Decimals	5 (0.1, 0.2) Jumbers (1	(0.3)	
							- A	learest .	<i>5% (5, 10</i>	), 15)	
							Abung	lancer	Recorded	as either Co	ounts if
							less the	an 10, c	or estimate	ed in interva	als when
							- C	Counts (	(1, 2, 3)	20.1	
								stimate stimate	es (10, 20, es 'Interva	30) Is' (100, 200	7, 300)
				_			1				
							1				
							1				
					Veget	ation	Integri	ity - Fu	nction		
			Within Five 1	m 7 mlata			Plot	Numbe	er		Average
			within the 1	mz piots	1	1	2	3	4	5	Sum
			Litter Co	ver	2	1		ŀ	1	2	1.4
			Bare Ground	d Cover	70	7	5	5	9	60	43.8
			Cryptogam	Cover	0	C	>	85	90	10	37
			Rock Co	ver	Ð	E	λ.	T	1	1	0.6
			Weed	ls	Foliage	Ab	und.	We	eeds	Foliage	Abund.
			Sago	0	5	In	DD				
			Ohie	West	05	5	0				
			Absorte	Wot-	NIN GOL	-10	00				
			Turn	113	5	12	20	H	T		
			Thong	ale	0.1	1	1				
			illeli	F	5	5	000				-
			Hereh	int	0.1	4	MA.				
			112111	11		- 7	100				L

Ly-

Tobuco B 0.4 5

Assessor(s) Initials	Date Are		Area (ha) PCT Nun		umber		Zone	Number	F	lot Abbre	viation
TM /SE	5/2/3	22		4	8			8		d	
/ Within 20 x 2	20 m <sup>l</sup> plót		Species I	Name	oli- age	Abund.	() = i		Funct	ion	12242
Species Name	Foliage	Abund.						W	ithin 20 x .	50 m plot	
SWGINSONG gre	ung.2	1	F6				1	free DBH	- T	Count	
Mairraina brev	0.2	5	SG					80+ cm			
Cartanball	0.1	5	SG				5	50 - 79 cm	ו ו		
RSB	0.1	2	56				3	30 - 49 cm	ו ו		
Vittadinia	4	1000	FG				2	20 - 29 cm	1		
Sclevolaene dura	no 0.1	5 (	diacath	56			1	10 - 19 cm	n		
Austro barthis	5	1000	GG	41				5 - 9 cm			
Sclevolaena Oblig	0.5	30	SG					Tree Re	generatio	n <5 cm	0
								Hollo	w Bearing	Trees	Ũ
SG	1	5					<u>a</u> -		Log	S	.81 12
F6	4.2	2						W	ithin 20 x .	50 m plot	
66	5							Total	Length >	10cm diam	
			İ					0	Cour	γĽ	
							<i>Abur</i> <i>if less</i> <i>if less</i>	than 1% e nearest Decimals Whole Nu Nearest Man 10, o Counts (. Estimates Estimates	Recorded of restinate	20 a3 enner up furmbers up % cover. 0.3) , 2, 3) . 15) as either Co ad in interva 30) s' (100, 200	bunts if bunts if bunts if bunds when bunds when
			YOS' ENS-	11.1	Veg	etation	Integ	rity - Fu	nction	118	3-72-
			Within five	1m2 plots			Pl	ot Numbe	er 1		Average
					1		2	3	4	5	Sum
			Litter (	Lover	5	5	2	5	0	5	2.6
			Bare Grou	nd Cover	15		15	50	40	0	37
			Cryptoga	m Cover	10		0	5	40	125	29
	-		Rock (	Cover	0	1		0		0	0.4
			Wee	eds	Foliag	je At	ound.	We	eds	Foliage	Abund.
			Onio	, weed	DiL	. 6	00				
	·		- A/L /		- /		A A A				-
			Medi	C	0.4	6	000				
			Med i -hANF	C	0.4	6 6	000				
			Med a -HANF Sage	2- ,	0.4	2 6 2 1	000				
			Medi -Walt Sagu Stink	e Wort	0.4	~ 6 > 1	000				
			Medi -WWF Sags Stinkk Oxa	e Wort	0.4	- 6 - 1 - 1 - 1	000 000 00 00				

Assessor(s) Initials	Date		Ar	ea (ha)	РСТ	Numbe	er		Zone	Numbe	er P	lot Abbrev	viation
SEITM	5/7/	22			Species Name				12	)		A	
/ Within 20 x 2	20 m plót			Species I	Name	Foli- age	Abu	nd.			Funct	ion	1919
Species Name	Foliage	Abun	d.							И	/ithin 20 x :	50 m plot	
Austwolanthonia	540	500	Q,	6	6				-	Tree DB	H	Count	
Vittadinia	10.	50	Œ	F	£					80+ cm		0	0
Sclerolae na obligu	cust 19	10	2	50						50 - 79 ci	m		
Sclevo lacindian	0.5	5	5	S I	5				3	30 - 49 ci	m		
Osteocarpum	015	5		SG	-					20 - <mark>29</mark> ci	m		
acropierum									1	10 - 19 ci	m		
										5 - 9 cm			
SG	2	3								Tree R	egeneratio	n <5 cm	0
64	40	1							Ho		ow Bearing	Trees	0
FG	10	1									Log	5	1 . H. C.
										И	lithin 20 x s	50 m plot	
										Total	Length >	10cm diam	•
										0	Cour	nt.	
									<b>Abur</b> less t >10, - -	<ul> <li>Nearest 5% (5, 10, 15)</li> <li>Abundance: Recorded as either Count less than 10, or estimated in intervals vi &gt;10.</li> <li>Counts (1, 2, 3)</li> <li>Estimates (10, 20, 30)</li> <li>Estimates 'Intervals' (100, 200, 30</li> </ul>		ounts if Is when 0, 300)	
						Ve	getat	ion	Integ	rity - Fu	Inction	1. FR.	
			-	Within five	1m2 plo	ts			PI	ot Numb	er		Average
			-				1		2	3	4	5	Sum
			-	Litter (	over		2	4	2	3	5	5	3.8
			-	Bare Grou	nd Cove	r 2	0	10	>	5	50	30	23
			_	Cryptogar	n Cover	4	V	10	2	30	0	0	16
			_	Rock C	over	C	>	C	)	0	0	0	0
			-	Wee	as	Foli	age	Abi	ind.	W	eeds	Foliage	Abund.
			-	Salle	-	4		100	00				
			4	Chlon	Wan		1	1	2				
			4	please.	Ma	/	_	10	na l				
			-		U	-		-					
			_			_	_						
							_						

Appendix D: BAM-C Credit Sheets





Proposal Details		
Assessment Id	Proposal Name	BAM data last updated *
00024826/BAAS18175/21/00024930	Buronga Landfill Expansion Inside Previous Consent Area	19/12/2022
Assessor Name	Report Created	BAM Data version *
Troy Muster	30/01/2023	56
Assessor Number	BAM Case Status	Date Finalised
BAAS18175	Finalised	30/01/2023
Assessment Revision	Assessment Type	
4	Major Projects	

\* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

### Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetatio	TEC name	Current	Change in	Are	Sensitivity to	Species	BC Act Listing	EPBC Act	Biodiversit	Potenti	Ecosyste
	n		Vegetatio	Vegetatio	а	loss	sensitivity to	status	listing status	y risk	al SAII	m credits
	zone		n	n integrity	(ha)	(Justification)	gain class			weighting		
	name		integrity	(loss /								
			score	gain)								



Black Murra	Box open v y Darling D	voodland wetlar Depression Biore	nd with chenopo gion)	d under	store	ey mainly on th	e outer floodp	lains in south-we	estern NSW (mainly Riveri	na Bioregio	n and
4	15_Zone_1 _CA	Not a TEC	57.1	57.1	0.55	PCT Cleared - 50%	High Sensitivity to Gain		1.75		14
										Subtot al	14
Black	Oak - West	ern Rosewood o	open woodland o	n deep	sand	y loams mainly	y in the Murray	Darling Depress	ion Bioregion		
2	58_Zone_3 _CA	Not a TEC	24.2	24.2	3.4	PCT Cleared - 50%	High Sensitivity to Gain		1.75		36
3	58_Zone_4 _CA	Not a TEC	40.8	40.8	1.9	PCT Cleared - 50%	High Sensitivity to Gain		1.75		35
5	58_Zone_8 _CA	Not a TEC	13.7	13.7	3.3	PCT Cleared - 50%	High Sensitivity to Gain		1.75		0
										Subtot al	71
Cheno	pod sandp	lain mallee woo	dland/shrubland	of the a	arid a	and semi-arid (	(warm) zones				
1	170_Zone_ 5_CA	Not a TEC	49.5	49.5	3.1	PCT Cleared - 41%	High Sensitivity to Gain		1.50		58
										Subtot al	58



Narrow	Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.												
6	143_Zone_ 7_CA	Not a TEC	34.2	34.2	1.4 PCT Cleared - 30%	High Sensitivity to Gain	1.5	50	19				
								Subtot al	19				
								Total	162				

### Species credits for threatened species

Vegetation zone	Habitat condition	Change in	Area	Sensitivity to	Sensitivity to	BC Act Listing	EPBC Act listing	Potential	Species
name	(Vegetation	habitat	(ha)/Count	loss	gain	status	status	SAII	credits
	Integrity)	condition	(no.	(Justification)	(Justification)				
			individuals)						

Assessment Id



Proposal Details		
Assessment Id	Proposal Name	BAM data last updated *
00024826/BAAS18175/21/00025590	Buronga Landfill Expansion Outside Previous Consent Area	19/12/2022
Assessor Name	Report Created	BAM Data version *
Troy Muster	30/01/2023	56
Assessor Number	BAM Case Status	Date Finalised
BAAS18175	Finalised	30/01/2023
Assessment Revision	Assessment Type	
4	Major Projects	

\* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

### Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetatio	TEC name	Current	Change in	Are	Sensitivity to	Species	BC Act Listing	EPBC Act	Biodiversit	Potenti	Ecosyste
	n		Vegetatio	Vegetatio	а	loss	sensitivity to	status	listing status	y risk	al SAII	m credits
	zone		n	n integrity	(ha)	(Justification)	gain class			weighting		
	name		integrity	(loss /								
			score	gain)								



Black Murra	Box open w y Darling D	voodland wetland epression Bioreg	with cheno ion)	opod under	store	y mainly on th	e outer floodp	lains in south-w	estern NSW (mainly Rive	erina Bio	oregion and
1	15_Zone_1 _Outside_ CA	Not a TEC	57.1	57.1	0.16	PCT Cleared - 50%	High Sensitivity to Gain		1.7	75	4
										Subte al	ot 4
Black	Oak - West	ern Rosewood op	en woodlar	nd on deep	sand	y loams mainly	/ in the Murray	Darling Depress	sion Bioregion		
3	58_Zone_4 _Outside_ CA	Not a TEC	40.8	40.8	0.29	PCT Cleared - 50%	High Sensitivity to Gain		1.7	'5	5
5	58_Zone_8 _Outside_ CA	Not a TEC	13.7	13.7	0.67	PCT Cleared - 50%	High Sensitivity to Gain		1.7	'5	0
7	58_Zone_2 _Outside_ CA	Not a TEC	57.5	57.5	0.28	PCT Cleared - 50%	High Sensitivity to Gain		1.7	75	7
										Subte al	ot 12
Cheno	pod sandp	lain mallee woodl	and/shrubl	and of the	arid a	and semi-arid (	warm) zones				
2	170_Zone_ 5_Outside _CA	Not a TEC	49.5	49.5	0.36	PCT Cleared - 41%	High Sensitivity to Gain		1.!	50	7



6	170_Zone_ 10_Outsid e_CA	Not a TEC	3.3	3.3	0.3	PCT Cleared - 41%	High Sensitivity to Gain		1.50		0
										Subtot al	7
Sugar	Sugarwood open woodland of the inland plains mainly Murray Darling Depression Bioregion										
4	252_Zone_ 6_Outside _CA	Not a TEC	14.2	14.2	1.7	PCT Cleared - 50%	High Sensitivity to Gain		1.75		0
										Subtot al	0
										Total	23

### Species credits for threatened species

Vegetation zone	Habitat condition	Change in	Area	Sensitivity to	Sensitivity to	BC Act Listing	EPBC Act listing	Potential	Species
name	(Vegetation	habitat	(ha)/Count	loss	gain	status	status	SAII	credits
	Integrity)	condition	(no.	(Justification)	(Justification)				
			individuals)						

Assessment Id

Appendix E: Risk Matrix



#### Buronga Landfill Expansion BDAR

Risk Matrix										
Risk Criteria	Consequences	Negligible (NE)	Minor (MI)	Moderate (MO)	Significant (SI)	Major MA)				
Likelihood		Environmental impacts or local, low significance, temporary, and reversible. Negligible impact on flora and fauna	Minor effects on the biological or physical environment. Easily rehabilitated, temporary, and short- term effect. Minor impact on flora and fauna.	Moderate short-term effects but no long-lasting effects on ecosystem function. A significant change, rehabilitated with difficulty. Moderate impact on flora and fauna.	Long-term severe environmental effects. Likely to result in a regulatory investigation, permanent environmental harm requires immediate attention. Significant impact on flora and fauna.	Severe long term environmental impairment of the ecosystem function. Destruction of sensitive features, severe impact, irreversible, or widespread. Significant impact on flora and fauna.				
Almost Certain (A)	Event is expected to occur in most circumstances. [At least once per month]	М	н	VH	E	E				
Likely (B)	The event will probably occur in most circumstances. [At least once a year]	М	н	н	VH	E				
Possible (C)	The event should occur at some time. [At least once in 5 years]	L	м	н	н	VH				
Unlikely (D)	The event could occur at some time. [At least once in 25 years]	L	м	м	н	н				
Rare (E)	The event may occur only in exceptional circumstances. [Less than once in 25 years]	L	L	L	м	м				

Source: ISO 31000 Risk Management, https://www.iso.org/iso-31000-risk-management.html



Appendix F: Vegetation Integrity Plot Photos





Plate 1. Plot 1a, PCT 15 (15 Zone 1)



Plate 2. Plot 1b, PCT 15 (15 Zone 1)



Plate 3. Plot 1c, PCT 15 (15 Zone 1)



Plate 4. Plot 1d, PCT 15 (15 Zone 1)



Plate 5. Plot 1e, PCT 15 (15 Zone 1)



Plate 6. Plot 2a, PCT 58 (58 Zone 2)



Plate 7. Plot 2b, PCT 58 (58 Zone 2)



Plate 8. Plot 3a, PCT 58 (58 Zone 3)



Plate 9. Plot 3b, PCT 58 (58 Zone 3)



Plate 10. Plot 3c, PCT 58 (58 Zone 3)



Plate 11. Plot 4a, PCT 58 (58 Zone 4)



Plate 12. Plot 4b, PCT 58 (58 Zone 4)



Plate 13. Plot 5a, PCT 170 (170 Zone 5)



Plate 14. Plot 5b, PCT 170 (170 Zone 5)



Plate 15. Plot 5c, PCT 170 (170 Zone 5)



Plate 16. Plot 5d, PCT 170 (170 Zone 5)



Plate 17. Plot 6a, PCT 252 (252 Zone 6)



Plate 18. Plot 6b, PCT 252 (252 Zone 6)



Plate 19. Plot 7a, PCT 143 (143 Zone 7)



Plate 20. Plot 8a, PCT 58 (58 Zone 8)


Plate 21. Plot 8b, PCT 58 (58 Zone 8)



Plate 22. Plot 8c, PCT 58 (58 Zone 8)



Plate 23. Plot 8d, PCT 58 (58 Zone 8)



Plate 24. Plot 10a, PCT 170 (170 Zone 10)



### **Buronga Landfill Expansion**

Amendment Report

Appendix P – Heritage Site Record

Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



#### **Melissa Salt**

From: Sent: To: Subject: Matt Cupper <landskape@telstra.com> Tuesday, 26 April 2022 10:29 AM simon.rule; Melissa Salt Fwd: Site has been approved

Begin forwarded message:

From: AHIMS <<u>noreply@ahims.fexcon.com.au</u>> Subject: Site has been approved Date: 12 April 2022 at 1:49:52 pm AEST To: landskape@telstra.com

Hello,

We are glad to inform you that your submitted site has been approved. Please find approved site details below. You can also download the PDF site card for this site recording from the <u>AHIMS</u> <u>Quarantine Station</u>. Please note that the site card will be stored in the quarantine station for 40 days before being deleted.

Site Name : Buronga Landfill Artefact Scatter 1

Site ID: 46-3-0192

Thank you,

**AHIMS** Team

#### Office of Environment & Heritage

### **Aboriginal Site Impact Recording Form**

AHIMS Registrar PO Box 1967, Hurstville 2220 NSW

1 This form must be completed following impacts to AHIMS sites that are:

- a) a result of test excavation carried out in accordance with the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW
- b) authorised by an Aboriginal Heritage Impact Permit (AHIP) issued by the Office of Environment and Heritage (OEH)
- undertaken for the purpose of complying with Director General's Requirements issued by the Department of Planning and Infrastructure (DP&I) for:
  - State Significant Development (SSD Part 4),
  - State Significant Infrastructure (SSI Part 5.1), or
  - A Major Project (Part 3A now repealed) under the Environmental Planning and Assessment Act 1979 (EP&A Act), or
- d) authorised by a SSD/SSI/Part 3A consent/approval under the EP&A Act.
- 2 Completed forms must be submitted to the AHIMS Registrar (www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm).
- 3 This form is intended to complement (not replace) the AHIMS Site Recording Form. Where there is a need to provide detailed information about the nature of a site, use the AHIMS Site Recording Form.
- 4 This form does not replace the need to submit reports to OEH (as a condition of an AHIP or SSD/SSI/Part 3A consent/approval) This form must be submitted in addition to any reports.

AHIMS site ID: 46-3-0192

Date recorded: 10-04-2022

ite impact authorisation (select one)	Reference numbers, dates	
Archaeological Code (The impacts to this site were the result of test excavation carried out in accordance with the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW.)	Date OEH was notified (under requirement 15c of the Code): OEH Regional office notified:	
AHIP (The impacts to this site were authorised by an	AHIP number:	C0002579
K AHIP.)	Date issued/signed:	2017-03-30
	AHIMS permit ID/number:	4081
SSD/SSI/Part 3A application (The impacts to this site were undertaken for the purposes of complying with	Project number:	
Director General's Requirements issued by the DP&I	Date Director General's Requirements issued:	
SSD/SSI/Part 3A approved project (The impacts to this	or	
<ul> <li>site were authorised by a consent/approval under Parts 4/5 1/3A of the EP&amp;A Act )</li> </ul>	Date of project approval:	

 Site status following impacts:

 Not a site (The investigations concluded that this is not a site.)

 Valid site (The investigations confirmed that this is an Aboriginal site.)

 Partially destroyed (The site was partially destroyed following authorised impacts; a portion of the site remains in situ.)

 X

Site nan	atio ne:	Buronga Lan	dfill Artef	act Scatter 1		
Easting	: 6	610565 Northing			6223164	Coordinates must be in GDA (MGA)
Horizon	tal A	ccuracy (m):	5			
Zone:	54		Loc	ation method:	Non-Differential	GPS

Recorder Information: (The person responsible for the completion and submission of this form)

Title	:	Surname	First name	First name	
Dr. Cup	ipper		Matt		
Organisation:	Landskape				
Address:	178 Midger	n Flat Road Br	roken Head 2481		
Phone: 0408	006690	E-mail:	landskape@telstra.com		

Location map Clearly demarcate the original AHIMS site boundary, show the boundaries of impacted areas and the areas where the site remains in situ. Display map coordinates.



Site contents information	open/closed site:	Closed	Site condition	Disturbed
			Scar	red Trees
Features:	Number of features exte	gth of Width of ure(s) feature (s) ent (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
1. Artefact	1 1	1		
Description:			shape	Species
Broken sandstone core				
			Scar	red Trees
Features:	Number of features exte	gth of Width of ure(s) feature (s) ent (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	red Trees
Features:	Number of features exter	gth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	ed Trees
Features:	Number of features features	gth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	ed Trees
Features:	Number of features exter	oth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widtl (cm) (cm)
Description:			Scar shape	Tree Species
Other Site				

#### Methodology and results

Summary of the methodology and results of the activity or works undertaken through the authorised impacts, as relevant to the AHIMS site

Watts identified an a broken sandstone core (AHIMS site number 46-3-0192) during a due diligence assessment. This was in a proposed landfill cell work area, immediately north of the existing Buronga landfill. The Aboriginal object could not be re-identified during a cultural heritage assessment by Cupper on 5 August 2016. Wentworth Shire Council subsequently obtained an AHIP to destroy the Aboriginal object and excavated a landfill cell encompassing the Aboriginal object during circa late 2017.

#### Management recommendations

Summary of any management recommendations for the AHIMS site

#### Post-investigation significance

Discuss if the scientific/archaeological or cultural significance of the site has changed in light of the results of the investigations or works conducted at the site.

#### Additional comments

#### Site photographs

Include photographs of the authorised impacts activity, as relevant to the AHIMS site. Please keep photo size to a maximum of 200 kb.



Description: Landfill cell encompassing AHIMS site number 46-3-0192

Description: Landfill cell encompassing AHIMS site number 46-3-0192





#### Office of Environment & Heritage

### **Aboriginal Site Impact Recording Form**

AHIMS Registrar PO Box 1967, Hurstville 2220 NSW

1 This form must be completed following impacts to AHIMS sites that are:

- a) a result of test excavation carried out in accordance with the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW
- b) authorised by an Aboriginal Heritage Impact Permit (AHIP) issued by the Office of Environment and Heritage (OEH)
- undertaken for the purpose of complying with Director General's Requirements issued by the Department of Planning and Infrastructure (DP&I) for:
  - State Significant Development (SSD Part 4),
  - State Significant Infrastructure (SSI Part 5.1), or
  - A Major Project (Part 3A now repealed) under the Environmental Planning and Assessment Act 1979 (EP&A Act), or
- d) authorised by a SSD/SSI/Part 3A consent/approval under the EP&A Act.
- 2 Completed forms must be submitted to the AHIMS Registrar (www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm).
- 3 This form is intended to complement (not replace) the AHIMS Site Recording Form. Where there is a need to provide detailed information about the nature of a site, use the AHIMS Site Recording Form.
- 4 This form does not replace the need to submit reports to OEH (as a condition of an AHIP or SSD/SSI/Part 3A consent/approval) This form must be submitted in addition to any reports.

AHIMS site ID: 46-3-0192

Date recorded: 10-04-2022

ite impact authorisation (select one)	Reference numbers, dates	
Archaeological Code (The impacts to this site were the result of test excavation carried out in accordance with the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW.)	Date OEH was notified (under requirement 15c of the Code): OEH Regional office notified:	
AHIP (The impacts to this site were authorised by an	AHIP number:	C0002579
K AHIP.)	Date issued/signed:	2017-03-30
	AHIMS permit ID/number:	4081
SSD/SSI/Part 3A application (The impacts to this site were undertaken for the purposes of complying with	Project number:	
Director General's Requirements issued by the DP&I	Date Director General's Requirements issued:	
SSD/SSI/Part 3A approved project (The impacts to this	or	
<ul> <li>site were authorised by a consent/approval under Parts 4/5 1/3A of the EP&amp;A Act )</li> </ul>	Date of project approval:	

 Site status following impacts:

 Not a site (The investigations concluded that this is not a site.)

 Valid site (The investigations confirmed that this is an Aboriginal site.)

 Partially destroyed (The site was partially destroyed following authorised impacts; a portion of the site remains in situ.)

 X

Site nan	atio ne:	Buronga Lan	dfill Artef	act Scatter 1		
Easting	: 6	610565 Northing			6223164	Coordinates must be in GDA (MGA)
Horizon	tal A	ccuracy (m):	5			
Zone:	54		Loc	ation method:	Non-Differential	GPS

Recorder Information: (The person responsible for the completion and submission of this form)

Title	:	Surname	First name	First name	
Dr. Cup	ipper		Matt		
Organisation:	Landskape				
Address:	178 Midger	n Flat Road Br	roken Head 2481		
Phone: 0408	006690	E-mail:	landskape@telstra.com		

Location map Clearly demarcate the original AHIMS site boundary, show the boundaries of impacted areas and the areas where the site remains in situ. Display map coordinates.



Site contents information	open/closed site:	Closed	Site condition	Disturbed
			Scar	red Trees
Features:	Number of features exte	gth of Width of ure(s) feature (s) ent (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
1. Artefact	1 1	1		
Description:			shape	Species
Broken sandstone core				
			Scar	red Trees
Features:	Number of features exte	gth of Width of ure(s) feature (s) ent (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	red Trees
Features:	Number of features exter	gth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	ed Trees
Features:	Number of features features	gth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widt (cm) (cm)
Description:			Scar shape	Tree Species
			Scarr	ed Trees
Features:	Number of features exter	oth of Width of ure(s) feature (s) nt (m) extent (m)	Scar Depth Regrowth (cm) (cm)	Scar Length Scar Widtl (cm) (cm)
Description:			Scar shape	Tree Species
Other Site				

#### Methodology and results

Summary of the methodology and results of the activity or works undertaken through the authorised impacts, as relevant to the AHIMS site

Watts identified an a broken sandstone core (AHIMS site number 46-3-0192) during a due diligence assessment. This was in a proposed landfill cell work area, immediately north of the existing Buronga landfill. The Aboriginal object could not be re-identified during a cultural heritage assessment by Cupper on 5 August 2016. Wentworth Shire Council subsequently obtained an AHIP to destroy the Aboriginal object and excavated a landfill cell encompassing the Aboriginal object during circa late 2017.

#### Management recommendations

Summary of any management recommendations for the AHIMS site

#### Post-investigation significance

Discuss if the scientific/archaeological or cultural significance of the site has changed in light of the results of the investigations or works conducted at the site.

#### Additional comments

#### Site photographs

Include photographs of the authorised impacts activity, as relevant to the AHIMS site. Please keep photo size to a maximum of 200 kb.



Description: Landfill cell encompassing AHIMS site number 46-3-0192

Description: Landfill cell encompassing AHIMS site number 46-3-0192





#### REQUEST FOR SEARCH OF LAND CLAIM REGISTER

OFFICE OF THE REGISTRAR ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

> Level 3, 2-10 Wentworth Street Parramatta NSW 2124 02 8633 1266 PO Box 5068 Parramatta NSW 2124

> > Х

Please print all details clearly using block letters

#### 1. Contact details

Full name:	Melissa Salt
Name of company:	Tonkin Consulting on behalf of Wentworth Shire Council
Postal address:	LvI 2, 170 Frome St Adelaide SA 5000
Email address:	melissa.salt@tonkin.com.au
Telephone number:	0428 997761

#### 2. Real Property Details (if more than one parcel please attach separate table)

Lot / Section / Deposited Plan:	Lot 197 DP 756946 and Lot 212 DP 756946
Parish:	Gol Gol
County:	Wentworth

Attached is a copy of the current title search(es), please tick (  $\checkmark$  ):

#### 3. To assist our office in assigning priorities please provide:

a. The purpose for which information is required:

Response to Submission for a State Significant Development

b. The reason for urgency (when urgent consideration is required):

DPIE has requested a response by 10 October 2022

#### Please note:

- i. Searches will only be performed on Crown Land.
- ii. In order to process a search we require a copy of a current title search for the relevant land.
- iii. Subject to demand, searches are normally completed within 10 working days.
- Complex searches may take longer.
- iv. If your search is urgent, please indicate why at point 3b above.
- v. Please send the completed form together with current relevant title search(es) via email to: **ALC@oralra.nsw.gov.au**
- 4 Signature and date:
- MA Dut



Order number: 74668525 Your Reference: 21-102 07/06/22 14:44



#### NSW LRS - Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 197/756946

\_\_\_\_

SEARCH DATE	TIME	EDITION NO	DATE
7/6/2022	2:44 PM	-	_

#### LAND

LOT 197 IN DEPOSITED PLAN 756946 AT BURONGA LOCAL GOVERNMENT AREA WENTWORTH PARISH OF GOL GOL COUNTY OF WENTWORTH (FORMERLY KNOWN AS PORTION 197) TITLE DIAGRAM CROWN PLAN 1052.1820

FIRST SCHEDULE

\_\_\_\_\_

THE STATE OF NEW SOUTH WALES

(CA144032)

SECOND SCHEDULE (2 NOTIFICATIONS)

- \* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- \* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

\_\_\_\_\_

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

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#### **CERTIFICATE ORDER SUMMARY**

#### **Transaction Details**

Date: 07/06/2022 14:46 Order No. 74668596 Certificate No: 112332956 Your Reference: 21-102 Certificate Ordered: NSW LRS - Copy of Plan or Plan Documents - Crown Plan 1052-1820 Available: Y Size (KB): 245 Number of Pages: 1 Scan Date and Time: 30/05/2013 08:19

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Req:R954042 /Doc:CP 01052-1820 P /Rev:30-May-2013 /NSW LRS /Prt:07-Jun-2022 14:46 /Seq:1 of 1 © Office of the Registrar-General /Src:DyeDurham /Ref:



NO ADDITIONS OB AMENDMENTS TO BE MADE

CAT. NO. W. 1052-1820

DEFG 179'28' G.I. Pipe 5.0 197 on post A THE SET ON peg Ø RD 17 on peg Ø 359'28' G.I. Pipe 4.3 359°28' 179°26'40" Spike Iron Bolt 1.32 10.0 Ø Note No. WE3547 marked in error. he oblighterated AZIMUTH TAKEN FROM XY FIELD BOOK LD. 6245 PAGES 6 to 9 I Donald Alexander Pedler of Mildura... a Surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and the special requirements of the Department of Lands and was campleted on <u>29-1-1969</u>. Signature Sonald A Pedlar 

This space for office use only.

PAPER NO. WLC 66-305 NOTATION PLAN



Order number: 74668750 Your Reference: 21-102 07/06/22 14:49



#### NSW LRS - Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 212/756946

\_\_\_\_

SEARCH DATE	TIME	EDITION NO	DATE
7/6/2022	2:49 PM	-	-

#### LAND

LOT 212 IN DEPOSITED PLAN 756946 AT BURONGA LOCAL GOVERNMENT AREA WENTWORTH PARISH OF GOL GOL COUNTY OF WENTWORTH (FORMERLY KNOWN AS PORTION 212) TITLE DIAGRAM CROWN PLAN 1088.1820

FIRST SCHEDULE

\_\_\_\_\_

THE STATE OF NEW SOUTH WALES

(CA141605)

SECOND SCHEDULE (2 NOTIFICATIONS)

- \* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- \* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

\_\_\_\_\_

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

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#### **CERTIFICATE ORDER SUMMARY**

#### **Transaction Details**

Date: 07/06/2022 14:53 Order No. 74668776 Certificate No: 112333169 Your Reference: 21-102 Certificate Ordered: NSW LRS - Copy of Plan or Plan Documents - Crown Plan 1088-1820 Available: Y Size (KB): 179 Number of Pages: 1 Scan Date and Time: 26/11/2012 17:16

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### **Buronga Landfill Expansion**

Amendment Report

Appendix Q – Noise

#### Wentworth Shire Council

SSD-10096818 8 February 2023 Ref: 202597R07



### **Buronga Landfill Expansion**

Submissions Report

S6801C5

July 2022

# SONUS.

Sonus Contact: Byron Holmes Senior Engineer Phone: +61 (0) 8 8231 2100 Email: bholmes@sonus.com.au www.sonus.com.au Buronga Landfill Expansion Submissions Report S6801C5 July 2022



Document Title	: Buronga Landfill Expansion Submissions Report
Document Reference	: \$6801C5
Date	: July 2022
Prepared By	: Byron Holmes, MAAS
Reviewed By	: Simon Moore, MAAS

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#### **1** INTRODUCTION

Sonus conducted a noise and vibration assessment for the Buronga Landfill Expansion project (State Significant Development SSD-10096818) (**the Project**). The assessment considered the key issues relating to noise and vibration identified in the Planning Secretary's Environmental Assessment Requirements (**SEARs**) for the Project, including the following:

- a quantitative noise and vibration impact assessment in accordance with the relevant EPA guidelines;
- consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area;
- cumulative impact assessment, inclusive of impacts from other existing and proposed developments; and,
- details and analysis of the effectiveness of proposed mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation measures, and monitoring measures.

The assessment was detailed in Sonus report S6801C3 (**the Sonus report**), attached as Appendix O to the *Environmental Impact Statement* (**EIS**) prepared for the Project (prepared by Tonkin, dated 25 January 2022, reference 202597R04).

The review of the EIS by the *Department of Planning and Environment* (**the Department**) requested clarification and additional information relating to the noise and vibration assessment, as detailed in Attachment 1 of the Departments *Response to Submissions* (**RtS**) letter (dated 11 April 2022) and reproduced below:

#### Noise and vibration impact assessment

- The Department requests clarification and additional information on noise and vibration impacts, including:
  - Assessment to be based on the hours of operation as indicated in the EIS
  - Clarification as to whether the assessment includes:
    - noise generated during the initial construction phase of the new/relocated structures, basins, roadways and other on-site infrastructure
    - noise from the general public using the recycling facilities
    - noise from monthly shredding of green waste and C&D waste, and the shredding of tyres to maintain a 3m stockpile height
    - differentiation of noise from light rigid, heavy rigid and articulated vehicles
    - noise associated with final capping and rehabilitation of each cell as it reaches completion



٠	Assessment to include:	
	<ul> <li>assessment of annoying noise characteristics for the hours of operation up to 1900 Monday</li> </ul>	
	to Sunday (in addition to daytime measurements provided)	
	<ul> <li>LA10 measurements (in addition to the LA90, Leg, and Lmax measurements provided)</li> </ul>	
	- justification for the use of 'default noise-enhancing meteorological conditions' and the	
	exclusion of any noise-enhancing weather or worst-case sound propagation conditions in line	
	with Fact Sheet D of the NPfl	
٠	Noise contours	

This report provides additional information addressing the requested items. Responses to each item are detailed in the following section.

#### 2 RESPONSE TO AGENCY COMMENTS

Comment: Assessment to be based on the hours of operation as indicated in the EIS

The noise and vibration assessment was conducted based on the operating hours of the landfill following the expansion remaining consistent with those currently in place (8:00am to 4:45pm Monday to Friday, 9:00am to 4:45pm Saturdays and Sundays, and closed Good Friday, Christmas Day and Boxing Day). As such, the assessment only considered noise emissions during the "day" period<sup>1</sup> as defined by the *Noise Policy for Industry* (**the NPfi**).

However, the hours of operation currently permitted under the EPA licence for the facility are 7:00am to 7:00pm Monday to Saturday, 9:00am to 7:00pm Sunday, and closed public holidays. The permitted hours of operation following the expansion will remain consistent with these hours, and as such the facility will retain the ability to operate into the "evening" period (defined by the NPfI as between 6:00pm and 10:00pm on any day).

While the facility will retain the ability to operate into the evening period, the intent is for receival of waste from the general public and commercial sources to continue to occur largely within the current hours of operation (i.e. access to the public will remain within the current hours of operation).

<sup>&</sup>lt;sup>1</sup> The NPfl defines the day period as between 7:00am to 6:00pm Monday to Saturday, or 8:00am to 6:00pm on Sundays and public holidays

...

# sonus.

Outside of these hours, activities are expected to predominantly comprise those associated with on-site dust suppression and management of the waste received during the day. These activities would be conducted using a wheeled loader or similar (waste management) or a water cart (dust suppression).

Noise levels have been predicted based on waste management occurring at the top of the landfill cell closest to nearby residences (Cell 1A), with dust suppression occurring simultaneously on internal site roads leading from the site entry gate to this location.

Based on the above, a noise level of 35 dB(A) is predicted at the nearest residence, including at 5 dB(A) penalty for a low frequency noise character associated with the wheeled loader. This achieves compliance with the evening project noise trigger level of 35 dB(A). Lower noise levels are predicted for residences further from the site, for waste management activities further from the nearest residence, and where waste management activities are shielded from view at nearby residences by previously completed landfill cells.

*Comment: Clarification as to whether the assessment includes:* 

- noise generated during the initial construction phase of the new/relocated structures, basins, roadways and other on-site infrastructure

Initial construction activities associated with establishment of the expanded facility are expected to comprise construction of the first new landfill cell (Cell 1A immediately to the north of the existing cell), establishment of the internal road network, and construction of site buildings.

Construction activities would be assessed against the *Interim Construction Noise Guidelines* (**the ICNG**). The ICNG provides 'management levels' for construction activities within 'recommended standard hours'<sup>2</sup> based on the *Rating Background* Level (RBL) plus 10 dB, which are 5dB less stringent than the project noise trigger levels that apply to ongoing operational noise impacts during the same periods under the NPfI.

Construction of new landfill cells and basins will occur periodically throughout the life of the facility as the previous cells reach capacity. Noise impacts associated with construction of new basins and cells were not specifically considered as these activities predominantly comprise civil earthworks, utilising the same or similar earthmoving equipment to that associated with ongoing waste management within the landfill cells.

<sup>&</sup>lt;sup>2</sup> defined by the ICNG as 7:00am to 6:00pm Monday to Friday, and 8:00am to 1:00pm Saturday

The Sonus report considered the 'worst case' scenario for ongoing waste management, comprising placement of waste material at the top of the nearest new cells (Cells 1A and 2E) to noise sensitive locations to the southwest and north-east respectively. As construction of new cells will occur at or below ground level these activities will benefit from shielding by the existing landfill cell and previously completed new cells.

As such, noise levels associated with construction of new cells and basins are predicted to be lower than those of the ongoing waste management presented in the Sonus report, and would therefore comply with the requirements of the ICNG.

Construction activities associated with establishment of site buildings (sheds, offices and amenities) and forming the unsealed internal road network will be relatively minor and short-term in nature, comprising erection of the proposed sheds and placement of transportable buildings, and construction of unsealed roads.

Nonetheless, an indicative assessment of noise impacts associated with these activities has been conducted based on a conservative construction scenario representative of construction of footings for the *Front End Recycling Facility* (**FERF**) building occurring concurrently with road formation in the vicinity of the FERF.

As the FERF will be constructed near the site boundary closest to the nearest noise sensitive receivers to the south of the site (and will not benefit from any shielding by the existing landfill cell), the below scenario is expected to be representative of the "worst-case" noise impacts associated with the construction phase of the expansion:

- Crane;
- Generator;
- Grader;
- Excavator;

- Front end loader;
- Dozer;
- Roller;
- Concrete agitator truck;

The sound power levels of the above noise sources have been selected consistent with Australian Standard AS 2436-2010 *"Guide to noise and vibration control on construction, demolition and maintenance sites"*.

Based on the scenario described above, a noise level of 44 dB(A) is predicted at the nearest noise sensitive receptor, indicating that compliance with the requirements of the ICNG during 'recommended standard hours' will be achieved for construction activities associated with the expansion.

Should works outside of Recommended Standard Hours be required, these would be addressed by a noise management plan that is prepared in accordance with the requirements of the ICNG.

Comment: Clarification as to whether the assessment includes:

noise from the general public using the recycling facilities

Noise from the general public using the recycling facilities was not specifically assessed as this component of the operations would generate lower noise levels compared with the more significant noise associated with the commercial receival and placement of landfill material within the landfill cells.

Nonetheless, noise from the general public using the recycling facilities has been predicted.

While the facility will retain the ability to operate into the evening period following the expansion (as is presently the case), the intent is for access to the facility by the general public to continue within the current hours of operation (i.e. only during the 'day' period in accordance with the NPfI).

The highest predicted noise level at a noise sensitive location arising from these activities is 33dB(A), which complies with the 40dB(A) criterion applicable under the NPfI during the day period. When considering the cumulative noise levels for the other activities conducted on-site (as presented in the Sonus report) compliance with the project noise trigger level for the day period is predicted to be achieved (including a 2dB penalty for a low frequency noise character).

The combined level of all activities conducted on-site (including the FERF and placement of material within the landfill cells) is 40 dB(A) during the day (inclusive of a noise character penalty), which complies with the day-time project noise trigger level.

Comment: Clarification as to whether the assessment includes:

...

- noise from monthly shredding of green waste and C&D waste, and the shredding of tyres to maintain a 3m stockpile height

Processing of waste streams (green waste, C&D waste and tyres) will occur periodically to manage stockpile sizes (approximately monthly basis depending on the volume of each type of waste received), and as such

forms part of the noise emissions from the site. These noise sources were not included in the noise predictions presented in the Sonus report.

A prediction of the noise levels associated with these activities has been undertaken. The assessment was based on the following sound power levels which were obtained from manufacturers data and measurements of similar facilities:

- Shredding of green waste: 115 dB(A)
- Concrete crushing (C&D waste): 115 dB(A)
- Tyre shredding: 111 dB(A)

To achieve compliance with the NPfI, the following is recommended:

- Shredding green waste, concrete crushing and tyre shredding should be confined to the day period only (i.e. cease by 6:00pm); and,
- Scheduling of green waste shredding, concrete crushing and tyre shredding should ensure that no more than one of these activities occurs at the same time.

Based on the above, the day project noise trigger level of 40dB(A) is predicted to be achieved for any one of the above activities occurring simultaneously with worst case typical operations (comprising receival and placement of landfill material and operation of the FERF).

*Comment: Clarification as to whether the assessment includes:* 

- differentiation of noise from light rigid, heavy rigid and articulated vehicles
- ...

The predicted levels presented in the Sonus Report are based on the peak daily traffic numbers corresponding to future operation and construction presented in the Traffic Assessment (Appendix H to the EIS), with a combined total of 163 light rigid, heavy rigid and articulated truck movements projected, or an average of 13 per hour across a 12-hour work day. Conservatively, all truck movements were modelled as articulated trucks (which will generate a higher noise level than light rigid and heavy rigid trucks); as such lower noise levels would be predicted by an assessment which differentiated between the different vehicle types.

An additional 98 light vehicles (or 8 per hour across a 12-hour work day) are projected to access the site during the future peak operation and construction scenario (as presented in the Traffic Assessment). The noise levels associated with these vehicles when moving within the site are significantly lower than those associated with

heavy vehicles, and as such will provide a negligible contribution to noise levels in the context of the higher number of heavy vehicle movements within the site.

The combined noise contours presented in Appendix A include the influence of all vehicles accessing the site (both light vehicles and heavy vehicles).

*Comment: Clarification as to whether the assessment includes:* 

#### noise associated with final capping and rehabilitation of each cell as it reaches completion

The assessment detailed in the Sonus Report was based on the worst-case scenario for operational noise emissions from the site, comprising placement of waste material at the top of the landfill cells closest to noise sensitive receivers to the south-west and north-east of the site (cells 1A and 2E respectively). Lower noise levels are predicted for waste management activities occurring further from the nearest residence, and where waste management activities are shielded from view at nearby residences by previously completed landfill cells.

Final capping and rehabilitation of the landfill cells will comprise the same noise sources and similar activities to ongoing placement of material within the cells, and will occur at the top of the cells consistent with the worst-case scenario considered by the Sonus report.

As such, the noise levels presented in the Sonus report (and represented by the contours provided in Appendix A) are representative of this phase of the activities.

Comment: Assessment to include:

- assessment of annoying noise characteristics for the hours of operation up to 1900 Monday to Sunday (in addition to daytime measurements provided)

An assessment of annoying noise characteristics has been undertaken. As noted in the Sonus report, near field measurement data for the excavator, front end loader and road trucks moving within the site indicates that these sources attract a 2dB penalty for a low frequency characteristic during the day in accordance with Fact Sheet C of the NPfI. This characteristic would be expected to become more prominent with increasing distance from the source. For the evening period a 5dB penalty for a low frequency characteristic would apply, resulting in an exceedance of the project noise trigger levels at the nearest residence for the "worst case" operational scenarios presented in the Sonus Report between the hours of 6:00pm and 7:00pm.

As noted, while the facility will retain the ability to operate into the evening period following the expansion (consistent with the current permitted operating hours), the intent is for receival of waste from the general public and commercial sources to continue to occur within the current hours of operation (i.e. access to the public will remain within the current hours of operation).

Outside of these hours, activities are expected to predominantly comprise those associated with on-site dust suppression and management of the waste received during the day. These activities would be conducted using a wheeled loader or similar (waste management) or a water cart (dust suppression).

As such, noise levels have been predicted for the evening period based on a scenario comprising the above activities (dust suppression and waste management). The predictions are based on the above activities occurring at the worst-case locations relative to the nearest noise sensitive receptors to the south-west and north-east (cells 1A and 2E respectively), and as such represent a conservative assessment. The predicted noise levels indicate that compliance with the evening project noise trigger level of 35 dB(A) (including a 5 dB(A) penalty for a low frequency noise character associated with the wheeled loader) is achieved at all nearby noise sensitive receptors.

A 2dB penalty for an annoying noise characteristic during the day period, and a 5dB penalty during the evening period is reflected in the noise contours provided in Appendix A.

*Comment: Assessment to include:* 

LA10 measurements (in addition to the LA90, Leq, and Lmax measurements provided)

The background noise monitoring results presented in Appendix C of the Sonus report are reproduced below, with the addition of the measured  $L_{10}$  levels. The graph has also been updated to reflect the hours of operation as described in the EIS:

Buronga Landfill Expansion Submissions Report S6801C5 July 2022

# sonus.



Comment: Assessment to include:

- justification for the use of 'default noise-enhancing meteorological conditions' and the exclusion of any noise-enhancing weather or worst-case sound propagation conditions in line with Fact Sheet D of the NPfI

Two options for considering meteorological effects are provided by Fact Sheet D of the Policy;

- Either adopt the noise-enhancing meteorological conditions for all assessment periods for noise impact assessment purposes without an assessment of how often these conditions occur (a conservative approach); or,
- Determine the significance of noise-enhancing conditions. Where noise-enhancing meteorological conditions occur for less than 30% of the time, standard meteorological conditions may be adopted for the assessment.

Standard and noise-enhancing meteorological conditions are presented in Table D1 of Fact Sheet D of the NPfl, and are reproduced below:
# sonus.

Meteorological Conditions	Meteorological Parameters	
Standard meteorological conditions:	Day/evening/night: stability categories A–D with wind speed up to 0.5 m/s at 10 m AGL.	
Noise-enhancing meteorological conditions:	Daytime/evening: stability categories A–D with light winds (up to 3 m/s at 10 m AGL). Night-time: stability categories A–D with light winds (up to 3 m/s at	
	10 m AGL) and/or stability category F with winds up to 2 m/s at 10 m AGL.	

The noise assessment adopted the first option; i.e. noise-enhancing meteorological conditions consistent with Table D1 of Fact Sheet D of the NPfI representing a conservative assessment. Specifically, Stability Category D was used with a wind speed of 2.5 m/s from all sources to each sensitive receiver location.

The predicted levels have been reviewed and it is noted that increasing the wind speed from 2.5 m/s to 3m/s (the maximum wind speed indicated in Table D1 for daytime/evening predictions) has a negligible impact on predicted noise levels (an increase of up to 0.2dB). In combination with Stability Category D (the most stable of those indicated for daytime /evening periods by Table D1), the predicted levels therefore represent an absolute worst-case assessment (i.e. highest possible noise levels).

Noise contours for the day-time and evening periods based on the noise-enhancing meteorological conditions described above (stability category D, 3m/s wind from all sources to each receiver location) are provided in Appendix A.

### Comment: Noise contours

Noise contours are provided in Appendix A for the following scenarios:

- Operational noise for the daytime and evening periods representing worst-case noise impacts for residences located to the south and south-west of the site;
- Operational noise for the daytime and evening periods representing worst-case noise impacts for residences located to the north-east of the site;
- Indicative worst-case construction during standard hours.

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### 3 SUMMARY

The Sonus Report was based on an assessment of the worst-case scenario during the day, comprising placement of landfill material at the top of the landfill cells closest to receivers to the south-west and northeast (cells 1A and 2E respectively). Activity occurring at these locations will not benefit from any shielding provided by constructed land fill cells (as would occur for activity lower within the cells) and as such represent a conservative assessment.

The predicted levels were based on default noise-enhancing meteorological conditions consistent with those specified in Table D1 of Fact Sheet D of the NPfI.

The assessment presented in the Sonus Report did not include an assessment of:

- noise levels during the NPfI evening period (i.e. after 6:00pm);
- noise associated with the general public accessing the FERF; or,
- noise from periodic processing (shredding) of green waste, tyres and construction & demolition (C&D) waste.

These activities are expected to be either minor in noise impact (general public accessing the FERF) or occur infrequently (periodic processing of waste streams to maintain stockpile heights).

As such, the assessment has been updated to include the above activities and assessment periods as presented in this report.

During the day period, inclusion of the above activities results in predicted levels no greater than 40 dB(A) at the most affected noise sensitive receptor, including a 2dB penalty for a low frequency noise characteristic. This is an increase of 2dB compared with the levels presented in the Sonus report, and is reflected in the noise contours provided in Appendix A. Consistent with the Sonus Report, predicted noise levels during the day period comply with the project noise trigger level applicable under the NPfI.

During the evening period, an assessment has been made of activities most likely to be undertaken during these hours, including waste management and dust suppression. Based on the assessment, a noise level no greater than 35dB(A) is predicted at the most affected noise sensitive receptor, including a 5dB penalty for a low frequency noise characteristic. This complies with the 35dB(A) project noise trigger level that applies during the evening period in accordance with the NPfI.

# sonus.

As such, the following additional management measures will be required to ensure that compliance with the project noise trigger levels is achieved at all times during the permitted hours of operation:

- Ensure that access to the site by the general public, and receival of commercial waste does not occur outside of the hours of 7:00am to 6:00pm Monday to Saturday, or 8:00am to 6:00pm Sundays and public holidays (i.e. consistent with the 'day' period as defined by the NPfI);
- Ensure that no more than one periodic waste processing activity (i.e. monthly shredding of green waste, C&D waste or tyres to maintain stockpile heights) occurs at any one time. Any one of these activities can occur concurrently with all other typical daytime operations at the site (i.e. operation of the general public facilities and receival and placing of commercial waste).
- Ensure that limited activities only occur after 6pm, comprising waste management and dust suppression.



### **APPENDIX A – Noise Contours**

Figure 1: Worst case operational noise impacts - Cell 1A (daytime)

Figure 2: Worst case operational noise impacts – Cell 2E (daytime)

Figure 3: Worst case operational noise impacts – Cell 1A (evening)

Figure 4: Worst case operational noise impacts - Cell 2E (evening)

Figure 5: Worst case construction noise impacts – FERF (recommended standard hours)



### **Buronga Landfill Expansion** Figure 1: Worst Case Operational Noise - Cell 1A - Day

Default noise-enhancing meteorological conditions (Stability Class D, 3m/s wind) Includes 2dB character penalty Date: 31/05/2022 Prepared by: BH Prepared for: Tonkin/WSC Projection: MGA94 Zone 54 Sheet size: A3 0 250 500 r



## Legend:



Predicted Noise Levels, Leq

_	20	dB(A)		
	25	dB(A)		
_	30	dB(A)		
_	35	dB(A)		
_	40	dB(A)		

45 dB(A)
50 dB(A)
55 dB(A)
60 dB(A)
65 dB(A)
70 dB(A)





## Figure 2: Worst Case Operational Noise - Cell 2E - Day

Default noise-enhancing meteorological conditions (Stability Class D, 3m/s wind) Includes 2dB character penalty

Prepared for: Tonkin/WSC Projection: MGA94 Zone 54 Sheet size: A3

0







----- 50 dB(A) —— 55 dB(A) ----- 60 dB(A) ----- 65 dB(A) — 70 dB(A)





Default noise-enhancing meteorological conditions (Stability Class D, 3m/s wind) Includes 5dB character penalty

Sheet size: A3

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20 dB(A)	
25 dB(A)	
- 30 dB(A)	
35 dB(A)	
40 dB(A)	

— 65 dB(A) — 70 dB(A)





Default noise-enhancing meteorological conditions (Stability Class D, 3m/s wind) Includes 5dB character penalty

Sheet size: A3

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----- 60 dB(A) ----- 65 dB(A) — 70 dB(A)





W



