Buronga Landfill Proposed Expansion

Preliminary Scoping Report

Wentworth Shire Council

8 October 2020
Ref: 20180746R001

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Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
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Executive Summary

This Preliminary Scoping Report (PSR) has been prepared by Tonkin on behalf of Wentworth Shire Council (WSC) in support of a proposed expansion to the Buronga Landfill; owned and operated by WSC. The proposed activity is declared as State Significant Development as specified under Schedule 1, Clause 23 of the *State Environmental Planning Policy (State and Regional Development) 2011*. The development is therefore subject to the requirements of Part 5 of the *Environmental Planning and Assessment Act* 1979. On this basis the Secretary's Environmental Assessment Requirements are requested for the proposed development. This PSR forms a part of the early consultation phase of the State Significant Development application.

The proposed expansion to the landfill will increase the total quantity of waste that WSC is licensed to landfill at the Buronga Landfill from 30,000 tonnes to 100,000 tonnes of general waste per annum. The proposed development will consist of the construction of multiple additional landfill cells over the next approximately 30 years comprising a volume of approximately 4.8 million m^3 over an area of approximately 395,000 m^2 (including the current active landfill cell). The proposed expansion is to occur on the same site as the existing facility, but beyond the footprint of the current landfill operation and will operate as a regional landfill facility. Additional sheds, hardstands and associated infrastructure are proposed as a part of the development to facilitate resource recovery, separate general public and commercial clients and capture stormwater.

This PSR has been prepared to determine the potential environmental constraints of the proposed expansion to the Buronga Landfill and will inform further detailed design works for the proposed development. This PSR includes a desktop assessment of potential environmental constraints upon the proposed development including an assessment of surface water, groundwater, geology, site topography, flora & fauna, noise, dust, landfill gas, odours, litter, traffic, visual impact and the social/cultural environment including Aboriginal and European heritage.

Based on the assessment undertaken herein, it has been determined that the proposed development would not have an unacceptable impact upon most environmental aspects. As a licenced site, many controls are already in place regarding the operation of the site as a landfill facility. Several aspects identified for further consideration are already addressed and controlled by the site LEMP and EPA licence (#20209) and these documents will require amendment to capture the expanded operations. The aspects which appear to require further consideration are:

- Flora and fauna: Buronga Landfill is within an area designated for Terrestrial Biodiversity. The proposed development will occupy approximately one-third of the licenced area with the expanded footprint placed over a former quarry ad borrow pit areas; however, additional clearing will be required. A threatened species assessment should recommend further measures to manage or mitigate the proposed development, if required;
- Traffic: The impact of increased traffic movements traveling to the site during cell construction and site operation at the junction of Arumpo Road and Silver City Highway and the impacts upon Arumpo Road are unlikely to be minor. It is suggested that a Traffic Management Plan should be prepared to assess the level of impact and recommend any management or mitigation required;
- Stakeholder engagement: WCS will need to prepare and implement a Stakeholder Engagement Strategy.

Expansion of the Buronga Landfill poses a best solution response for WSC as other waste management facilities in the area are nearing closure due to a lack of space or are smaller and at significant distance from Buronga. Given the site is already in use as a waste management facility, expansion of Buronga Landfill represents best value for money and least impact on the community. The proposed expansion will require a capital investment of approximately $70 million over the 30-year expected lifetime.

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1 Introduction

1.1 Background

This Preliminary Scoping Report (PSR) has been prepared as a part of the early consultation phase of the development application for the proposed expansion of the Buronga Landfill, located at 258 Arumpo Road, Buronga (Lot 1 DP 1037845, Lot 197 DP756946 and Lot 212 DP 756946). The Buronga Landfill is owned and operated by the Wentworth Shire Council (WSC) under Environment Protection Licence No 20209 issued under the *Protection of the Environment Operations Act* 1997. This licence was issued 5 April 2013 and has been varied 11 times, most recently on 24 November 2017 (Appendix A). The site is currently accepting waste quantities near its approved annual tonnages and there is currently no long term regional facility in this area. To meet these demands, WSC is proposing to increase the annual waste quantity received from up to 30,000 tonnes to up to 100,000 tonnes and expand the landfill footprint from 19 ha to 40 ha by extending northward. A preliminary concept design for this extension has been completed (Appendix B).

Under Section 4.36 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (NSW), the proposed development of the site constitutes a State Significant Development (SSD) due to the total waste to be landfilled. On this basis of the requirements of this legislation, WSC has commissioned the preparation of this PSR to inform the Secretary's Environmental Assessment Requirements (SEARs) pursuant to Part 2, Schedule 2 of the *Environmental Planning and Assessment Regulation* 2000 (NSW). The proposed development will also require a variation to the EPA licence.

1.2 Purpose of Report

The purpose of this PSR is to provide the New South Wales Department of Planning, Industry and Environment (DPI&E) with information about the development of the Buronga Landfill facility, and to obtain the SEARs required for the preparation of the EIS. Pursuant to Part 2, Schedule 2 of the *Environmental Planning and Assessment Regulation* 2000, '*…before preparing an environmental impact statement, the responsible person must make a written application to the Planning Secretary for the environmental assessment requirements with respect to the proposed statement.'* This PSR will provide a basis for discussion with DPI&E during the early consultation phase, including the EPA, and framing amendments to the existing EPA Licence.

1.3 The Proponent

WSC is the proponent seeking development consent to expand their existing Buronga landfill facility by increasing the landfill footprint and increasing the annual waste quantity accepted under their NSW EPA Licence; as described in this PSR. Wentworth Shire Council is the local Shire Council for the Buronga area.

Waste tonnages into the facility have increased in recent years, with 23,800 tonnes received in 2017-18 increasing to a projected 29,000 tonnes of waste in 2019-20. Waste tonnages are expected to continue to increase in future years from Wentworth Local Government Area and may also increase if waste is accepted at site from other areas within NSW, Victoria and SA.

1.4 Site and Surroundings Description

Buronga Landfill is located on Arumpo Road Buronga approximately 4.5 km north northeast of the township of Buronga, NSW. Access to the Landfill is via Arumpo Road with most landfill operations occurring in an area of approximately 19 ha, with the landfill footprint covering approximately 5 Ha. The Landfill is zoned SP2 (Waste or Resource Management Facility) and is surrounded by agricultural activities and remnant vegetation. A summary of the site details is shown in Figure 1.1 and Table 1.1

Lot 1 DP1195524

Lot 2 DP1195524

ARUMPO ROAD

Lot 1 DP1037845

Lot 6917 DP1000008

Lot 197 DP756946

Lot 212 DP756946

Lot 2 DP1071616

Lot 7307 DP1180864

Lot 7311 DP1180864

Lot 2 DP1121028

Lot 2 DP1033964

Lot 930 DP756961

Lot 2 DP867041

Lot 1 DP1121028

Lot 1187 DP822097

Lot 7308

Legend

- Licenced Area
- Lot Boundaries
- Road Corridor

tonkin

0 200 400 600 m

EPSG:3857

N

Wentworth Shire Council

Buronga Landfill Approvals Support
Site Plan

Job Number:	20180746
Filename:	20180746GQ001AGQ
Revision:	Rev A
Date:	2019-07-03 16:16
Drawn:	Isaac Nicholls

Data Acknowledgement:
Imagery from NSW Government Spatial Services, 2019
Cadastre from NSW Government Spatial Services, 2019
Road Data from NSW Government Spatial Services, 2019

Figure 1.1

Table 1.1 Site Identification Details

Aspect	Detail
Site Name	Buronga Landfill
Site Location	258 Arumpo Road, Wentworth, NSW, 2739
Landfill Area (ha)	Approximately 19 ha operational 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 Uses	NORTH: Broadscale agriculture (grazing), Arumpo Road
	EAST: Remnant vegetation, irrigated agriculture to SE, Lake Gol Gol (1.8 km)
	SOUTH: Remnant vegetation, irrigated agriculture to SW (grapevines, orchards)
	WEST: Arumpo Road, Industry including bentonite and gypsum suppliers, Mourquong saltwater disposal basin

1.5 History & Approvals

The site was first used for waste disposal in 1934. In 1967, the Local Government Gazettal notes Reserve No. 86496 (which contains the site) was trusted to the Wentworth Shire Council under the *Public Trusts Act 1897* (NSW) for use in landfilling. Since 2015 the facility has been operated by the Wentworth Shire Council, from 2011-2015 the waste facility was operated by a private contractor. The site was operational for many years before the private contractor took over management of the site. The site is licenced by the NSW EPA under the *Protection of the Environment Operations Act* 1997, with Wentworth Shire Council holding Licence number 20209. The current licence 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 Landfill Environmental Management Plan (LEMP) (WSC, 2015). The LEMP sets out operational procedures protecting human health and the environment from impact by the operations at the Buronga Landfill.

Historically landfilling was undertaken on the eastern portion of the site, mainly above ground with waste being burnt in trenches. The first lined landfill cell was completed in 2017 and designed and constructed in accordance with the NSW EPA Environmental Guidelines for Solid Waste Landfills (NSW EPA, 2016) hereafter referred to as the NSW Landfill Guidelines. EPA approval of this cell was received in November 2017, following this approval landfilling commenced in the new lined cell. A community

recycling centre (CRC) operates at the site, constructed in accordance with the NSW Environmental Trust Community Recycling Centre Grants Program.

The area of the site that is not currently used as part of the waste disposal facility consists of unused areas, areas of former quarrying activity (Landskape, 2016) or areas used as a borrow source for the landfill operation. A strategic review of the Buronga Landfill facility (Geolyse, 2015) was undertaken to describe WSC's intentions for the future of the landfill. The proposed concept layout has been updated by Tonkin to provide a practical solution for the waste management operations currently being undertaken and proposed to be undertaken on-site, including expanded resource recovery acceptance and handling areas (Appendix B).

Previous investigations undertaken on site include a geotechnical investigation undertaken by GHD in 2012, with 4 boreholes drilled in the footprint of the existing waste facility. Groundwater and geotechnical data were analysed from this investigation as part of the design of the new landfill cell. An aboriginal Cultural Heritage Assessment was undertaken across the area of the site not currently occupied by the waste facility by Landskape in October 2016. This assessment found that there is one previously recorded Aboriginal object on the site, however the survey in 2016 failed to re identify that object and no new objects were found. WSC holds an Aboriginal Heritage Impact Permit (C0002579) allowing them to move or harm the identified aboriginal artefact on site if necessary, as a part of the proposed development.

2 Description of Proposed Development

2.1 Overview

The site is licenced to accept up to 30,000 tonnes of general solid waste, 500 tonnes of tyres and 500 tonnes of asbestos for disposal per annum. Waste tonnages into the facility have increased in recent years, with 23,800 tonnes received in 2017-18 increasing to a projected 29,000 tonnes of waste in 2019-20. Waste is disposed in the southern portion of the licenced area within a footprint of approximately 19 ha. Surrounding Councils in New South Wales, Victoria and South Australia operate local landfills mainly servicing their local government area; however, increasing environmental requirements, recycling pressures and operational costs are changing the cost-benefit ratio for operating small landfills.

WSC intends to develop the Buronga Landfill to provide for the future needs of the WSC local government area as the population grows. In addition, the proposed developments are intended to maximise recycling opportunities. The facility will also provide waste management options for surrounding Council to utilise this facility as a short-term contingency measure or longer -term opportunity for recycling and disposal of their communities' waste.

The proposed expansion of the landfilling operation consists of the staged construction of 5 lined landfill cells to the north of the existing landfill and increasing the landfill footprint to approximately 40 ha. This proposed expansion is to occur over approximately the next 30 years and is anticipated to result in the life of the landfill site extending until mid-2053. The expansion will also include the construction of sheds, hardstands and haul roads to facilitate resource recovery activities, separation of general public and commercial clients, retention of stormwater and the moment of waste throughout the site. A concept site layout has been developed for the expansion of the landfill (Appendix B). The design of the landfill cells will be in accordance with current best practices using the layout provided in Appendix B, with all cells lined for acceptance of general waste. Detailed design of the landfill cells will occur as required over the lifetime of the site with the design of the first additional cell anticipated to begin after development approval is granted. These cells will be designed in accordance with the NSW Landfill Guidelines and other industry best practices to minimise the environmental impact of the landfill operation. Leachate and stormwater management infrastructure will be provided as a part of the development, including leachate and stormwater ponds. Closure and rehabilitation plans will be developed as required for the landfill cells and implemented as the cells reach end of life. The closure and rehabilitation process involves capping the landfill cells to prevent water ingress and revegetating the site.

The proposed development is to allow the Buronga Landfill to receive up to 100,000 tonnes of general solid waste per year and increase the total quantity of waste that can be accepted over the lifetime of the site through the construction of additional landfill cells. It is anticipated that the facility will have a quantity of landfilled waste of approximately 3.15 million tonnes over the life of the site, based on the minimum average compaction rate of 650 kg/m^3 required by the site licence and the concept cell design referenced above.

2.1.1 Operations

Buronga Landfill currently accepts building and demolition waste, general exempted waste, waste mineral oils, tyres, asbestos and general solid waste (both putrescible and non-putrescible) as permitted under the NSW EPA Licence 20209 (Appendix A). The facility is licenced to:

- Receive up to 10,000 tonnes/year (t/yr) and store a maximum of 20,000 tonnes recovered aggregate (building & demolition waste);
- store up to 4,000 litres of waste mineral oil;
- Store 50 tonnes of tyres at any one time; and
- Dispose of 500 t/yr tyres, 500 t/yr asbestos and 30,000 t/yr general solid waste.

Building and demolition waste and waste oils are received for resource recovery. Council personnel take all reasonable steps to ensure that recyclable and reusable items received are diverted from landfill. Where possible building and demolition waste (concrete, bricks and tiles) is mixed with soil to be used as daily cover. Clean fill accepted at the landfill is stockpiled as appropriate on site for use as cover material or for rehabilitation. Garden waste (except for noxious weeds which are disposed of in the landfill) is stockpiled until the volumes reach a sufficient size for a contractor to shred and remove the mulch created from site.

WSC has constructed a Community Recycling Centre (CRC) on site in accordance with the NSW Environmental Trust Community Recycling Centre Grants Program. The CRC on site accepts recyclables and hazardous waste from the public. Materials accepted at the CRC include paints, motor oils, cooking, hydraulic and transmission oils, household single use batteries, car batteries, fluorescent and compact fluorescent lighting, gas cylinders and smoke detectors. Other recyclable materials accepted at the facility include scrap metal, mineral oils, glass and plastic containers, garden waste and cardboard and paper. The CRC facilitates the diversion of these recyclables away from landfill for reuse and this facility is to continue under the proposed development.

Remaining wastes, i.e. general waste, tyres and asbestos, are disposed of through landfilling. The site currently accepts bonded asbestos materials which are disposed of in accordance with the procedure set out in the LEMP requiring asbestos materials to be appropriately wrapped and sealed and immediately covered when placed. Waste disposed in the landfill is placed and compacted to achieve a maximum practical *in situ* density in accordance with the site licence. The waste is covered daily with a minimum of 150 mm of material in accordance with the LEMP to maintain sanitary conditions on site and minimise environmental impact.

Environmental monitoring is required by the site licence, including monitoring of leachate, stormwater and groundwater. Leachate generated in the lined cell is managed through a formal leachate capture system and pumped to the leachate basin and disposed of via evaporation. The LEMP permits storage of excess leachate in the landfill cell during very wet weather and disposal off site via tanker to a sewage treatment plant or similar, if required. The legacy cell has no formal leachate management system. Surface water from the site is directed to a sedimentation basin in the south eastern corner of the site. As noted in the LEMP, cells are graded to direct clean stormwater away from the waste mass and prevent contamination of stormwater. No landfill gas (LFG) management system exists on site, nor is LFG monitored at the site. The low rainfall is likely to result in limited leachate or gas generation due to relatively dry and aerobic landfill conditions.

The operations of the proposed expansion are to continue to be in accordance with the best management practices of the time, as defined by the EPA Licence and Landfill Guidelines. Facilities for the public to separate recyclables and disposal of waste will continue to be provided.

2.2 Power Requirements

Electricity is used for on-site facilities; the expansion of the site is unlikely to change power requirements in comparison to the existing facility. The operating hours are not proposed to be expanded as part of this proposal.

2.3 Water Requirements

The expansion of the site is likely to change water requirements in comparison to the existing facility. Water is required for compaction during construction and dust suppression during construction and operations. Alternative sources of water will be used when available, including:

- leachate for dust suppression at the tipping face;
- stormwater for construction and general dust suppression on-site.

3 Key Planning Legislation

3.1 Project Approval

The proposed development requires approval as it is an expansion of the existing landfill. This proposed development will result in an increase of the total capacity of the landfill and an increase in the maximum annual quantity of waste accepted from 30,000 to 100,000 tonnes and an increase in landfill footprint from 19 ha to 40 ha. It will continue to accept the same categories of waste as permitted in the NSW EPA Licence 20209 for the operation of the Buronga Landfill. The proposed development has the following objectives:

- Increase the landfill lifespan by staged construction of additional landfill cells on the current site over a footprint of approximately 40 ha of the 124 ha site;
- Increase the maximum annual quantity of waste permitted to be accepted from 30,000 tonnes/yr to 100,000 t/yr of mixed waste.

WSC is seeking to obtain development consent for the site to receipt of up to 100,000 tonnes of mixed waste per annum. Under Section 4.36, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (NSW) and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (NSW), the proposed development constitutes a State Significant Development. WSC is aware that the proposed development will also require a variation to the existing NSW EPA licence for the operation of the Buronga Landfill. In accordance with the legislation and pursuant to Part 2, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (NSW), WSC, has commissioned the preparation of the PSR to seek the Secretary's Environmental Assessment Requirements.

3.2 NSW Statutory Legislation

The relevant NSW planning legislation includes:

- *Environmental Planning and Assessment Act 1979*;
- *Environmental Planning and Assessment Regulation 2000;*
- *Protection of the Environment Operations Act 1997.*

3.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act establishes the statutory framework for planning and environmental assessment in New South Wales, including allowing for the preparation of environmental planning instruments, being State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs). Exempt development (S1.6) does not require development consent, environmental assessment or State significant infrastructure approval and hence the proposed development does not qualify as an exempt development.

Part 4 of the EP&A Act generally provides for the control of local development that requires development consent under an environmental planning instrument. Part 4 also provides for State Significant Development.

3.2.2 Environmental Planning and Assessment Regulation 2000

The proposed development is considered a designated development and may require an Environmental Impact Statement. The facility triggers Clause 32 (1)(a)(iv) of Schedule 3 of this legislation:

> *(1) Waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste and:*
> *(a) that dispose (by landfilling, incinerating, story, placing or other means) of solid or liquid waste:*
>
> *(iv) that comprises more than 200 tonnes per year of other waste material.*

As described in Section 2.1 the facility is proposed to accept up to 100,000 tonnes per annum of waste material and therefore comprises a designated development. The site already comprises a designated development as it is currently a waste facility accepting up to 30,000 tonnes per annum, exceeding the requirement for Clause 32(1)(a)(iv) to be triggered. The Landfill was a pre-existing use prior to the development of the WSC Interim Development Order in 1970 and hence no development application has been submitted (WSC, 2015)).

3.2.3 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act* (POEO Act) 1997 defines scheduled activities which require an Environment Protection Licence. Waste disposal by application to land is a scheduled activity unless the activity involves the following:

(f) sites that are outside the regulated area, but only if:

(i) the site is owned by and operated by or on behalf of a local council, and

(ii) the site was in existence immediately before 28 April 2008 and was not required to be licensed before that date, and

(iii) details required under clause 47 of the Protection of the Environment Operations (Waste) Regulation 2005 were provided, in relation to the site, before 28 April 2008, and

(iv) the site receives from off-site less than 5,000 tonnes per year of waste, and

(v) that waste has been generated outside the regulated area and consists only of general solid waste (putrescible), general solid waste (non-putrescible), clinical and related waste, asbestos waste, grease trap waste or waste tyres (or any combination of them). the waste received is <5,000 tonnes/yr.

As Buronga Landfill receives over 5,000 t/yr of general solid waste it is a scheduled activity and required to hold an Environment Protection Licence. This requirement is current for the existing operation and does not change for the proposed development; however, the licence will require amendment is the proposed development is approved. The current Licence requires adherence to the Landfill Guidelines and development of site-specific plans which will also require updating if approval is granted.

3.3 Environmental Planning Instruments

Relevant NSW Planning Instruments include:

- State Environmental Planning Policy (State and Regional Development) 2011 No 511
- State Environmental Planning Policy (Infrastructure) 2007 No 641
- Wentworth Local Environment Plan 2011

3.3.1 State Environmental Planning Policy (State and Regional Development) 2011

Clause 23, Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (NSW) sets the definition for waste and resource management facilities that are declared to be State Significant Development. Clause 23(1)(b) applies to the proposed development.

> ***23 Waste and resource management facilities***
>
> *(1) Development for the purpose of regional putrescible landfills or an extension to a regional putrescible landfill that:*
>
> *(a) has a capacity to receive more than 75,000 tonnes per year of putrescible waste, or*
>
> *(b) has a capacity to receive more than 650,000 tonnes of putrescible waste over the life of the site, or*

(c) is located in an environmentally sensitive area of State significance.

(2) Development for the purpose of waste or resource transfer stations in metropolitan areas of the Sydney region that handle more than 100,000 tonnes per year of waste.

(3) Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.

(4) Development for the purpose of waste incineration that handles more than 1,000 tonnes per year of waste.

(5) Development for the purpose of hazardous waste facilities that transfer, store or dispose of solid or liquid waste classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste that handles more than 1,000 tonnes per year of waste.

(6) Development for the purpose of any other liquid waste depot that treats, stores or disposes of industrial liquid waste and:

(a) handles more than 10,000 tonnes per year of liquid food or grease trap waste, or

(b) handles more than 1,000 tonnes per year of other aqueous or non-aqueous liquid industrial waste.

Under clause 23(1)(b), it is evident that the proposed development is a State Significant Development and Section 4.36, Division 4.7 of the *Environmental Planning and Assessment Act* 1979 (NSW) applies. Under Section 4.12, Division 4.3 of the Act, an Environmental Impact Statement, in the form prescribed by the regulations, must accompany the development application.

3.3.2 State Environmental Planning Policy (Infrastructure) 2007

Under the infrastructure SEPP, a 'waste disposal facility' is defined as

…a building or place used for the disposal of waste by landfill, incineration or other means, including such works or activities as recycling, resource recovery and other resource management activities, energy generation from gases, leachate management, odour control and the winning of extractive material to generate a void for disposal of waste or to cover waste after its disposal.

Hence; the proposed development is permitted with consent under Section 121 of the *State Environmental Planning Policy (Infrastructure)* 2007.

Note, under section 123 of the Infrastructure SEPP:

(1) In determining a development application for development for the purpose of the construction, operation or maintenance of a landfill for the disposal of waste, including putrescible waste, the consent authority must take the following matters into consideration:

(a) whether there is a suitable level of recovery of waste, such as by using alternative waste treatment or the composting of food and garden waste, so that the amount of waste is minimised before it is placed in the landfill, and

(b) whether the development:

(i) adopts best practice landfill design and operation, and

(ii) reduces the long-term impacts of the disposal of waste, such as greenhouse gas emissions or the offsite impact of odours, by maximising landfill gas capture and energy recovery, and

(c) if the development relates to a new or expanded landfill:

(i) whether the land on which the development is located is degraded land such as a disused mine site, and

(ii) whether the development is located so as to avoid land use conflicts, including whether it is consistent with any regional planning strategies or locational principles included in the publication EIS Guideline: Landfilling (Department of Planning, 1996), as in force from time to time, and

(d) whether transport links to the landfill are optimised to reduce the environmental and social impacts associated with transporting waste to the landfill.

3.3.3 State Environmental Planning Policy (Koala Habitat Protection) 2019

The *State Environmental Planning Policy (Koala Habitat Protection) 2019* (Koala Habitat SEPP) provides the framework for conservation and management of natural areas that provide habitat for koalas to ensure permanent free-living populations over the present range. The policy applies to the Wentworth Shire Council area. Wentworth Shire does not have a published Koala Plan of Management, however the Wentworth Shire Council Development Control Plan states that the sole vegetation species for koala habitat is the River Red Gum. The site is not located within the mapped Koala Development Application Map in the Koala Habitat SEPP. The flora and fauna assessment recommended to be undertaken shall address if any River Red Gum are present on site.

3.3.4 Wentworth Local Environment Plan

The Local Environment Plan relevant to the site is the *Wentworth Local Environmental Plan 2011* (LEP). The Land Zoning Map shown in Figure 3.1 shows that the Buronga site is zoned SP2 (Infrastructure) for the purpose of "Waste or Resource Management Facilities". The objectives of the SP2 zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or may detract from the provision of infrastructure.

Under Part 2 of the LEP, roads and water reticulation systems are permitted without consent in Zone SP2 Infrastructure. Other uses, as shown on the Land zoning Map, are permitted with consent. The proposed development of a waste disposal facility is permitted with consent on the site. It is understood that Buronga Landfill did not require approval at the time of landfill activity commencing and hence there is no current Development Application or other approval (Appendix B in LEMP).

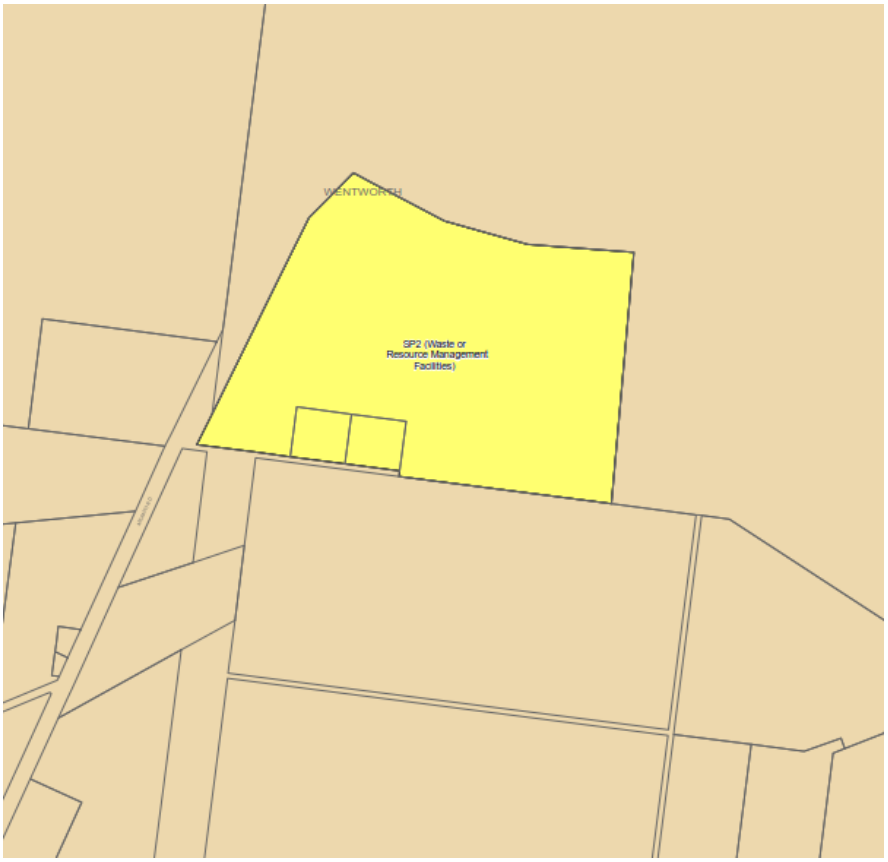

Figure 3.1 Land Zoning Map (Source: NSW Government)

The Wentworth LEP, defines area where complying development may still require development consent, being areas of special or unique environmental aspects. The Buronga Landfill is not located within 100 m of an environmentally sensitive area, including the wetlands located to the east and west of the site, and is not within the Flood Planning Area or a heritage conservation area (including heritage and archaeological sites. Buronga Landfill is within the area designated for terrestrial biodiversity and under S7.4 of the LEP, the consent authority must consider whether or not the development:

(a) is likely to have any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(b) is likely to have any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(c) has any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

(d) is likely to have any adverse impact on the habitat elements providing connectivity on the land.

Where these are true, the development needs to be designed, sited and managed to avoid, minimise or mitigate the impact. Although within this area, it is noted that the areas north of the current landfill cells have previously been quarried and consent has been given for the use of these areas as a borrow source for landfill cover soil.

3.4 Commonwealth Policy and Legislation

Relevant Commonwealth Policy includes:

- *The National Waste Policy* 2009

Relevant Commonwealth Legislation includes:

- *National Greenhouse and Energy Reporting Act 2007*
- *Environmental Protection and Biodiversity Conservation Act 1999*

The subject site is not listed as a World or National Heritage Place, nor will the development impact upon any World or National Heritage Places. The site is not located near a Commonwealth Heritage Place. The closest protected areas are located approximately 5.5 km away adjacent to the Murray River. There are several Wetlands of International Importance located along the Murray River, with the closest being the Riverland Complex 100km downstream. The legislation protects native vegetation, the EIS will address the potential for native vegetation to be impacted upon by the development.

3.5 Approvals/Licences Required

This development is considered a State Significant Development under Schedule 1 of *State Environmental Planning Policy (State and Regional Development)* 2011 (NSW). In accordance with this legislation, a development application must be submitted to the Minister for Planning with an appropriate Environmental Impact Statement (EIS).

The site is currently licenced under the *Protection of the Environment Operations Act* 1997 (NSW), holding NSW EPA Licence No. 20209. As part of the development process the proponent will apply to the EPA for a variation to the existing licence. Due to the staged nature of the proposed development, the licence will likely require several variations over the lifetime of the landfill site.

4 Impact Identification and Assessment

This section of the PSR provides a description of the potential environmental impacts of the proposed development, both during construction and operation.

4.1 Site Conditions

The site is an existing landfill facility located approximately 5km north of the township of Buronga at 258 Arumpo Road, Wentworth (Lot 1 DP 1037845, Lot 197 DP 756946 and Lot 212 DP 756946). The total site area is approximately 124 ha and the existing landfill operation covers approximately 19 ha, straddling the boundary of Lots 197 and Lot 212 and extending into the larger Lot 1. The site is in a rural setting surrounded by industrial and agricultural sites. The closest residence is located on Arumpo Road approximately 950 m south of the site boundaries.

The area of proposed expansion lies within Lot 1 DP 1037845 and is heavily disturbed by past activities. The land currently comprises remnant vegetation and areas of former quarry operations and borrow sources for the landfill.

4.2 Climate

The Buronga area has a warm (persistently dry) grassland climate, with hot dry summers and cold winters (Bureau of Meteorology, 2019a). Climate data were sourced from the Mildura Airport (Bureau of Meteorology (2019b) as this is the closest climate station to the Buronga Landfill. Mean maximum temperatures are highest in summer months from December to February and lowest in winter months from June to August (Table 4.1).

Table 4.1 Monthly Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean maximum daily temperature (°C)	32.5	31.8	28.5	23.7	19.1	16.0	15.5	17.3	20.6	24.1	27.7	30.3	23.9
Mean minimum daily temperature (°C)	16.8	16.5	13.9	10.2	7.4	5.2	4.3	5.3	7.3	9.8	12.6	14.9	10.4
Mean monthly Rainfall (mm)	22.2	21.6	19.3	19.1	24.9	22.0	24.9	25.4	26.8	28.6	26.0	25.5	288.2
Highest monthly rainfall (mm)	129.4	192.6	128.2	120.4	86.3	82.2	59.4	74.8	93.6	120.6	129.9	181.2	657.4
Mean daily pan evaporation (mm)	10.7	9.8	7.4	4.6	2.7	1.8	2.0	3.0	4.6	6.6	8.6	10.1	6.0

Source: Bureau of Meteorology, 2019, Mildura Airport, Site Number 076031, Climate data 1946 – 2019

Mean rainfall is consistent across the year but is typically higher in late winter to spring, rainfall in summer months typically occurs over a smaller number of higher intensity events, with the highest mean number of days of rain occurring in July. Mean monthly evaporation exceeds mean rainfall in all months of the year and mean annual rainfall (288.2 mm) is greatly exceeded by annual evaporation (2191 mm).

Mean wind speeds are highest in spring and lowest in late autumn to winter, with mean 9am wind speeds ranging from 17.4 km/h in October to 9.4 km/h in June and mean 3pm wind speeds ranging from 19.7 km/h in September and October to 15.1 km/h in May. Wind directions are generally from the south and

south east in the morning and south to south west in the afternoon in summer months and north to west in the morning and to the west in the afternoon in winter months.

4.3 Surface Water

On average, the rainfall is spread evenly throughout the year, with more rainy days during winter. Extreme rainfall events in the area have occurred in summer in the past, specifically in 2011 where the annual rainfall was 657 mm, with 322 mm of this rainfall occurring in January and February. These extreme events are more likely to result in runoff and generate stormwater than low intensity events.

The current operation has surface water management processes in place, as noted in the LEMP (WSC, 2015). Surface water management processes for the proposed development will be developed as part of detailed design of the development and governed by a revised LEMP. WSC is committed to preventing contaminated surface water from leaving the site.

Significant surface water bodies in the area around the Landfill are Lake Gol Gol, Gol Gol Swamp and the Murray River. Lake Gol Gol & the Gol Gol Swamp (both "wetlands" or ephemeral lakes) are located over 1.8 km East of the site. These waterbodies are connected through Gol Gol Creek to the Murray River. These water bodies have not been flooded regularly since the construction of flow control structures along Gol Gol Creek in the 1950s. Lake Gol Gol and the Gol Gol Swamp suffer from drought stressed vegetation and groundwater salinity issues (Murray Darling Wetlands Working Group, 2010).

The Murray River is located approximately 3.7 km away at the closest point towards the South West. The Murray River system is a significant river system that provides large volumes of irrigation and drinking water for downstream areas.

4.3.1 Stormwater

There is the potential for sediment or leachate contaminated stormwater to be generated on site, both in the current operation and the proposed expanded operation. Stormwater management processes and structures will be developed and documented in a Stormwater Management Plan according to regulations and the NSW EPA *Environmental Guidelines: Solid Waste Landfills, Second Edition* 2016 and other industry best practices.

Stormwater flows have the potential to impact upon the receiving environment. During construction of the development there is the potential for sediment laden stormwater to be generated which can have negative impacts upon receiving waters. To prevent this sediment laden water from leaving site a construction environmental management plan will be developed to control the environmental impacts of the construction. Erosion and sediment controls will be designed with reference to the Blue Book (Landcom, 2004; DECC, 2008) and Best Practice Erosion and Sediment Control (IECA, 2008)

During landfill operation there is the potential for overland flows to contact waste and become contaminated. Currently stormwater is bunded to separate it from waste areas to prevent it from becoming contaminated. The flows are directed around the toe of the landfill and are detained on site in a sedimentation basin before release, this process will continue under the future development. Water that contacts waste is captured as leachate and treated according to EPA requirements. Run-on of stormwater from areas external to the site is kept away from waste and other operational areas by bunding and construction of drains to prevent contamination of this water.

Annual monitoring of the stormwater discharges from the sedimentation basin currently on site is required under the EPA licence for the site.

4.3.2 Leachate

Any water that contacts waste becomes contaminated. The current active landfill cell is lined with a leachate collection and treatment system to prevent leachate from leaving the site. Leachate is collected and evaporated to prevent release into the environment. A Leachate Management Plan will be developed

to for the proposed development to comply with the Landfill Guidelines (NSW EPA, 2016)) and other industry best practices regarding the collection and treatment of leachate to prevent contaminated material from leaving the site.

Annual monitoring of the leachate basin is required under the EPA licence for the site.

4.3.3 Flooding

The site is not located in a designated flood planning area (WSC, 2011).

4.4 Groundwater

The site is underlain by the Lower Renmark Group aquifer comprising fine to medium grained quartz sand and carbonaceous silt and clay (GHD, 2012). The groundwater levels are around 30 m AHD or over 6 m below the surface (Table 4.2) and were confirmed to be similar on-site. The site levels range from RL48 to RL35 at a low point in the far east of the site, with the topographic map suggesting that the levels are generally around 40m. The borehole data examined shows that the groundwater surface is generally at a level of 30-32 m AHD in the area surrounding the site. One borehole reading shows groundwater at a level of 38m AHD. This reading is over 25 years old and is from a bore nearly 2km from the site, the reading is not considered representative of the groundwater conditions on site. The data suggests that there is at least 3m of groundwater separation at the lowest point of the site and generally greater than 4.5 m of groundwater separation. The investigation shows that elevated groundwater is not an issue at the site (Table 4.3). The regional groundwater flow in the vicinity of the site is expected to be in a south westerly direction towards the River Murray.

Table 4.2 Groundwater Bores within 2 km of Buronga Landfill (WaterNSW, 2018)

BHID	Water Level (mbgl)	Water Level (mAHD)	Purpose of Borehole	Date Sampled
GW087083	9.12	31.42	Monitoring Well	20/09/2018
GW087038	6.60	32.12	Monitoring Well	20/02/2013
GW087644	4.82	31.3	Monitoring Well	20/09/2018
GW088168	4.60	n/a	Monitoring Well	10/03/2008
GW088478	7.20	29.54	Monitoring Well	19/03/2018
GW088479	7.82	30.07	Monitoring Well	19/03/2018
GW087039	6.32	32.35	Monitoring Well	19/02/2013
GW087074	8.80	31.70	Monitoring Well	20/02/2013
GW087328	11.25	32.60	Monitoring Well	09/06/1982
GW087325	2.070	38.00	Monitoring Well	01/09/1993
GW088305	1.170	31.220	Monitoring Well	26/05/2014

Table 4.3 On-Site Boreholes

Monitoring Location	Date Sampled	Water Level (mbgl)	Water level (mAHD)
GHD BH01	19/01/2010	Dry	N/A
	29/04/2010	Dry	N/A
	13/06/2012	Dry	N/A
GHD BH02	19/01/2010	8.3	30.2
	29/04/2010	9.3	29.2
	13/06/2012	8.6	29.9
GHD BH03	19/01/2010	7.2	30.6
	29/04/2010	7.4	30.4
	13/06/2012	6.6	31.2
GHD BH04	17/05/2012	15.4	32.6
	13/06/2012	15.5	32.7

Landfilling has previously occurred mostly above ground level in a single landform, this landfill area is unlined. The currently landfill area consists of a lined cell with a leachate collection system to minimise the potential for groundwater contamination. Groundwater monitoring is undertaken at the landfill, given the semi-arid climate, the potential for leachate generation and movement to groundwater is considered to be low.

The proposed development will consist of lined landfill cells complying with the environmental guidelines and industry best practices regarding cell construction to prevent leachate contamination of groundwater. Closure plans including progressive capping and controlling drainage into the landfill in accordance with industry best practices reduces the generation of leachate. These steps to control and reduce leachate generation, combined with the separation between the ground surface and the groundwater mean that it is possible to prevent the landfilling operation from having a negative impact on groundwater.

Groundwater monitoring is required under the EPA licence for the site. This requirement will remain under the proposed development, potentially on a wider scale involving the installation of additional monitoring wells.

4.5 Local Geology and Soil Types

The Mildura 1:250,000 geological map issued by the Geological Survey of Victoria shows that the geology of the area around the site consists mostly of Quaternary Pleistocene era aeolian (wind-blown) calcareous sands and calcareous clayey sands of the Woorinen Formation. To the east of the site there are fluvial and lacustrine sediments of clay, sands and sandy clays of the Coonambidgal Formation. The Woorinen formation consists of red-brown medium to fine silty sand, red calcareous silty clay and sandy clay. The Woorinen formation overlies the Quaternary age Blanchetown Clay unit which comprises fluvial-lacustrine clays and sandy clays. The Blanchetown clay unit overlies the Tertiary age Parilla Sand unit (Douglas, J.G. *et al.*, 1988). The Parilla Sand unit is quartzose, fine to medium grained and moderately well sorted. There are no known faults in the area around the site according to the geological maps issued by the Geological Survey of Victoria.

Two Australian Soil Classification types are noted in the vicinity of the Landfill, as shown in Figure 4.1. Vertosols (grey shading) are cracking clay soils that have a clay texture throughout the profile, exhibit considerable shrink and swell during wetting and drying and present strong cracking when dry. Rudosols (yellow shading) are soils that have negligible pedologic organisation, the component soils vary widely in texture and depth. The Vertosol soils in this area are likely to consist of Grey, Brown and/or red clays and the Rudosols are likely to consist of Siliceous sands (Department of Environment and Heritage, 2019).

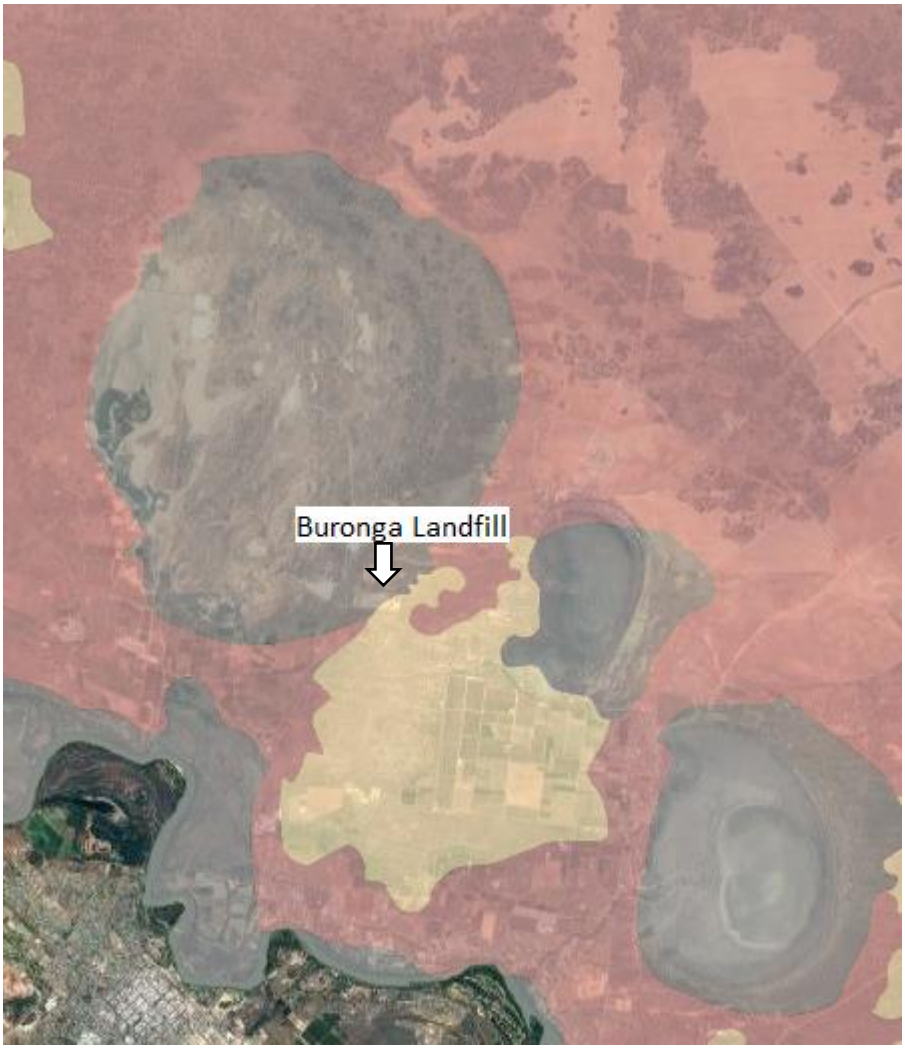

Figure 4.1 Australian Soil Classification of the Area (Source: Department of Environment and Heritage 2019) showing Calcarosols (red), Vertosols (grey) and Rudosols (yellow).

Geological conditions on site have been found to be consistent with the expected deposits from the literature. The landfill is believed to be underlain by medium dense sands or stiff clays. The upper silty and clayey sands are reddish brown in colour suggesting they are Rudosols (WSC, 2015). This suggests these soils would be suitable for the foundation of a landfill. The use of lined landfill cells prevents landfill gas or leachate from passing through geological units that could potentially provide a migration pathway.

4.6 Site Topography

The site generally slopes to the east from a peak of approximately RL48 in the north-west corner to RL35 at a lower area at the eastern toe of the landfill. The NSW 1:50 000 Topographic Map (Mildura 7329-N, 2017) shows site levels are around 40m AHD. Drainage generally follows the natural gradient through

constructed drains to the east around the toe of the previous landfill area to a sediment pond located in the south eastern corner of the site.

The historic landfill operation mainly occurred above natural ground level, with some minor excavation to around 3 m in some areas. This historic landfilling area is on the eastern side of the site and consists of a single landform. The previously landfilled area is located to the to the East of the current cell and is a similar height to the historic operation landform.

The area around the site is generally quite flat, with levels increasing to RL50 on the Eastern side of Lake Gol Gol approximately 4 km away from the site. A gully runs North-East to South-West across the site. The visual impact of the site on surrounding receptors due to the site topography is low, with the landfilling operation not being significantly higher than natural levels.

4.7 Flora & Fauna

The site is partially clear of vegetation, with other areas containing sparse remnant vegetation and bounded by natural bushland comprising small bushes/scrub and medium sized trees. The far eastern side of the site is relatively undisturbed. The NSW Department of Environment & Heritage Vegetation Classes map (Figure 4.2) shows the site is in an area of Semi-Arid Woodlands; partially the Grassy subformation (yellow shading) and partially the Shrubby subformation (brown). A Search of the EPBC Act Protected Matters tool shows that 20 threatened species and 1 threatened ecological community exist in the area of the site (Appendix C).

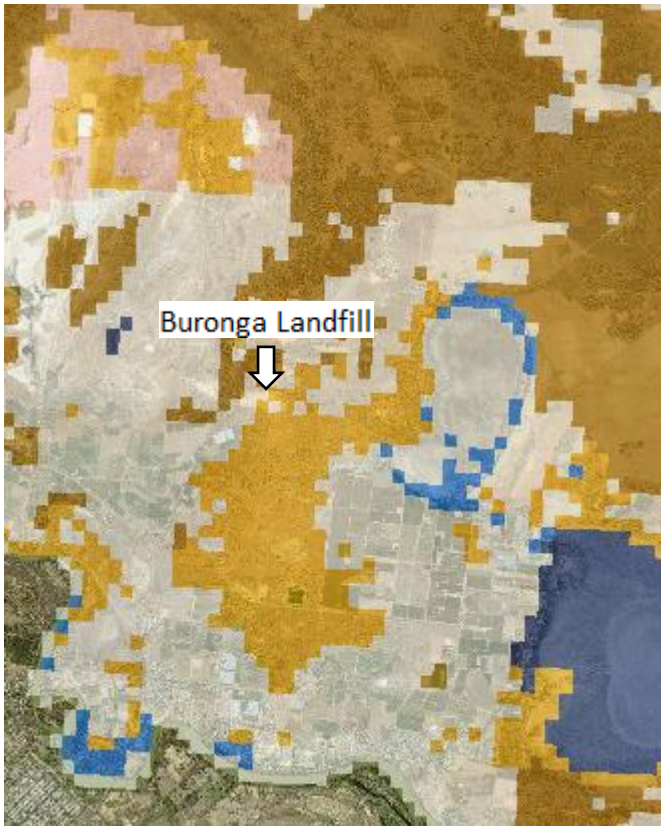

Figure 4.2 Vegetation Classes Map (Source: Department of Environment & Heritage, 2019)

Clearing has occurred in areas of the proposed extension to facilitate a borrow pit to supply soil for landfill construction and operations. The proposed development has been sited to maximise the landfill footprint over the borrow pit areas; however, further clearing will be required. The increase in landfilled areas would result in approximately one-third of the total area being cleared for landfill operations.

4.8 Surrounding Areas and Receptors

The nearest sensitive receptors are industrial sites to the west and north-west and farmland to the south-west. Farmland lies approximately 300m to the South and South West of the site, and one industrial site (bentonite suppliers) approximately 400m to the West with the other industrial site (gypsum suppliers) 500 m to the north-west. The closest residential dwellings are approximately 1km to the South and Lake Gol Gol is approximately 1.8 km to the East. The proposed extension does not move the landfill closer to the residential property or to Lake Gol Gol. The industrial sites are currently potential receptors to the landfill operations with the proposed extension moving operations to approximately 300 m of the gypsum supplier. Both industrial sites contribute to truck movements along Arumpo Road along with the landfill and the agricultural packing shed located 900 m south.

4.8.1 Noise

The current LEMP specifies procedures to minimise the impact of noise upon the receptors of the site and to comply with EPA requirements relating to noise pollution. The operation of the proposed site is to be similar to the operation of the current site; noise is able to be effectively controlled to minimise impact upon receptors. No plant generating noise in excess of current levels is proposed for the development. The operating hours of the landfill are proposed to remain as currently licenced being:

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

As a result, it is not expected that the proposed development will increase the noise levels generated from site construction or operations.

4.8.2 Dust

The current LEMP specifies procedures to minimise the dust emissions from site to avoid impact upon receptors and to comply with EPA regulations. The operation of the proposed site is to be similar to the operation of the current site and dust control procedures employed under the current LEMP (WSC, 2015) will be continued including:

- Immediate burial and covering of dusty loads;
- Maintenance and watering (if required) of entrance and site access roads;
- Restriction of speed limits on-site;
- Scheduling of earthworks for construction undertaken on days with little or no wind and/or when the soil to be excavated is moist;
- Use of water trucks where required.

These dust control measures are able to effectively minimise impact upon receptors. The proposed development will be staged so that clearing of existing vegetation will only occur immediately preceding cell development.

4.8.3 Litter

Litter has the potential to impact receptors, both human and non-human (including vegetation). The LEMP requires that WSC implement all practicable measures to minimise litter generation and confine litter inside of the boundaries of the site, including:

- Filling in a direction to provide greatest protection to wind;
- Undertaking landfilling within a bunded waste disposal area;
- Maintaining a small active waste disposal area (tipping face);
- Regularly compacting waste throughout the day;

- Covering of all landfilled waste at the end of the day with a minimum of 150 mm cover, or as specified in the licence;
- Use of mobile litter fences around the active tipping area, as required;
- Covering of all loads entering the landfill;

These procedures will continue to be implemented to the proposed facility to minimise litter from leaving the site and impacting receptors.

4.8.4 Landfill Gas

Landfill gas has the potential to have impact upon both off site and on-site receptors. The generation of landfill gas has previously been modelled for the existing landfill operation, but it is noted that the generation of landfill gas requires anaerobic conditions which are created by waste being moist and compact. The semi-arid environment limits the amount of moisture in the waste mass. As there are no identified existing off-site human receptors and the proposed landfill cells will incorporate a lining system that minimises the risk of migration of landfill gas outside of the boundary of the landfill the risks of lateral movement of LFG are further limited. The placement of interim capping at cell completion and final capping will assist in oxidising fugitive methane emissions and limiting vertical movement of gas.

Following development approval, changes to monitoring regimes for the proposed development will be accounted for in a revised LEMP and EPA Licence for the site.

4.8.5 Odours

The LEMP specifies measures to minimise the generation and effect of odours arising from the landfilling operations on the current site. Complaints must be recorded and reported to the EPA if they are received by WSC. The prevailing winds are from the south, south east and south west in summer months and north to west in winter months. There is only one receptor to the north (north west) of the site, the gypsum supplier on Arumpo Road. To the south, the nearest receptor is a residence and agricultural operation approximately 950 m to the south. The proposed development will maintain the LEMP measures to minimise the generation and effect of odours from the operations on the site and maintain effective reporting and resolution of any complaints.

4.8.6 Traffic

Traffic access the site along Silver City Highway (B79) which links Buronga and Wentworth to Broken Hill. Arumpo Road is accessed from Silver City Highway by a right or left-hand turn from an added lane section, allowing movement of traffic past turning vehicles. The proposed development is to increase the annual quantity of waste accepted at the site; therefore, an increase in traffic volume is expected to occur. The traffic is expected to be of the same type as the existing site and is not unusual for the area given the nearby industrial activities. The increase in truck movements will depend on truck size and recycled volumes.

It is expected that a Traffic Management Plan will need to be developed to ensure safe turning off the Silver City Highway and that Arumpo Road is constructed to withstand higher traffic volumes.

4.9 Social/Cultural Environment

The site is already in use as a landfill facility, therefore no change to the social and cultural of the environment is anticipated to occur.

4.9.1 Aboriginal Cultural Heritage

An Aboriginal Cultural Heritage Assessment was conducted at the Buronga Landfill covering the proposed extension area in 2016 (Landskape, 2016). The assessment found that there is one previously recorded Aboriginal object on the site (AHIMS Site Number 46-3-0192), however the survey in 2016 failed to reidentify that object. No new objects were found. WSC was granted an Aboriginal Heritage Impact Permit

(C0002579) to move or harm, if necessary, the identified aboriginal artefact on site as a part of the borrow pit development. The Heritage Assessment found that the Barkandji Aboriginal community thought that it was unlikely that the Buronga Landfill area contains abundant physical remains of Aboriginal occupation. Buronga Landfill was deemed to have a Low overall Archaeological Significance Rating. Accidental discovery procedures will be included in Construction Environmental Management Plan prepared prior to developing each Cell.

4.10 Visual Impact

The site is already in operation as a landfill facility. The facility is currently set back approximately 250 m from Arumpo road and the proposed development is not expected to reduce this set back. The surrounding topography is gently undulating to flat, with no nearby areas overlooking the site. The development does not propose to increase the levels on the site significantly, minimising visual impact. Scattered remnant vegetation between the landfill and Arumpo Road will be retained as far as practical which combined with a slight rise between the road and the landfill will provide a screen to users of Arumpo Road.

4.11 Licences

The site is currently licenced by the NSW Environmental Protection Authority under the *Protection of the Environment Operations Act* 1997 (Licence No. 20209). This licence will require variation for the proposed development and is expected to contain updated conditions for stormwater, leachate, LFG as a minimum.

5 Project Justification

The NSW Waste and Resource Recovery Strategy 2014-2021 sets out targets to address waste reduction, resource recovery and diversion of waste from landfill as required by the *Waste Avoidance and Resource Recovery Act* 2001. WSC have implemented strategies to meet these targets including the establishment of the Community Recycling Centre to receive materials that can be reused or recycled and prevent these materials from being disposed of in landfill. Some wastes cannot be diverted from landfill and WSC are committed to disposing of this in a way that minimises the impact of its impact upon the environment.

Population growth in WSC towns was almost 3% for Wentworth and Buronga whilst Mildura has consistently grown at 8 – 15% per annum for the last eight years, effectively doubling the population over this period (Population Australia, 2019). WSC has identified this growth as an opportunity to provide improved waste management facilities for its constituents as well as providing a regional service. By becoming a regional facility, WSC will potentially attract economies of scale to better facilitate recycling which can be challenging in communities at distance from capital cities.

The proposed development consists of an expansion to the existing landfill facility and an increase in the annual tonnage of waste that WSC is licensed to accept. This increased annual tonnage allows for consolidation of waste management infrastructure, providing better monitoring and regulation through a larger facility. This allows a better solution for the environment through economies of scale, with the construction, operation and closure of landfill cells in accordance with industry best practices to better protect the environment.

The Buronga Landfill is located in a semi-arid environment with no sensitive receptors within 1 km of the site; its neighbours are industrial activities for bentonite and gypsum supply. The site is a former quarry and has been used as a soil borrow pit and hence is a degraded site. The geology of the site is stable and the environment naturally leads to lower leachate and LFG generation than more temperate environments. The current licence as reflected in the LEMP, requires best management practices at the landfill and its ownership by a local Council authority ensure the interests of the community are well represented. Alternative sites have not been investigated given the suitability of the existing site.

If the expansion is not approved, then the Buronga Landfill will be nearing closure. An alternative site in Wentworth Shire is unlikely to be found, given that this site is an existing use as a landfill. The nearest landfill in Mildura (Vic) is nearing closure and other nearby landfills are unlicensed or closed. The closest licenced landfill in NSW is at Deniliquin over 300 km south east showing significant distances would need to be travelled to dispose of non-recyclable waste.

The expansion of Buronga Landfill is the optimal solution as:

- Aggregation of waste improves recycling opportunities;
- Consolidation of landfill facilities improves management and utilisation of best management practices;
- The site is an existing landfill meets the siting requirements for a landfill in this region;
- No other facilities are available within economic distances from Wentworth and Buronga;
- Improved economies of scale should reduce cost to current rate payers.

6 Consultation

As part of the development application, stakeholder consultation will be undertaken in accordance with Wentworth Shire Council internal project procedures and statutory requirements in addition to the consultation requirements determined through the early consultation process part of the SSD application. The consultation strategy aims to address all community and regulatory concerns.

Council will develop a Stakeholder Engagement Plan to address specific actions to inform and consult with stakeholders including:

- Neighbours
- Local residents
- Internal Council departments
- Relevant authorities/regulators as identified in the SEAR's

It is expected that the SEAR's will nominate the required consultation with the relevant authorities required as part of the Environmental Impact Statement prepared for the application. Relevant authorities include:

- NSW Department of Planning, Industry and Environment
- NSW Environment Protection Authority
- NSW Roads and Maritime Services

7 Capital Investment Value

The capital investment required for the proposed expansion to the Buronga Landfill is summarised in Table 7.1 with assumptions provided in Appendix D. The budget has been prepared based upon Tonkin's experience with the construction, closure and aftercare of landfill facilities across Australia. Based upon the concept layout developed by Tonkin (Appendix B), the capital expenditure cost for the future landfill cells is in excess of $70 million for the construction and capping of the lined landfill cells in present value terms. The landfill cells will be constructed with a lining system suitable for filling of general waste to the layout shown in Appendix B. This capital investment value is based upon the total footprint of the development being constructed as a series of discrete cells over the life of the site. The details of the cells and estimated costs for construction and capping are shown below in Table 7.1. The operating costs were estimated at approximately $19 million in present value terms (Geolyse, 2015).

Table 7.1 Estimated Capital Costs

Volume ('000 m^3)	Area (ha)	Construction Cost (Million $)	Capping Cost (Million $)
4,800	40	55.6	18.4

The total estimated capital cost for cell and cap construction is $74.1 million with an additional $19 million for operations over a 30-year timeframe in present value terms. The capital investment for the proposed development is in the order of $90 million over the 30-year timeframe. Due to the timeframe proposed for construction, changes in best-practice, technology or material costs could have a substantial impact upon the costs of the proposed development. These costs result in the development to be designated as a regionally significant development due to being worth between $5 and $100 million, however due to the proposed development's status as a state significant development, the determining body is the Minister for Planning. These costs provided are estimates only and are subject to change during detailed design.

8 Conclusion

This Preliminary Scoping Report (PSR) has been prepared on behalf of Wentworth Shire Council (WSC) in support of a proposed expansion of the Buronga Landfill. The proposed expansion will increase the quantity of waste that WSC are licensed to accept and include the construction of several additional landfill cells over the next approximately 30 years by extending the landfill footprint. The information in this document is intended to assist the Secretary in determining the requirements for an environmental impact statement (EIS) to accompany the development application for the proposed development at the Buronga Landfill.

A high-level review of legislative framework has suggested that the development is a State Significant Development under Clause 23(1) of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development)* due to the total volume of waste to be landfilled exceeding 650,000 tonnes. The proposed development is permissible with consent in the zone, currently SP2, and can satisfy the conditions of relevant legislation. The site is currently operational as a landfill facility and will continue to do so under the proposed development.

A desktop assessment of potential environmental constraints for the proposed development has included surface water, groundwater, geology, site topography, flora & fauna, noise, dust, landfill gas, odours, litter, traffic, visual impact and the social/cultural environment including Aboriginal and European heritage. Based on this high-level assessment, continued operation of the landfill in accordance with the POEO Licence and LEMP will ensure potential impacts of the landfill's proposed operation are minimised. This assessment has suggested that the following may be required to ensure these impacts are minimised:

- Update Licence issued to include expanded monitoring;
- Update Landfill Environmental Management Plan and associated sub-plans, e.g. Stormwater and Leachate Management Plan/s;
- Complete Threatened Species Assessment for the site to ensure proposed siting minimises impacts as far as practical and advise on additional management or mitigation which may be required;
- Prepare Traffic Management Plan to assess the potential impact of the additional traffic movements on the right-hand turn at Silver City Highway and on the maintenance requirements for Arumpo Road;
- Prepare and implement Stakeholder Engagement Plan.

9 References

Bureau of Meteorology (2019a), *Climate classification maps,* Commonwealth of Australia, Bureau of Meteorology, accessed 5 July 2019 < http://www.bom.gov.au/jsp/ncc/climate_averages/climate-classifications/index.jsp?maptype=kpn#maps>

Bureau of Meteorology (2019b). *Climate statistics for Australian locations, Summary statistics MILDURA AIRPORT,* Commonwealth of Australia, Bureau of Meteorology, accessed 3 July 2019 <http://www.bom.gov.au/climate/averages/tables/cw_076031.shtml>

DECC (2008). *Managing Urban Stormwater: Soils and Construction Volume 2B Waste Landfills*, Department of Environment and Climate Change NSW, Sydney, NSW

Douglas J.G., Ferguson J.A., Geological Society of Australia, Victorian Division (1988). *Geology of Victoria,* Geological Society of Australia, Victorian Division, Melbourne, Vic

Geological Survey of Victoria (1997). *1:250 000 Geological Map Series, MILDURA*, Edition 2, Ref: SI 54-11, May 1997

Geolyse (2015). *Buronga Landfill, Strategic Review.* Ref: 214455_REP_002A.docx,final report, 14 July 2015.

GHD (2012). *Buronga Landfill, Geotechnical Investigation Report.* Ref: 21/21400/181848. November 2012.

IECA (2008). *Best Practice Erosion and Sediment Control,* International Erosion control Association Australasia, Picton, NSW

Landcom (2004). *Managing Urban Stormwater: Soils and Construction Volume 1*, Fourth Edition, New South Wales Government, 2004

Landskape (2016). *Buronga Landfill Borrow Pit Upgrades, Aboriginal Cultural Heritage Assessment,* 4 October 2016.

NSW EPA (2016). *Environmental Guidelines, Solid Waste Landfills,* Second Edition, New South Wales Environmental Protection Authority, Sydney

Population Australia 2019, *Mildura Population 2019,* Population Australia, accessed 3 July 2019 <http://www.population.net.au/mildua-population/>

Tonkin Consulting (2016). *Buronga Landfill, Proposed Cell Technical Specification,* Revision B, Ref: 20155461S1B, 29 August 2016.

WaterNSW 2019, *Real Time Data, Murray River Basin,* accessed 10 May 2019 <https://realtimedata.waternsw.com.au/>

WSC (2011). *Wentworth Local Environment Plan 2011*. 28 February 2019.

WSC (2015). *Buronga Landfill, Landfill Environmental Management Plan.* Ref: 21/21400/181846, Revision 0, Wentworth Shire Council, December 2015.

Appendix A – EPA Licence 20209

Environment Protection Licence

Licence - 20209

Licence Details	
Number:	20209
Anniversary Date:	05-April

Licensee

WENTWORTH SHIRE COUNCIL

PO BOX 81

WENTWORTH NSW 2648

Premises

BURONGA LANDFILL

ARUMPO ROAD

BURONGA NSW 2739

Scheduled Activity

Waste disposal (application to land)

Fee Based Activity	Scale
Waste disposal by application to land	Any capacity

Region

South West

Suites 7-8, Level 1 Griffith City Plaza, 130-140 Banna Avenue
GRIFFITH NSW 2680

Phone: (02) 6969 0700

Fax: (02) 6969 0710

PO Box 397

GRIFFITH NSW 2680

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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

WENTWORTH SHIRE COUNCIL
PO BOX 81
WENTWORTH NSW 2648

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled development work listed below at the premises listed in A2:
Construction of landfill cells and leachate and stormwater collection systems.

A1.2 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Waste disposal (application to land)	Waste disposal by application to land	Any capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
BURONGA LANDFILL
ARUMPO ROAD
BURONGA
NSW 2739
LOT 197 DP 756946, LOT 212 DP 756946 & LOT 1 DP 1037845

A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Resource recovery - recovered aggregate processing and storage
Waste storage

A3.2 Recovered aggregate processing and storage as per Development Application and attachments

DA13/120 approved by Wentworth Shire Council dated 20 February 2014.

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

A4.2 For the purposes of condition A4.1 the licence application includes:

1) Wentworth Shire Council - Buronga Landfill - Landfill Environmental Management Plan (LEMP) - dated November 2012 and prepared by GHD;

2) Wentworth Shire Council - Buronga Landfill - Engineering Design Report - dated November 2012 and prepared by GHD;

3) Wentworth Shire Council - Buronga Landfill - Geotechnical Investigation Report - dated November 2012 and prepared by GHD;

4) Transpacific Industries Ltd - Buronga Landfill - Environmental Management Plan - Composting Trial prepared by GHD and dated December 2012;

5) GHD response to EPA Comments - Dated 04/12/2012 Ref: 21/21400/181047

6) Wentworth Shire Council - Memorandum - Buronga Landfill Lanfill Use: Issue Date 26/02/2010 prepared by the Manager Governace and Corporate Development;

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

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Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
2	Groundwater quality		Borehole labelled 'BH02' as shown in the drawing titled "Site Layout" at Appendix "A" of the "Wentworth Shire Council - Buronga Landfill - Environmental Management Plan" dated November 2012 and kept on EPA file FIL07/5811-18
3	Groundwater quality		Borehole labelled 'BH03' as shown in the drawing titled "Site Layout" at Appendix "A" of the "Wentworth Shire Council - Buronga Landfill - Environmental Management Plan" dated November 2012 and kept on EPA file FIL07/5811-18
4	Groundwater quaility		Borehole labelled 'BH04' as shown in the drawing titled "Site Layout" at Appendix "A" of the "Wentworth Shire Council - Buronga Landfill - Environmental Management Plan" dated November 2012 and kept on EPA file FIL07/5811-18
5	Water quality	Water quality	Discharge point from the sediment basin as shown in the drawing titled "Site Layout" at Appendix "A" of the "Wentworth Shire Council - Buronga Landfill - Environmental Management Plan" dated November 2012 and kept on EPA file FIL07/5811-18
6	Proposed Leachate Storage Pond		Leachate pond as shown in the drawing titled "Site Layout" at Appendix "A" of the "Wentworth Shire Council - Buronga Landfill - Environmental Management Plan" dated November 2012 and kept on EPA file FIL07/5811-18

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

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L2 Waste

L2.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Building and demolition waste	As defined in the NSW Resource Recovery Exemption titled "Recovered Aggregate Order 2014" and includes material comprising of concrete, brick, ceramics, natural rock and asphalt that can be processed into an engineered material. This does not include refractory bricks or associated refractory materials or asphalt that contains coal tar.	Resource recovery	The total quantity of Recovered Aggregate that can be received in each annual Reporting period is 10,000 tonnes. The total amount of Recovered Aggregate that can be stored at the premises at any one time is 20,000 tonnes.
NA	General or Specific exempted waste	Waste that meets all the conditons of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005	As specified in each particular resource recovery exemption	NA
NA	Waste	Any waste received on site that is below the licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA
J100	Waste mineral oils unfit for their original intended use	Mineral oils unfit for their original intended use; Oil filters; Transformer fluids (excluding PCB's); Waste hydrocarbons	Waste storage	4,000 litres
T140	Tyres		Waste disposal (application to land)	500 tonnes

N220	Asbestos		Waste disposal (application to land)	500 tonnes
NA	General solid waste (non-putrescible and putrescible)	Municipal Solid Waste, Commercial & Industrial	Waste disposal (application to land)	30,000 tonnes

L2.2 The licensee must not dispose of any tyres on the premises which;
a) have a diameter of less than 1.2 metres; and
b) are delivered at the premises in a load containing more than 5 whole tyres; and
c) became waste in the Sydney Metropolitan Area.

L2.3 Tyres stockpiled on the premises must:
a) not exceed fifty (50) tonnes of tyres at any one time; and
b) be located in a clearly defined area away from the tipping face; and
c) be managed to control vermin; and
d) be managed to prevent any tyres from catching fire.

L3 Noise limits

L3.1 All operations and activities occurring on the premises must be conducted in a manner that will not cause or permit offensive noise beyond the boundary of the premises.

L4 Hours of operation

L4.1 All work at the premises must be conducted between the hours of:

6:00am to 7:00pm Monday to Friday; and

7:00am to 6.00pm Saturdays, Sundays and Public Holidays

L5 Potentially offensive odour

L5.1 No condition of this licence identifies a potentially offensive odour for the purposes of Section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997 provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

O4 Emergency response

O4.1 Within 3 months of the date of the issue of this licence, the licensee must develop, or update, an emergency response plan which documents the procedures to deal with all types of incidents (e.g. spill, explosions or fire) that may occur at the premises or outside of the premises (e.g. during transfer) which are likely to cause harm to the environment.

O4.2 The licensee must extinguish fires at the premises as soon as possible.

O5 Processes and management

O5.1 The licensee must take all practicable steps to control entry to the premises.

O5.2 The licensee must install and maintain lockable security gates at all access and departure locations.

O5.3 The licensee must ensure that all gates are locked whenever the landfill is unattended.

O5.4 The licensee must ensure that all vehicles containing waste enter and exit the site through the weighbridge.

O5.5 The licensee must implement the litter management program specified in clause 9.3 of the Buronga Landfill Environmental Management Plan dated November 2012.

O5.6 The licensee must ensure that adequately trained staff are available at the premises in order to administer the requirements of this licence.

O5.7 The licensee must install and maintain a stockproof perimeter fence around the premises.

O5.8 The licensee must ensure that all weather roads are maintained on site to allow waste to be accepted and disposed of at the landfill in all reasonable weather conditions.

Leachate management

O5.9 A leachate barrier and collection system must be installed and managed at the landfill as specified in Environmental Guidelines: Solid Waste Landfills or alternative of equal or better environmental performance.

O5.10 The sediment basin and leachate holding pond must be maintained to ensure that their design capacity is available for the storage of rainfall runoff from a 1 in 20 year, 24 hour Average Recurring Interval rainfall event.

O5.11 Excess leachate is permitted to be disposed of at a premises which may lawfully receive the leachate for treatment.

O5.12 Landfill leachate must not be irrigated except as expressly permitted by a condition of this licence.

O6 Waste management

O6.1 The licensee must have in place and implement procedures to identify and prevent the disposal of any waste not permitted by this licence to be disposed of at the premises.

O6.2 Surface drainage must be diverted away from any area where waste is being or has been landfilled.

O6.3 The licensee must manage the disposal of waste at the premises in accordance with the progressive filling plan as described in the Buronga Landfill Environmental Management Plan dated November 2012.

O6.4 There must be no incineration or burning of any waste at the premises.

O6.5 An average compaction rate of not less than 650 kg per cubic metre must be achieved for all waste disposed of at the premises.

O6.6 The licensee must ensure that the achieved compaction rate of landfilled waste (excluding cover material) is stated in the annual report for the waste premises submitted to the EPA.

O6.7 Cover material must be clean soil, virgin excavated natural material or other suitable waste materials won on the premises or imported to the premises.
a) Daily cover
Cover material must be applied to a minimum depth of 150mm over all exposed landfilled waste prior to ceasing operations at the end of each day.
b) Intermediate cover
Cover material must be applied to a depth of to a depth of 300mm over surfaces of the landfilled waste at the premises which are to be exposed for more than 90 days.

c) Cover material stockpile
At least two weeks cover material must be available at the premises under all weather conditions. This material may be won on site, or alternatively a cover stockpile must be maintained adjacent to the tip face.

O6.8 Final capping must comprise of: 500mm barrier layer made up of compacted clayey sand, 350mm of soil material, 150mm of mulch/shredded green waste and a minimum 100mm revegetation layer as specified in the LEMP.

O6.9 The licensee must conduct a filling plan survey consistent with Section 6 of the "Wentworth Shire Council, Buronga Landfill - Landfill Filling Plan" prepared by MRA Consulting Group and dated January 2015.

A report detailing the results of the survey must be submitted to the EPA within 1 month of completion of the survey.

O7 Other operating conditions

O7.1 The licensee must have in place and operate a calibrated weighbridge to record the volume of all waste brought into the premises.

O7.2 The weighbridge must have a valid Calibration Certificate at all times.

O7.3 The EPA must be notified immediately if the weighbridge becomes inoperative and it must be repaired as soon as practicable.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

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M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Water and/ or Land Monitoring Requirements

POINT 2,3,4

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams per litre	Yearly	Representative sample
Standing Water Level	metres	Every 6 months	In situ

POINT 2,3,4,6

Pollutant	Units of measure	Frequency	Sampling Method
Arsenic	milligrams per litre	Yearly	Representative sample
Benzene	milligrams per litre	Yearly	Representative sample
Calcium	milligrams per litre	Yearly	Representative sample
Chloride	milligrams per litre	Yearly	Representative sample
Conductivity	microsiemens per centimetre	Every 6 months	In situ
Fluoride	milligrams per litre	Yearly	Representative sample
Lead	milligrams per litre	Yearly	Representative sample
Magnesium	milligrams per gram	Yearly	Representative sample
Manganese	milligrams per litre	Yearly	Representative sample
Nitrate + nitrite (oxidised nitrogen)	milligrams per litre	Yearly	Representative sample
Nitrogen (ammonia)	milligrams per litre	Yearly	Representative sample
pH	pH	Every 6 months	In situ
Potassium	milligrams per litre	Yearly	Representative sample
Sodium	milligrams per litre	Yearly	Representative sample
Sulfate	milligrams per litre	Yearly	Representative sample
Total organic carbon	milligrams per litre	Yearly	Representative sample
Total Phenolics	milligrams per litre	Yearly	Representative sample

POINT 5

Pollutant	Units of measure	Frequency	Sampling Method
Conductivity	millisiemens per centimetre	Yearly	Representative sample

Nitrate + nitrite (oxidised nitrogen)	milligrams per litre	Yearly	Representative sample
Nitrogen (ammonia)	milligrams per litre	Yearly	Representative sample
pH	pH	Yearly	In situ
Total organic carbon	milligrams per litre	Yearly	Representative sample
Total suspended solids	milligrams per litre	Yearly	Representative sample

M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months the date of the issue of this licence.

M6 Other monitoring and recording conditions

M6.1 The licensee must monitor the remaining disposal capacity (in cubic metres) of the landfill.

M6.2 The licensee must develop and implement a Waste Control Program in accordance with the LEMP. The licensee must update and submit the updated Waste Control Program to the EPA for approval if any significant changes are made by the licensee.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 **Monitoring report**

The licensee must supply with the Annual Return a report, which provides:
a) an analysis and interpretation of monitoring results; and
b) actions to correct identified adverse trends.

R1.3 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.4 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.5 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.6 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.8 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.9 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

R4.1 The licensee must record the following data in relation to fires occurring at the premises:
a) Time and date when the fire started.
b) Whether the fire was authorised by the licensee, and, if not, the circumstances which ignited the fire.
c) The time and date that the fire burnt out or was extinguished.
d) The location of fire (eg. clean timber stockpile, putrescible garbage cell, etc).
e) Prevailing weather conditions at the time of the fire.
f) Observations made in regard to smoke direction and dispersion.
g) The amount of waste that was combusted by the fire.
h) Action taken to extinguish the fire;
i) Action taken to prevent a reoccurrence.

The data must be recorded on each day that the fire is burning.

R4.2 The licensee or its employees or agents must notify the occurrence of all fires on the premises in accordance with conditions R2.1 and R2.2 as soon as practical after becoming aware of the fire.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the

premises.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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Licence - 20209

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 20209

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Darren Wallett

Environment Protection Authority

(By Delegation)

Date of this edition: 05-April-2013

End Notes

2	Licence varied by notice	1519910 issued on 12-May-2014
3	Licence varied by notice	1526662 issued on 12-Dec-2014
4	Licence varied by notice	1528653 issued on 06-Mar-2015
5	Licence varied by notice	1532101 issued on 17-Jul-2015
6	Licence varied by notice	1535200 issued on 09-Nov-2015
7	Licence varied by notice	1536741 issued on 21-Dec-2015
8	Licence varied by notice	1536820 issued on 05-Jan-2016
9	Licence varied by notice	1539729 issued on 12-Apr-2016
10	Licence varied by notice	1546513 issued on 10-Nov-2016
11	Licence varied by notice	1551718 issued on 23-May-2017
12	Licence varied by notice	1558634 issued on 24-Nov-2017

Appendix B – Concept Layout Plan

Vegetation Screen

Bulk up area

Public Waste - Green, Concrete, Steel, Mattresses, Hard Rubbish, Mixed Waste

CRC

Zero Cost Items

Weighbridge

Site Compound / Offices

Existing Leachate Pond

200 m Separation Distance

200 m Separation Distance

200 m Separation Distance

200 m Separation Distance

Proposed Landfill Footprint

Proposed Stormwater Management Area

Legend

- Licenced Area
- Vegetation Screen

Proposed Operational Areas

- Proposed Landfill Footprint
- Proposed Stormwater Management Area
- Approximate Historical Landfill Footprint
- Current Landfill Cell
- Proposed Resource Recovery Areas
- Haul Road

tonkin

0 100 200 300 m

EPSG:3857

N

Job Number: 20180746
Filename: 20180746GQ001
Revision: Rev B
Date: 2020-10-07
Drawn: IPN

Data Acknowledgement:
Imagery from MetroMap, 2020

Wentworth Shire Council

Buronga Landfill Approvals Support
Concept Layout

Appendix C - EPBC Search Results

Australian Government
Department of the Environment and Energy

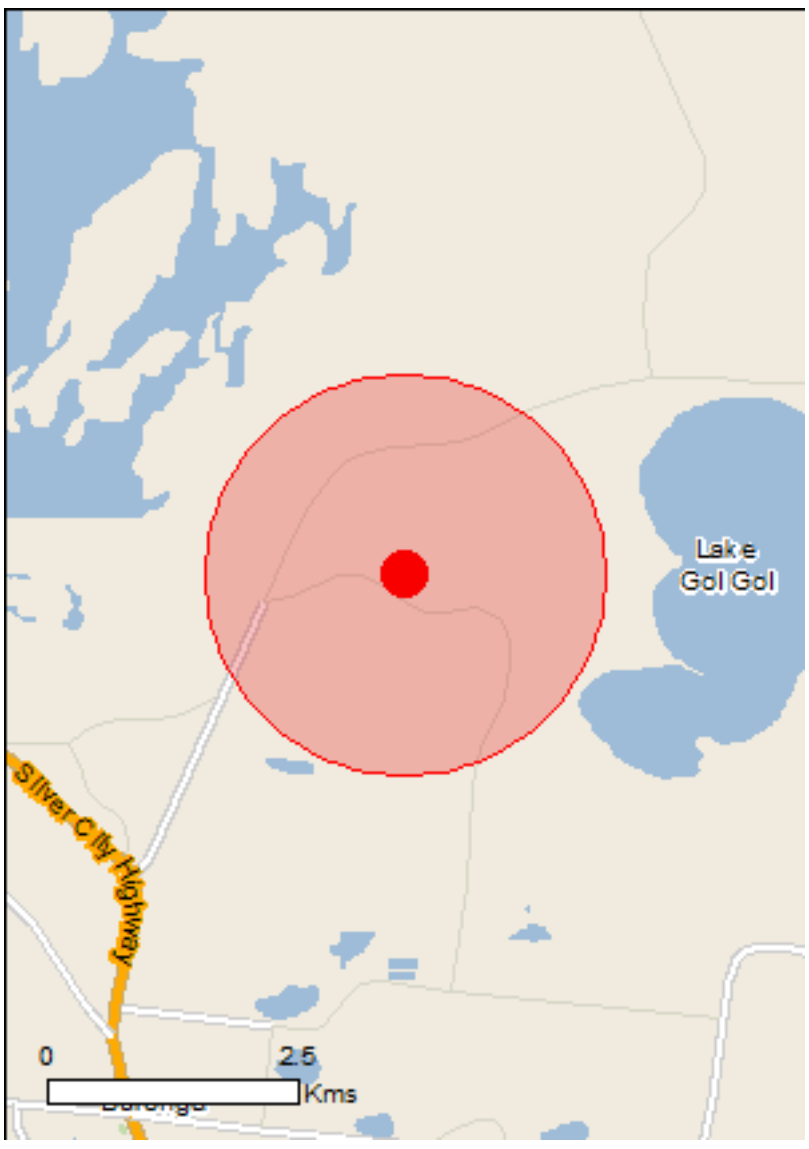
EPBC Act Protected Matters Report

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.

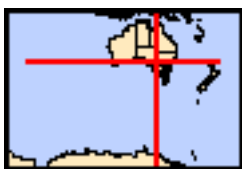
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 13/02/19 17:20:28



Coordinates
Buffer: 2.0Km



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:	1
Listed Threatened Species:	20
Listed Migratory Species:	9

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 permit 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:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	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 [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 Depression Bioregions	Endangered	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
Calidris ferruginea Curlew Sandpiper [856]	Critically 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
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-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Fish		
Craterocephalus fluviatilis Murray Hardyhead [56791]	Endangered	Species or species habitat likely to occur within area
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat likely to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	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
Phascolarctos 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 monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area
Solanum karsense Menindee Nightshade [7776]	Vulnerable	Species or species habitat may 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 the EPBC Act - Threatened 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		
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		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

Name	Threatened	Type of Presence
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		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
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
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 likely 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 known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		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 leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula benghalensis (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

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

Name	Status	Type of Presence
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 Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat may occur within area
Carrichtera annua 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 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

-34.12764 142.20503

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.

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Appendix D – Financial Assumptions

Cell Properties

Stage	Approximate Volume (m^3)	Approximate Area (m^2)	Baseliner Area (m^2)	Sideliner Area (m^2)
Total	4,800,000	400,000	367,000	33,000

Rates used for cost estimate

Element	Cost ($/m^2$)
Base Liner	138.9
Cap	46.0