

Buronga Landfill Expansion

Leachate Management Plan

Wentworth Shire Council

SSD-10096818

30 September 2024

Ref: 202597R12_Apx.I_Rev03



Building exceptional
outcomes together



Document History and Status

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1 Introduction

1.1 Background

This Leachate Management Plan (LMP) has been prepared by Tonkin on behalf of Wentworth Shire Council (WSC) as part of the Landfill Environmental Management Plan (LEMP) in support of the expansion to the Buronga Landfill (the site). The LMP was prepared by Daniel Du who is a Project Engineer specialising in waste management, with experience in a range of civil and waste management engineering projects including developing detailed design and associated documentation suitable for the construction of landfill cells and landfill caps including leachate collection systems, Daniel is supported by Mamdoh Ibrahim (Principal Engineer- Waste), who has 23 years of industry experience including design, construction, operation, closure and post closure of landfills in Australia and internationally, CVs of both Daniel and Mamdoh are provided in Appendix C.

WSC currently holds Environmental Protection Licence (EPL) 20209 which covers waste disposal activities (Construction of landfill cells and leachate and stormwater collection systems) and resource recovery activities (recovered aggregate processing and storage / Waste storage) at the site and is under the development processes of the expansion to the site under a Development Consent Application Number: SSD 10096818.

1.2 Site and Ownership

The site is located at 258 Arumpo Road, Buronga NSW and is shown in Figure 2 and Figure 3 of Appendix A. The site is owned and operated by WSC.

1.3 Compliance with Regulatory Requirements

The primary regulatory requirements for the operation of the site are:

- NSW Department of Planning, Industry and Environment, 2023, Buronga Landfill Expansion Development Consent, 19 July 2023, Ref: SSD-10096818 (the Development Consent);
- NSW EPA, 2023, Environment Protection Licence – 20209, Licence Version Date 8 March 2023 (the EPL);
- NSW EPA, 2016, *Environmental Guidelines, Solid Waste Landfills*, Second Edition, April 2016, Ref: EPA 2016/0259 (The Landfill Guidelines);
- Waste Avoidance and Resource Recovery Act 2001 (NSW) (WAAR Act 2001);
- Protection of the Environment Operations Act 1997 (NSW) (the POEO act 1997);
- Landcom, 2004. *Managing urban stormwater: soils and construction*, Volume 1, March 2004, 4th edition.

1.4 Compliance with Environmental Protection Licence

The POEO Act 1997 defines scheduled activities for which an EPL must be held. The site is licenced under the POEO Act 1997 for one scheduled activity:

Waste disposal (application to land).

The EPL also applies to ancillary activities undertaken at the site, listed as including:

- Resource recovery - recovered aggregate processing and storage;
- Waste storage.

WSC holds EPL number 20209 for the operations at the site. A copy of the EPL is included as Appendix B. This Leachate management Plan has been prepared to ensure compliance with the EPL. It is noted that activities proposed in the expansion development is under EPA's review and not included in the site



EPL by the time of preparation of this plan. The Leachate Management Plan should be updated accordingly following an updated EPL is issued.

1.5 Relevant Limits and Performance Measures

The leachate management system at Buronga Landfill is designed to prevent leachate from causing environmental harm, particularly by contaminating groundwater or surface water. The following limits and performance measures ensure that the leachate system complies with regulatory requirements and minimises risks to the environment:

1.5.1 Leachate Collection and Containment

Leachate from all active landfill cells must be collected via a sump and pipe system and directed to the leachate ponds for treatment and evaporation. The system is designed to prevent leachate migration into groundwater, maintaining at least 2 meters of separation between the base of the landfill liner and the highest recorded groundwater levels, as required by the Landfill Guidelines.

1.5.2 Leachate Pond Capacity

The leachate ponds are designed with sufficient capacity to handle both the expected volume of leachate and rainfall from a 1 in 25-year average recurrence interval (ARI) 24-hour storm event, ensuring that the ponds do not overflow. Freeboard of at least 0.5 meters must be maintained to prevent overtopping during heavy rainfall events.

1.5.3 Leachate Quality

The quality of leachate extracted from the landfill cells must be monitored regularly to detect any potential environmental risks. Specific parameters for leachate quality, such as electrical conductivity (EC), pH, and concentrations of total dissolved solids, must remain within acceptable limits based on historical data and best practice standards outlined in Section 3.3.

1.6 Performance Indicators

The performance of the leachate management system will be monitored and assessed using specific performance indicators to ensure compliance and operational efficiency. These indicators will focus on key aspects of leachate collection, treatment, and environmental protection, as outlined in Section 3.3.

1.6.1 Leachate Pumping Volumes

Daily monitoring of the volume of leachate pumped from each landfill cell sump to the leachate ponds will be recorded. This helps to track leachate generation and system performance, as described in Section 3.3.

1.6.2 Leachate Quality

Regular sampling and analysis of leachate quality parameters, including EC, pH, total dissolved solids (TDS), and other critical indicators, will be undertaken to ensure leachate is managed effectively. Detailed monitoring frequencies and methods are outlined in Section 3.3 of this plan.

1.6.3 Leachate Pond Freeboard

Freeboard levels in the leachate ponds will be monitored to ensure compliance with design criteria and prevent overtopping. This is discussed further in Section 2.5 of this plan.

1.6.4 Water Monitoring

The quality of groundwater and surface water will be monitored in conjunction with the Water Management Plan to detect any potential leachate migration.



1.7 Reference Documentation

This plan was written with reference to the following documents and legislation:

- NSW Department of Planning, Industry and Environment, 2023, Buronga Landfill Expansion Development Consent, 19 July 2023, Ref: SSD-10096818 (the Development Consent);
- NSW EPA, 2023, Environment Protection Licence – 20209, Licence Version Date 8 March 2023 (the EPL);
- NSW EPA, 2016, *Environmental Guidelines, Solid Waste Landfills*, Second Edition, April 2016, Ref: EPA 2016/0259 (The Landfill Guidelines);
- Waste Avoidance and Resource Recovery Act 2001 (NSW) (WAAR Act 2001);
- Protection of the Environment Operations Act 1997 (NSW) (the POEO act 1997);
- Landcom, 2004. *Managing urban stormwater: soils and construction*, Volume 1, March 2004, 4th edition.
- Wentworth Shire Council (2015), Buronga Landfill, Landfill Environmental Management Plan, December 2015, Ref: 21/21400/181846.
- GHD (2012). Buronga Landfill Geotechnical Investigation Report, Wentworth Shire Council, 05 November 2012, Ref: 21/21400/181848.
- Tonkin (2021), Buronga Landfill Expansion Geotechnical Investigation Report, 11 June 2021, Ref: 202597R02A.
- Tonkin (2022), Buronga Landfill Expansion Environmental Impact Statement, SSD-10096818, 25 January 2022, Ref: 202597R04Rev1. (the expansion development EIS)
- Tonkin (2022), Buronga Landfill Expansion Submission Report, SSD-10096818, 1 December 2022, Ref: 202597R05Rev2.
- Tonkin (2023), Buronga Landfill Expansion Amendment Report, SSD-10096818, 8 February 2023, Ref: 202597R07Rev0.
- Tonkin (2023), Buronga Landfill Expansion Groundwater Impact Assessment, 19 September 2021, Ref: 202597R03Rev0.

1.8 Consultation

In accordance with Development Consent (SSD_10096818) Condition A11, the draft of this Leachate Management Plan was provided to the EPA for consultation.



2 Site Infrastructure

2.1 Landfill Cell Layout

All landfill cells will be constructed with an engineered lining and leachate collection system consistent with the requirements of the Landfill Guideline and as represented in Figure 2-1. This lining system is provided to contain the waste and prevent environmental harm due to the landfill operation by forming a barrier between the waste and the environment.

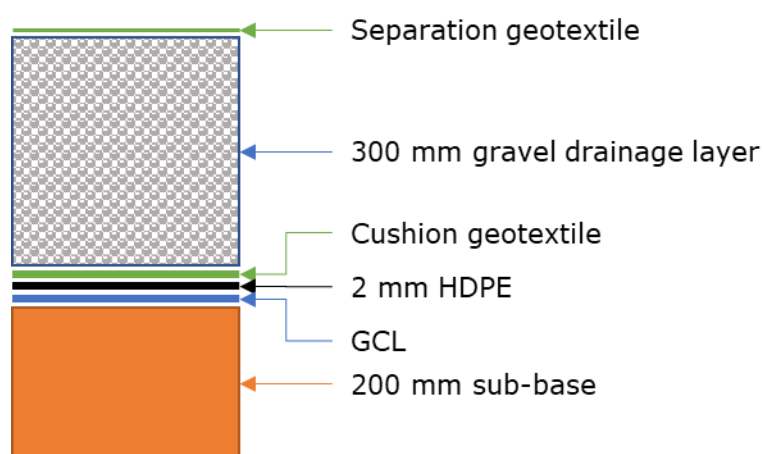


Figure 2-1: Schematic of Cell Liner System (NSW EPA, 2016)

The specific lining system profile will be determined during detailed design of the landfill cells prior to construction. It is anticipated that the first landfill cells and the basal liner will “piggyback” over the northern batter of the existing waste mass to allow for a continuous final landform to be developed sympathetic with other regional landforms. Utilising a “piggyback” lining system over the existing waste mass also allows the existing landfill footprint to be further utilised, minimising the footprint of the new landfill areas.

Cells extend to approximately 5 to 8 m bgl, with final base line levels to be determined during the detailed design of each cell. This cell depth has been selected to provide a minimum of 2 m separation between the groundwater levels recorded at the site and the lowest point of the cell floor. Groundwater levels were set as the highest groundwater levels observed in monitoring wells BH2 and BH4 located to the west and east of the existing landfill respectively. These wells were installed in 2010 and 2012 respectively (GHD, 2012) and have been monitored regularly since, with the highest observed groundwater levels being 30.2 m AHD in BH2 and 32.7 m AHD in BH4 based upon data provided by WSC. This separation is provided to ensure there is an unsaturated zone between the base liner to prevent contaminants reaching groundwater and to prevent groundwater impacting on the stability of the liner. Leachate sumps will be 300 mm below the lowest point of the floor to facilitate collection.

2.2 Existing Landfill

Located in the southern portion of the site, current disposal activities are undertaken in a fully lined and approved landfill cell within the existing landfill area, particularly in its eastern segment. Inert wastes, encompassing mixed building and demolition debris, alongside selected loads of inert commercial and industrial waste, are deposited at the old unlined cell to raise it to its final landform. Vehicles access the area from the south, manoeuvring on covered waste and backing up to the active tip face where material is unloaded, and vehicle then exit the site.



2.3 Stage 1 Landfill

The new Stage 1 landfill located at the north of the existing landfill is proposed for construction in four sub-stages, i.e., Stage 1A, Stage 1B, Stage 1C and Stage 1D. Sub-stages will progress from south to north on the western side of the site. Each sub-stage will be developed into individual landfill cells each with approximately 4 to 5 year filling lives. Concept design of the proposed new cells have been developed. Each cell will drain to a leachate collection sump which will contain a leachate pump and riser to facilitate the extraction of leachate from the landfill cells.

Design of cell Stage 1A has a composite barrier system overlain by leachate collection gravel and pipework. Leachate will drain to a sump located within Cell Stage 1A. Construction of this cell is subject to EPA approval.

All landfill cells will be constructed with an engineered lining and leachate collection system consistent with the requirements of the *Environmental Guidelines: Solid Waste Landfills*, Second Edition (NSW EPA, 2016).

2.4 Landfill Cell Construction Quality Assurance

Quality assurance measures will be implemented to ensure that all critical features of the landfill are constructed according to the design and specifications approved by WSC and EPA. Design work for the facility will be undertaken by suitable qualified and experienced personnel or consultants in accordance with quality principles.

All construction work will be undertaken by suitable qualified and experience personnel in accordance with quality principles.

Construction work of environmental protection elements at the site including the landfill capping layer or future landfill cells will be subject to the quality assurance requirements set out in the *Environmental Guidelines: Solid Waste Landfills*, Second Edition (NSW EPA, 2016). These requirements include:

- The preparation of a Construction Quality Assurance Plan prior to major construction works, setting out proposed testing, inspection and verification procedures to be implemented during construction.
- Following construction, the occupier shall prepare a Construction Quality Assurance Report on the quality assurance that was implemented to ensure that the works comply with the approved designs and specifications.
- In the case of a new landfill cell, a satisfactory Construction Quality Assurance Report shall be submitted to the EPA before the EPA can issue an approval to dispose of waste in the new landfill cell. The CQA report will also include a QA/QC program, the CQA Report will be developed in accordance with Development Consent (SSD_10096818) Condition B12.
- In the case of final capping works under a Closure Plan, a satisfactory Construction Quality Assurance Report shall be submitted to the EPA before the EPA can approve the surrender of the licence.
- Construction Quality Assurance Plans and Reports shall satisfy the requirements of Sections 11.1 and 11.2 of the *Environmental Guidelines: Solid Waste Landfills*.

These requirements apply to the construction of cell Stage 1A and any other future landfill cells constructed at the facility.

2.5 Leachate Management System

A high-level leachate balance has been undertaken to establish a footprint for the leachate basin area.

The existing leachate evaporation basin at the site is lined and is used for disposal of leachate from the existing lined landfill cell. This pond will initially be retained to dispose of leachate during the early period of the landfill operation. When additional leachate ponds are required, new leachate evaporation ponds will be designed and constructed to dispose of leachate from both the new and existing landfill



cells. The leachate ponds will be progressively constructed as the landfill expands and the volume of leachate generated increases.

Leachate ponds will be designed in accordance with the requirements of the *Environmental Guidelines: Solid Waste Landfills*, Second Edition and will be sized with adequate freeboard to accept rainfall from a 1 in 25-year average recurrence interval, 24-hour rainfall event to prevent overtopping. Ponds shall be lined with an engineered lining system of a similar standard to the landfill cells to prevent leachate causing contamination.



3 Leachate Management Plan

3.1 General

WSC will continue to undertake all practical measures to prevent contaminated waters leaving site. Site operations will generate different quality waters, including:

- Runoff from undisturbed areas within the site (clean stormwater runoff);
- Runoff from rehabilitated (revegetated) areas of the site (clean stormwater runoff);
- Runoff from disturbed areas of the site (potentially turbid stormwater runoff);
- Runoff from within the active landfilling area (leachate contaminated stormwater);
- Runoff from the waste transfer and storage areas (potentially contaminated stormwater); and
- Leachate from within the landfill.

Management of leachate at the landfill is aimed at:

- Minimising the generation of leachate;
- Preventing impact to surface water and groundwater in the vicinity of the site; and
- Ensuring that leachate is adequately contained, collected and evaporated in site.

Any water coming into contact with waste becomes leachate and must be directed to the leachate collection system for appropriate storage and disposal. WSC are required to minimise the generation of leachate at the site, to achieve this stormwater must be prevented from contacting waste. To prevent this from occurring WSC must continue to:

- Construct bunds and diversion drains to prevent run-off from upslope areas from entering the active landfill area;
- Ensure that waste placement is kept to the sub-cells as nominated in the filling plans;
- Place all waste to be landfilled inside the bunded areas protected from stormwater run-on; and
- Ensure that stormwater is prevented from entering the leachate collection system, including drains and the leachate pond.
- The following sections outline the management of leachate to achieve the mentioned goals.

3.2 Leachate Management

As identified in Section 2.1, all landfill cells will be constructed with engineered lining and leachate containment systems. Landfill leachate can cause environment harm if allowed to infiltrate to groundwater. Each cell will drain to a leachate collection sump which will contain a leachate pump and riser to facilitate the extraction of leachate from the landfill cells. It is proposed that leachate will be extracted from the cells and pumped to a leachate pond or ponds where the leachate will be disposed of via evaporation. Minor accumulation of salts from the leachate remains within the ponds and does not affect its operation over the longer term. Leachate will be transferred from the landfill cells to the leachate pond/s by a site leachate ring main that will be progressively extended as the landfill operation extends.

The existing leachate evaporation basin at the site shown in Appendix A Figure 4 is lined and is used for disposal of leachate from the existing lined landfill cell. This pond will initially be retained to dispose of leachate during the early period of the landfill operation. Once additional leachate ponds are required, new leachate evaporation ponds will be designed and constructed to dispose of leachate from both the new and existing landfill cells. The leachate ponds will be progressively constructed as the landfill expands and the volume of leachate generated increases (Appendix A Figure 5).



A high-level leachate balance has been undertaken to establish a footprint for the leachate basin area. This leachate balance model was developed using leachate generation volumes established using the Hydrologic Evaluation of Landfill Performance (HELP) model (Berger & Schroeder, 2013). The modelling was undertaken using the following inputs:

- Climate data obtained from SILO.
- Clayey sand daily and interim cover soils with an assumed cap infiltration of 1% of rainfall.
- Pond evaporation is equal to 80% of the daily pan evaporation.
- Waste absorptive capacity of 0.057 m³/t with a filling rate of 60,000 tpa.
- Landfill sub-stages are capped during the operation of the following sub-stage, being under interim cover until that time.

Leachate ponds will be progressively constructed as the site is developed. Leachate basins will be designed in accordance with the requirements of the Landfill Guideline and will be sized with adequate freeboard to accept rainfall from a 1 in 25-year average recurrence interval, 24-hour rainfall event to prevent overtopping. Ponds shall be lined with an engineered lining system of a similar standard to the landfill cells (Figure 2-1) to prevent leachate causing contamination.

3.2.1 Maintenance

All leachate management infrastructure will be maintained in proper working order so as to:

- Minimise leachate volume generation; and
- Prevent contamination of local groundwater and surface water.

Maintenance must include:

- Regular cleaning and repair of drains, collection pipes, pits and other leachate infrastructure;
- Regular inspection and repairs to the leachate basin where necessary; and
- Monitoring of leachate levels in the basin and appropriate off-site disposal of leachate where necessary.

Groundwater will continue to be monitored to evaluate the effectiveness of the leachate control measures. The monitoring of groundwater is detailed in site Water Management Plan. The monitoring of leachate is detailed in Section 3.3.

3.3 Leachate Monitoring Program

Leachate monitoring shall be undertaken to quantify the composition, height levels and volumes of leachate produced in the landfill cells. This information informs the performance of landfill capping and assists in assessing leachate impact to surface water or groundwater.

Leachate pumping volumes will be recorded by recording the daily volume extracted from each leachate sump. Leachate samples will be collected from one leachate sump within each substage. Quarterly samples recovered for in situ analysis will be analysed in the field using hand-held equipment. Annual grab samples will be immediately placed in chilled cooler boxes and transferred under Chain of Custody to a NATA-accredited laboratory for the analyses shown in Table 3-1. Quality assurance and quality control procedures will be undertaken, including the analysis of duplicate and triplicate samples. Results of analyses will be compared with historical data.



Table 3-1 Leachate Quality Monitoring Parameters

Analyte	Sampling method	Leachate Frequency
EC ($\mu\text{S}/\text{cm}$), DO, Eh, pH, temperature	<i>In situ</i>	3-monthly
Leachate Head	<i>In situ</i>	3-monthly
Alkalinity	Grab sample	Annually
Total dissolved solids (mg/L) Total Suspended Solids (mg/L)	Grab sample	Annually
Cations and Anions (Ca^{2+} , Mg^{2+} , K^{+} , Na^{+} , Cl^{-} , F^{-} , SO_4^{2-} ,) (mg/L)	Grab sample	Annually
Metals and metalloids (Al, As, Ba, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, Zn)	Grab sample	Annually
Nitrogen (NO_x , NH_3 , TOC)	Grab sample	Annually
Total Organic Carbon - Phenols - Petroleum Hydrocarbons (TPH) - Organochlorine and organophosphate pesticides - Semi-volatile organic carbons (mg/L) - Volatile organic compounds (mg/L)	Grab sample	Annually
Pesticides (OCP, OPP)	Grab sample	Annually
Phenolics – total	Grab sample	Annually
Hydrocarbons (BTEX, TRH, PAH)	Grab sample	Annually

3.3.1 Monitoring Locations

Currently the leachate samples are collected from the existing leachate pond and tested periodically as per the requirements of the EPL. As part of the expansion cells, each cell will drain to a leachate collection sump which will contain a leachate pump and riser to facilitate the extraction of leachate from the landfill cells. It is proposed that a leachate monitoring point will be added for every leachate sump installed.

When leachate modelling indicates a need, additional leachate evaporation ponds will be designed and constructed to facilitate the disposal of leachate from the landfill cells. The leachate ponds will be progressively constructed as the landfill expands and the volume of leachate generated increases. New leachate monitoring points will be also added in every new leachate pond. A variation to the EPL will be requested every time a new monitoring is added.

3.3.2 Monitoring Procedures

WSC will undertake regular monitoring of leachate to ensure that the site is not causing detrimental impact to the environment or creating health and safety issues on site. The operation of the landfill will be reviewed by WSC every 12 months or as required to assess the compliance of the landfill operation with regulatory requirements, the site licence, the LEMP and this Leachate management Plan.



All sampling must be carried out by suitable qualified and experience personnel, in accordance with EPA accepted procedures. These procedures include those described in the EPA Publication "*Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*¹" (EPA Water Sampling Guideline), the *National Environment Protection (Assessment of Site Contamination) Measure 2013* (Cth.) (ASC NEPM) and the *Environmental Guidelines: Solid Waste Landfills*. All laboratory analysis must be performed by a laboratory accredited by the National Association of Testing Authorities (NATA) to undertake the analysis specified. Selected analytes have been based upon the requirements of the *Environmental Guidelines: Solid Waste Landfills* and the site licence. Records of monitoring undertaken at the site must be recorded and retained as required by the site licence.

Where required, a Quality Assurance and Control (QA/QC) Program has been included as part of the Environmental Monitoring Program in accordance with AS/NZS 5667.1:1998(R 2016) Water Quality - Sampling including the collection of:

- Field Split Duplicates;
- Blind Duplicates; and
- Rinsate Blanks

Additionally, the analytical laboratories will complete their own internal QA procedures (as required by NATA registration) during the analysis of the samples.

¹ NSW Environmental Protection Authority, *Approved methods for the Sampling and Analysis of Water Pollutants in New South Wales*, NSW Department of Environment and Conservation, Sydney, March 2004, Ref: DEC 2004/35



4 Reporting

4.1 Annual Reporting

WSC will prepare an Annual Return in accordance with the requirement of the EPL. The Annual Return will include the following:

- A certified Statement of Compliance,
- A signed Monitoring and Complaints Summary,
- A Statement of Compliance for Licence Conditions,
- A Statement of Compliance for Load Based Fee,
- A Statement of Compliance for Requirement to Prepare Pollution Incident Response Management Plan,
- A Statement of Compliance for Requirement to Publish Pollution Monitoring Data; and
- A Statement of Compliance for Environmental Management Systems and Practices.

The Annual Return will be prepared for the required reporting period, and will be submitted to the EPA no later than 60 days after the end of the reporting period. WSC will retain a copy of the Annual Return for a period of at least 4 years after the Annual Return is supplied to the EPA.

The Annual Return will be prepared for the required reporting period and will be submitted to the EPA no later than 60 days after the end of the reporting period. WSC will retain a copy of the Annual Return for a period of at least 4 years after the Annual Return is supplied to the EPA.

The monitoring and complaints summary will contain the following information:

- Tabulated results of all monitoring information collected;
- Graphical presentation of data from at least the last three years in order to show variability/and or trends. Any statistically significant variations or anomalies will be highlighted and explained;
- An analysis and interpretation of all monitoring data;
- An analysis of and response to any complaints received;
- Identification of any deficiencies in environmental performance identified by the monitoring data, trends or incidents and of remedial action taken or proposed to be taken to address these deficiencies; and
- Recommendations on improving the environmental performance of the facility.

The monitoring and complains summary must be signed by WSC or by a person approved in writing by the EPA to sign on behalf of the Licence holder.

4.2 Incident Reporting

Any incident that causes or threatens material harm to the environment or may lead to a breach of EPL conditions must be communicated by WSC or its employees immediately after first becoming aware of the incident. Notifications must be made by telephoning the Environment Line service on 131 555. The Planning Secretary must be notified in writing via the Major Projects website. Written notice including details of the notification must be provided to EPA within 7 days of the date of which the incident occurs. Reportable incidents could include but are not limited to:

- Identification of non-domestic quantities (>200 g/tonne) of hazardous waste mixed amongst solid waste;
- Fire at the landfill;
- Entry of leachate or waste into the stormwater management system;
- Identification of any failure of an environmental protection system;



- Identification of a significant difference in groundwater or stormwater indicator parameters; and
- Any other incident or observation that could potentially pose an immediate environmental hazard outside normal operating conditions.

The occurrence of any such incident will also be recorded in the site's daily logbook as appropriate.

As required in the development consent, the written incident notification shall be provided to the Planning Secretary within seven days after WSC becomes aware of an incident. The written notification must:

- identify the development and application number;
- provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- identify how the incident was detected;
- identify when the applicant became aware of the incident;
- identify any actual or potential non-compliance with conditions of consent;
- describe what immediate steps were taken in relation to the incident;
- identify further action(s) that will be taken in relation to the incident; and
- identify a project contact for further communication regarding the incident.

Within 30 days of the date on which the incident occurred, WSC must provide the Planning Secretary and the EPA with a detailed report on the incident addressing all requirements below, and such further reports as may be requested. The Incident Report must include:

- a summary of the incident;
- outcomes of an incident investigation, including identification of the cause of the incident;
- details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- details of any communication with other stakeholders regarding the incident.

Where an authorised officer of the EPA suspects on reasonable grounds that an event has occurred at the premises that has caused, is causing or is likely to cause material harm to the environment, the authorised officer may request a written report of the event. WSC 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. The report may be required to contain any or all of the following information:

- The cause, time and duration of the event;
- The type, volume and concentration of every pollutant discharged as a result of the event;
- The name, address and business hours telephone number of employees or agents of the WSC, or a specified class of them, who witnessed the event;
- The name, address and business hours telephone number of every other person who witnessed the event, unless WSC cannot obtain that information after making reasonable effort;
- Action taken by WSC in relation to the event, including any follow up contact with complainants;
- Details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- Any other relevant matters.

The EPA and/or the Planning Secretary may make a written request for further details in relation to any of the above matters if it's not satisfied with the report provided by WSC. WSC must provide such further details to the EPA and/or the Planning Secretary within the time specified in the request.



4.3 Compliance Reporting

Within six months after the commencement of construction / first year of commencement of operation of the site expansion development, and in the same month each subsequent year, WSC will submit a Compliance Report to the Planning Secretary reviewing the environmental performance of the development to the satisfaction of the Planning Secretary.

Compliance Reports will be prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2020) and will also:

- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the development.

WSC will make each Compliance Report publicly available within 60 days after submitting it to the Planning Secretary and notify the Planning Secretary in writing at least seven days before this is done.

4.4 Independent Audit

Within one year of the commencement of operation of the site expansion development, and every three years after, unless the Planning Secretary directs otherwise, WSC will prepare an Independent Environmental Audit (Audit) of the development.

Audits will:

- be prepared in accordance with the Independent Audit Post Approval Requirements (Department 2020);
- be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary; and
- be submitted to the satisfaction of the Planning Secretary within three months of commissioning the Audit (or within another timeframe agreed by the Planning Secretary).

WSC will:

- review and respond to each Independent Audit Report prepared under the condition as required in the development consent;
- submit the response to the Planning Secretary and any other NSW agency that requests it, together with a timetable for the implementation of the recommendations;
- implement the recommendations to the satisfaction of the Planning Secretary; and
- make each Independent Audit Report and response to it publicly available no later than 60 days after submission to the Planning Secretary and notify the Planning Secretary in writing at least 7 days before this is done.

4.5 Record Keeping

The following records shall be kept at the legal address of the site Licensee:

- Copy of conditions of planning consent and authorisation under the *Amended Environmental Planning and Assessment Act 1979*;
- Records of inspections conducted by staff;
- Records of monitoring as discussed above;
- Records of complaints received;
- Correspondence with or records of inspections by EPA;
- Records of situations where licence conditions have been breached and how the breaches were rectified;



- Copy of LEMP in its entirety;
- The site's EPL;
- Site diary/daily log-book;
- Plans of waste storage locations for future possible retrieval;
- Worksite WHS field folder
- Any other applicable Council operational plans and policies including closure and post closure management plans (when developed);
- Copies of any site reporting; and
- Evidence and outcomes of site reviews.

WSC shall ensure that the above records are kept up to date and readily accessible for future reference.



5 Contingency Plan

The following Contingency Plan outlines the procedures for managing unexpected incidents involving leachate at the site, particularly those that may result in material harm to the environment. The plan aims to ensure prompt, effective responses to mitigate environmental impact, maintain regulatory compliance, and prevent leachate from contaminating groundwater or surface water.

5.1 Incident Detection and Initial Response

Regular monitoring of leachate levels, quality, and system performance, as described in Section 3.3, will allow for early detection of issues such as liner failures, sump overflows, or leachate pond exceedances. Immediate action will be taken if abnormal conditions are identified.

Upon detection of an incident, the Site Manager will ensure that:

- All operations contributing to the incident are ceased immediately.
- Temporary containment measures (e.g., berms or barriers) are deployed to limit further leachate migration.
- Emergency response teams are activated to handle the incident on-site.

The Site Manager will coordinate the response, ensuring all necessary actions are implemented swiftly.

5.2 Notification and Reporting

Immediately following the detection of an incident, the Site Manager will notify relevant personnel including the operational staff to ensure a coordinated response.

Notification and reporting procedures of any non-compliance incident will be handled as detailed in Section 7.

5.3 Mitigation and Remediation Actions

Temporary barriers and other containment measures will be employed to prevent further spread of leachate. If needed, leachate will be transferred to alternative storage areas.

The damaged section of the leachate management system will be repaired or replaced as soon as practicable.

If leachate contamination affects groundwater or surface water, the following steps will be taken:

- Remedial extraction and treatment of contaminated water.
- Soil removal or treatment in the affected area.
- Restoration of vegetation and soil structure in impacted zones.

In the event of leachate pond overtopping or failure, the following steps will be initiated:

- Cease leachate pumping to the affected pond.
- Employ temporary measures to contain overflow, such as constructing berms.
- Repair or reinforce the pond liner as soon as practicable to restore functionality.

5.4 Review and Continuous Improvement

Following any incident, a review will be conducted by the Site Manager to assess the effectiveness of the response. This review will consider:

- The root cause of the incident.
- The adequacy and effectiveness of the response actions.
- Any necessary improvements to the Leachate Management Plan and associated contingency measures.



Findings from the post-incident review will be used to update the Contingency Plan, ensuring that any lessons learned are incorporated into future responses. The Leachate Management Plan will be revised as necessary to reflect these updates, ensuring ongoing compliance with regulatory requirements.

5.5 Emergency Response Plan

The site's Emergency Response Plan includes detailed procedures for handling incidents such as spills, fires, and other emergencies. The Site Manager and operational staff are responsible for implementing this plan, coordinating with external emergency services as needed. The plan is reviewed regularly to ensure its continued relevance and effectiveness.



6 Continuous Improvement Program

The Continuous Improvement Program for the Leachate Management Plan ensures that the site's leachate management practices evolve to meet emerging environmental standards, address operational challenges, and adapt to changing regulatory requirements. The program is designed to ensure continuous monitoring, evaluation, and enhancement of leachate management procedures.

6.1 Objectives

The objectives of the Continuous Improvement Program are:

- To proactively identify and address potential improvements in the leachate management system.
- To ensure continued compliance with the relevant statutory and regulatory requirements, including the EPL and the Development Consent.
- To minimise the risk of leachate-related environmental impacts, particularly on groundwater and surface water.
- To implement the best available technologies and management practices to reduce leachate generation and improve containment and treatment efficiency.

6.2 Ongoing Monitoring and Evaluation

Regular monitoring of leachate levels and quality, as outlined in Section 3.3 of this plan, will continue for evaluating the performance of the leachate management system. Monitoring data will be reviewed periodically to identify trends or deviations from expected performance.

The Site Manager is responsible for ensuring that:

- Monitoring results are reviewed annually to assess the effectiveness of the leachate management system.
- Any exceedances of trigger levels are promptly investigated, and recommendations for corrective actions are made where necessary.
- Leachate management practices are aligned with industry best practices and updated regulatory guidelines.

6.3 Incorporation of New Technologies and Practices

Advances in leachate treatment technologies and management practices will be evaluated periodically for their potential to improve the system's efficiency. Where feasible, these innovations will be incorporated into site operations to enhance environmental protection. This may include:

- Adoption of improved leachate treatment methods.
- Upgrades to containment systems or pumping equipment.
- Implementation of new monitoring technologies to provide real-time data and more accurate assessments.

6.4 Corrective Actions and Response to Incidents

As part of the continuous improvement process, corrective actions will be initiated in response to any identified non-conformances, such as elevated pollutant levels or breaches of performance criteria. The Site Manager will ensure that corrective actions are documented and that the underlying causes of incidents are addressed to prevent recurrence.



6.5 Periodic Review of the Leachate Management Plan

The Leachate Management Plan will be reviewed at least every three years, or following significant operational changes, regulatory updates, or major environmental incidents. This review will focus on:

- Evaluating the effectiveness of the leachate management strategies.
- Identifying necessary modifications based on recent monitoring data or regulatory requirements.
- Exploring opportunities for further improvement of the system's performance.

6.6 Staff Training and Engagement

A key component of the continuous improvement process is staff training and involvement. Regular training sessions will be conducted to:

- Ensure staff are up-to-date on the latest leachate management techniques and regulatory requirements.
- Equip personnel with the knowledge to detect and report any potential issues related to leachate management.
- Foster a proactive approach to environmental protection across all site operations.



7 Protocols for Managing Non-compliance

In case of non-compliance with statutory requirements or performance criteria:

- Immediate notification will be sent to the EPA.
- A corrective action plan will be developed and implemented within the shortest possible timeframe.
- Follow-up monitoring will be conducted to ensure the effectiveness of the corrective actions.

WSC will also notify the Planning Secretary in writing via the Major Projects website within seven days after WSC becomes aware of any non-compliance.

The non-compliance notification will:

- identify the development and the application number;
- set out the condition of consent that the development is non-compliant with;
- the way in which it does not comply and the reasons for the non-compliance (if known); and
- what actions have been, or will be, undertaken to address the non-compliance.

A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.



8 Plan Review Protocol

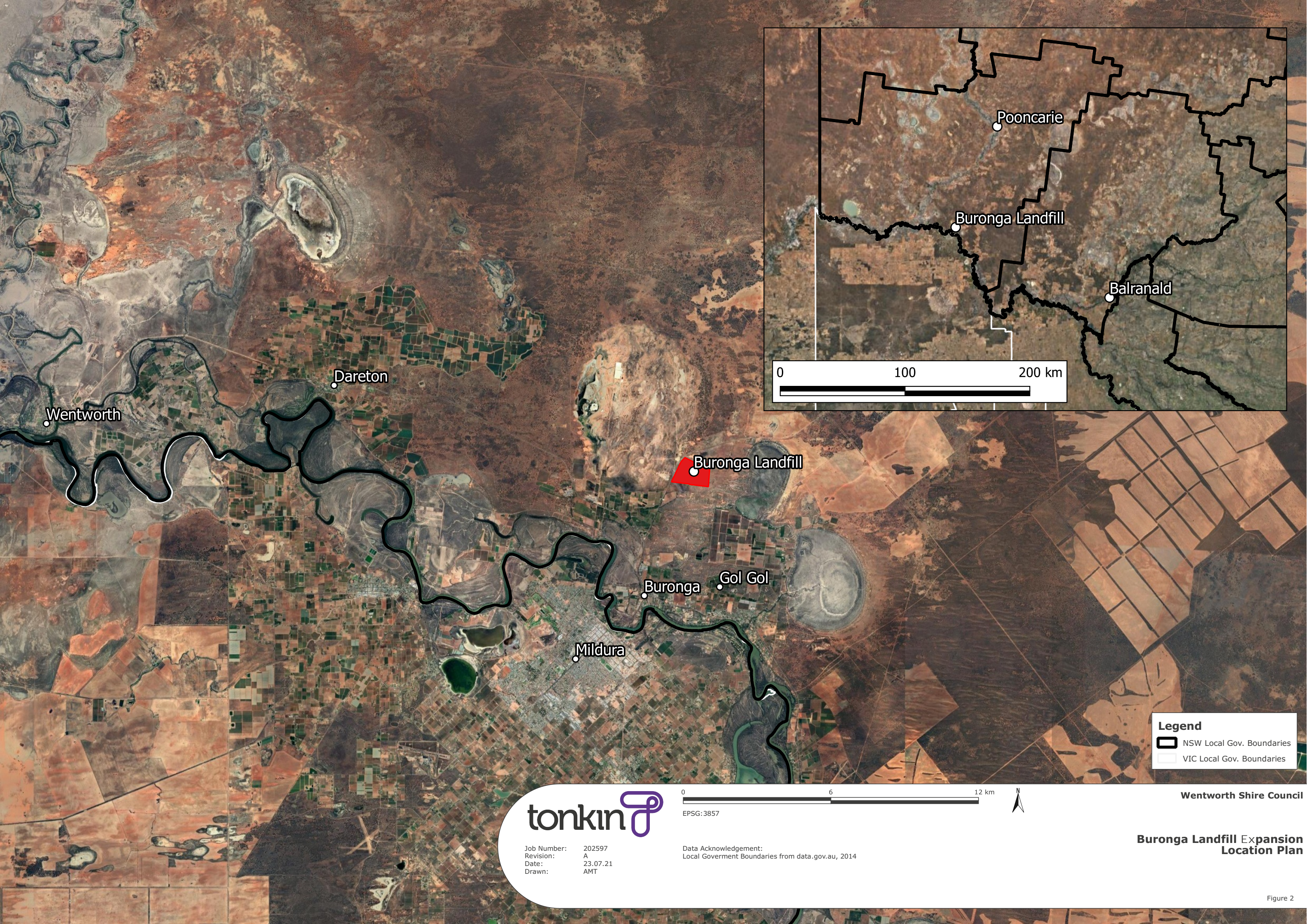
The Leachate Management Plan will undergo a formal review every three years or following significant changes in site operations, regulatory requirements, or after any major incident. Any revisions will be submitted to the EPA for approval.



Appendix A – Figures



Figure 2: Regional Location Plan



Wentworth

Dareton

Buronga Landfill

Buronga

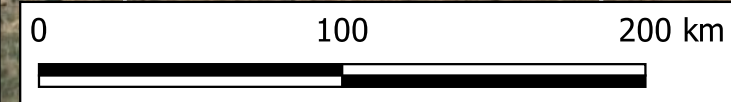
Gol Gol

Mildura

Pooncarie

Buronga Landfill

Balranald



Legend

- NSW Local Gov. Boundaries
- VIC Local Gov. Boundaries



Job Number: 202597
 Revision: A
 Date: 23.07.21
 Drawn: AMT



Data Acknowledgement:
 Local Government Boundaries from data.gov.au, 2014

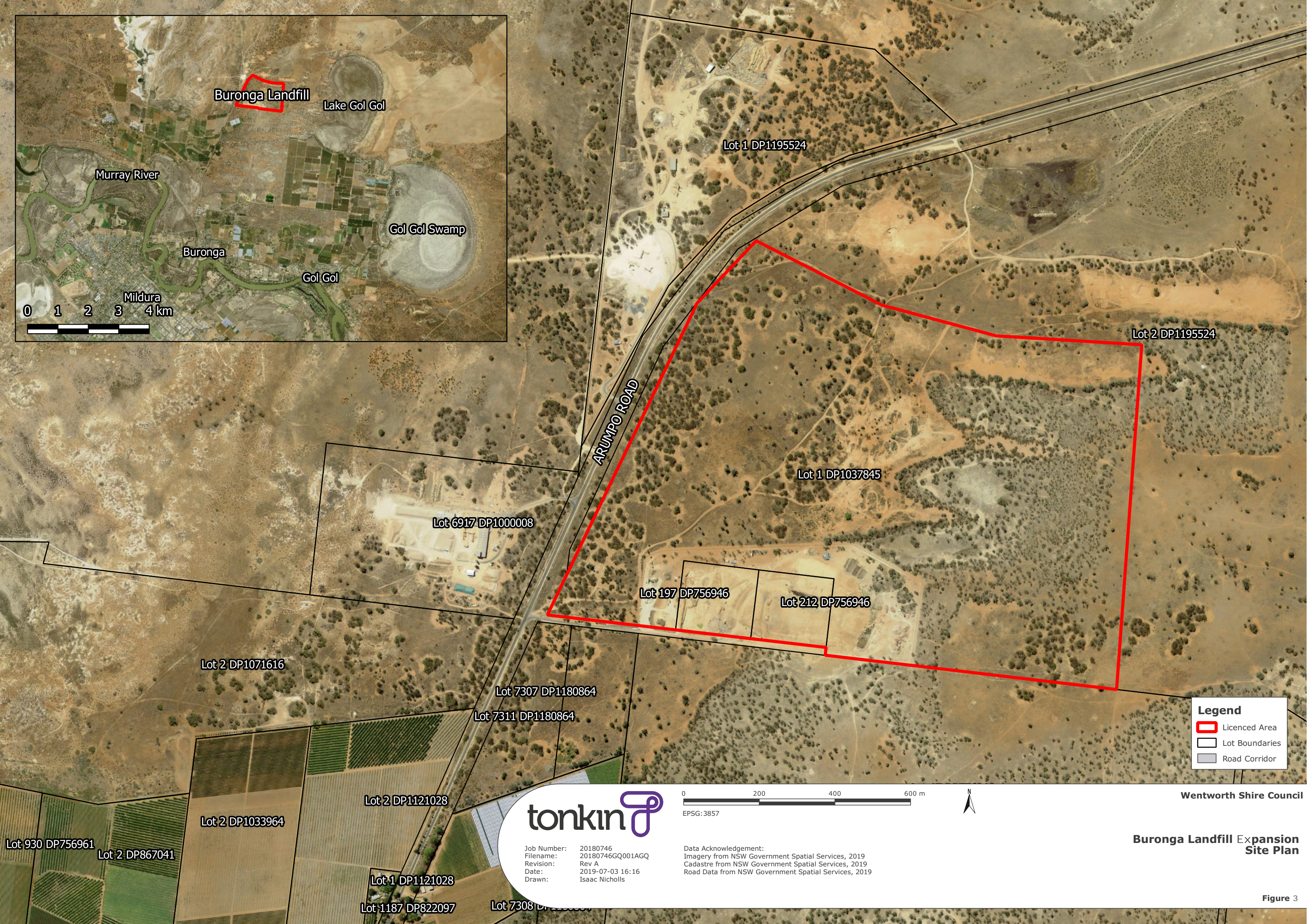


Wentworth Shire Council

**Buronga Landfill Expansion
 Location Plan**



Figure 3: Site Location Plan



Buronga Landfill

Lake Gol Gol

Murray River

Gol Gol Swamp

Buronga

Gol Gol

Mildura

0 1 2 3 4 km

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 DP1180864

Legend

- Licenced Area
- Lot Boundaries
- Road Corridor

tonkin

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

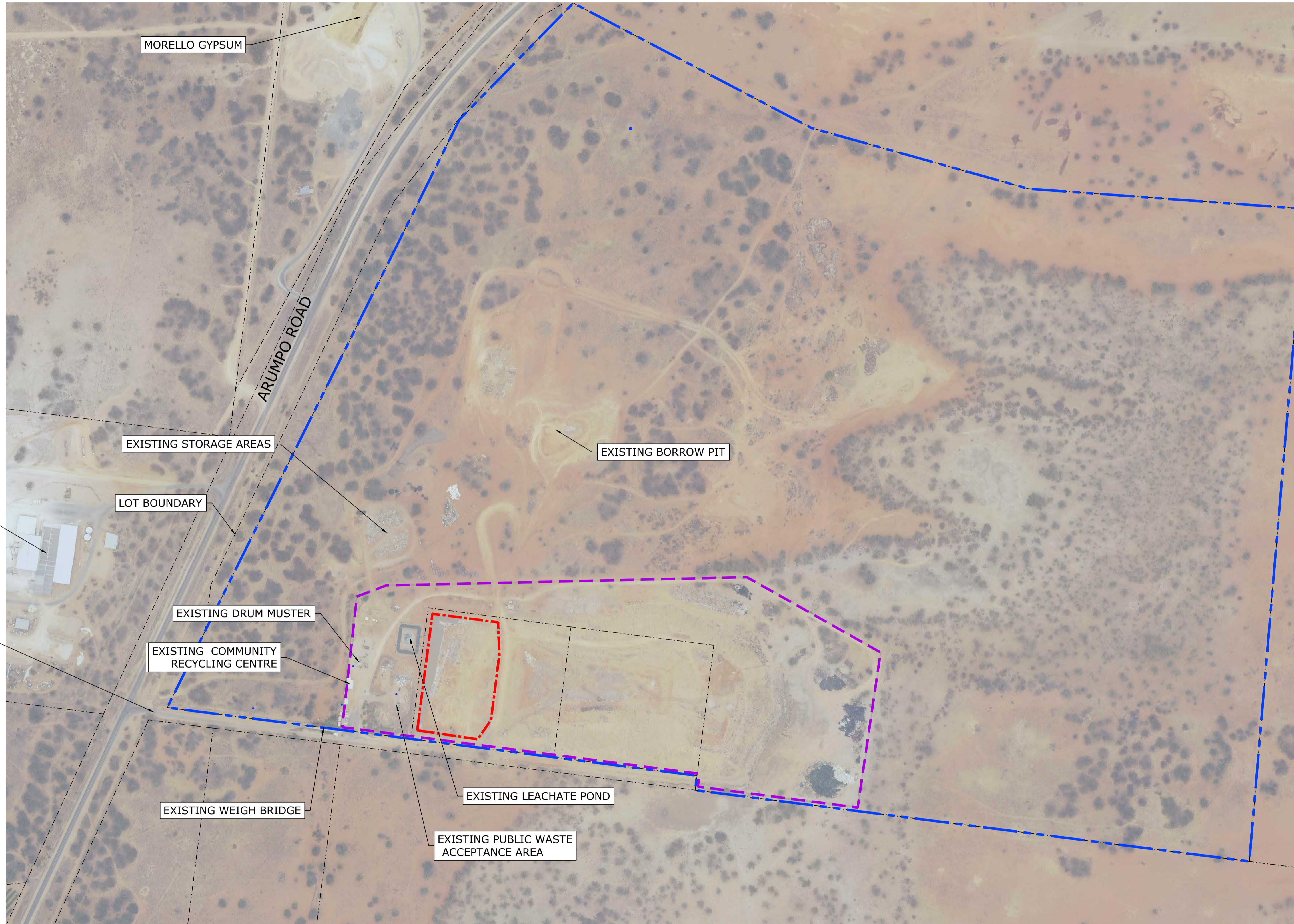


Wentworth Shire Council

Buronga Landfill Expansion Site Plan



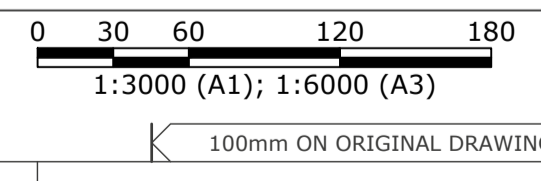
Figure 4: Current layout showing Existing Leachate Pond



LEGEND

	LICENCED AREA
	LANDFILL FOOTPRINT
	ACTIVE CELL

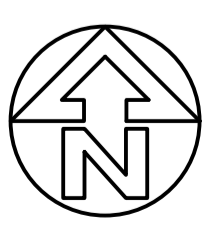
THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.



SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
B	ISSUED FOR APPROVAL	8.2.23	IN	JDT
A	ISSUED FOR INFORMATION	10.8.22	IN	JDT

COORDS: MGA94 ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:3000
SURVEYED:PRICEMERRET
SURVEY DATE:03.03.21
APPROVED / PROJECT LEADER
MEL SALT



PUBLIC UTILITIES:
THE SERVICES SHOWN ARE DERIVED FROM PLANS OBTAINED FROM THE RELEVANT SERVICE AUTHORITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE RELEVANT SERVICE AUTHORITIES FOR CONFIRMATION OF SERVICES AND THEIR LOCATION BEFORE EXCAVATION WORK COMMENCES.



NOT FOR CONSTRUCTION

WENTWORTH SHIRE COUNCIL

BURONGA LANDFILL EXPANSION

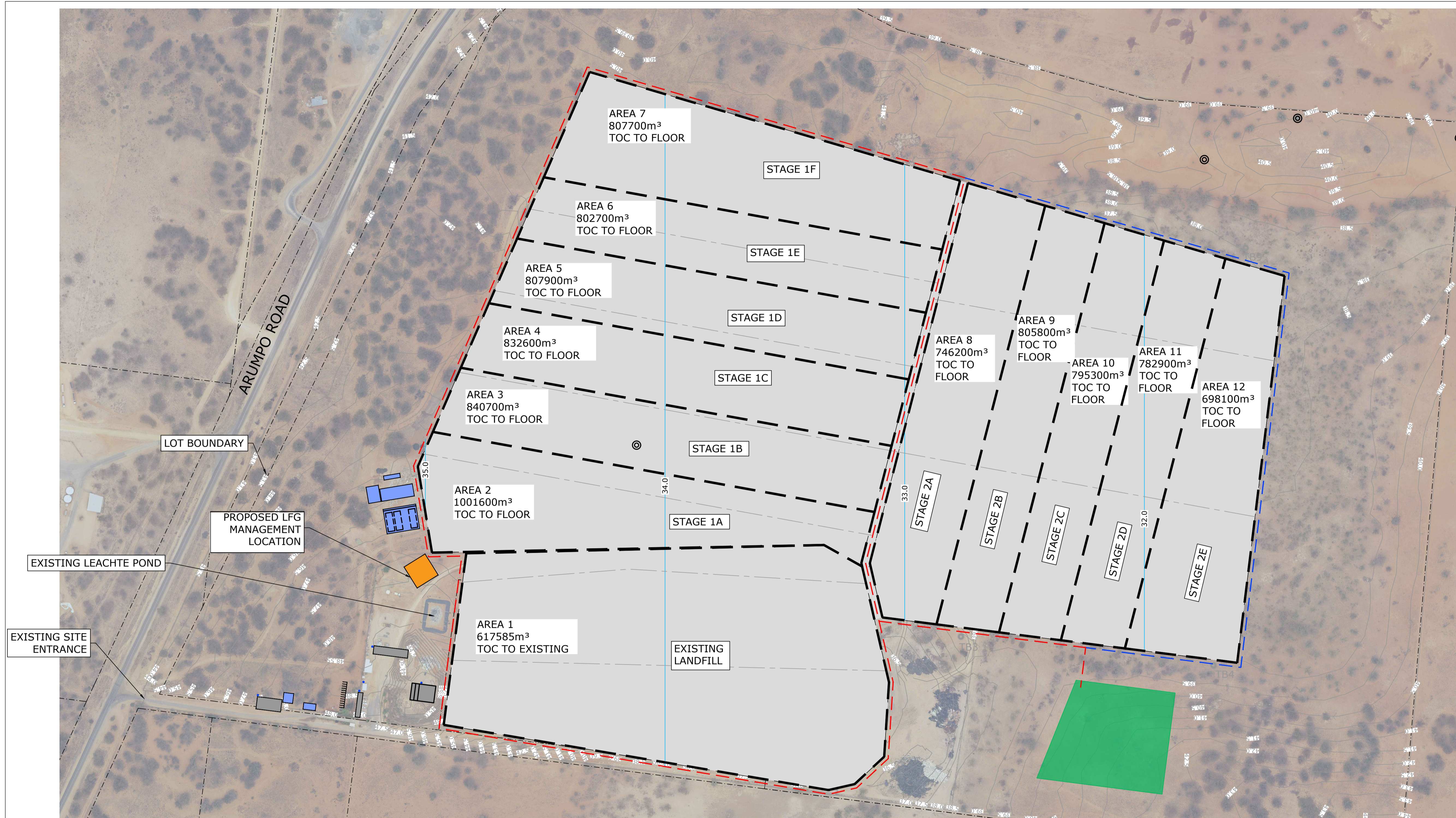
FIGURE 4

CURRENT SITE LAYOUT

FILENAME: 202597 CONCEPT DESIGN.DWG	PROJECT NUMBER 202597	DRAWING NUMBER 04	REVISION B
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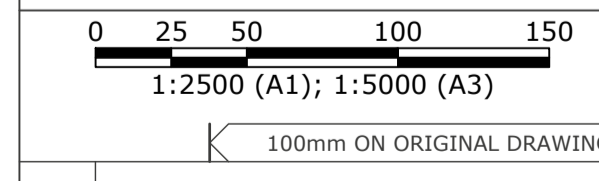
Figure 5: Proposed Layout Showing Future Leachate Ponds



LEGEND

- 40.0 EXISTING CONTOUR (0.5m INTERVAL)
- PROPOSED STAGE BOUNDARY
- PROPOSED CELL BOUNDARY
- PROPOSED STAGE 1 SERVICE ALIGNMENT
- PROPOSED STAGE 2 SERVICE ALIGNMENT
- 33.0 PROPOSED FLOOR CONTOURS
- PROPOSED LEACHATE POND
- ABORIGINAL ARTIFACT SITE
- PROPOSED BUILDING OR SHED
- PROPOSED HARDSTAND AREA
- PROPOSED LFG AREA (FUTURE)

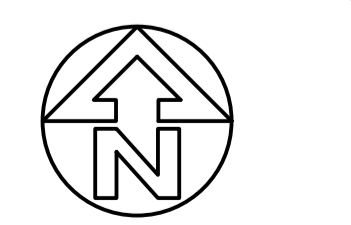
THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.



SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
B	ISSUED FOR INFORMATION			
A	FOR INFORMATION	14.09.21		

COORDS: MGA94 ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:2500
SURVEYED: PRICEMERRET
SURVEY DATE: 03.03.21
APPROVED / PROJECT LEADER



PUBLIC UTILITIES:
THE SERVICES SHOWN ARE DERIVED FROM PLANS OBTAINED FROM THE RELEVANT SERVICE AUTHORITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE RELEVANT SERVICE AUTHORITIES FOR CONFIRMATION OF SERVICES AND THEIR LOCATION BEFORE EXCAVATION WORK COMMENCES.

NOT FOR CONSTRUCTION

WENTWORTH SHIRE COUNCIL
BURONGA LANDFILL EXPANSION
FIGURE 5
PROPOSED CELL LAYOUT

FILENAME: 202597 CONCEPT DESIGN.DWG	PROJECT NUMBER 202597	DRAWING NUMBER 05	REVISION B
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Appendix B – Environment Protection Licence

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

Environment Protection Licence



Licence - 20209

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Environment Protection Licence

Licence - 20209



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).

Environment Protection Licence



Licence - 20209

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.

Environment Protection Licence

Licence - 20209

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

Environment Protection Licence

Licence - 20209



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.

Environment Protection Licence

Licence - 20209



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 quality		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.

Environment Protection Licence

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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 conditions 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

Environment Protection Licence



Licence - 20209

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;
- have a diameter of less than 1.2 metres; and
 - are delivered at the premises in a load containing more than 5 whole tyres; and
 - became waste in the Sydney Metropolitan Area.

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

Environment Protection Licence



Licence - 20209

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.

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- 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.

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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

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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.

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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.

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- 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.

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- 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

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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 <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
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 <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
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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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 Environment 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 months. 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 <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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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 C – Authors and Reviewers CVs

Daniel Du

Project Engineer

Daniel is a Project Engineer specialising in waste management, with experience spanning various industries including mining, land development and construction, all with a focus on environmental sustainability.

As a "GCI-ICP" certified CQA (Construction Quality Assurance) inspector, Daniel has performed construction quality control and construction quality assurance for both bulk earthworks and geosynthetic installation, demonstrating a strong understanding of CQC/CQA procedures.

He has been involved in a range of civil and waste management engineering projects including developing detailed design and associated documentation suitable for the construction of landfill cells and landfill caps.

Daniel employs a pragmatic approach to project delivery, thriving on collaboration with clients and project teams to solve complex issues and deliver highly considered solutions that meet client objectives and key stakeholder expectations.

Recent, relevant experience

Design Engineer | Inkerman Landfill Stage 7 Cells 1 and 2 Detailed Design | Cleanaway Solid Waste | Inkerman, SA | 2024 – Present

Daniel was responsible for the development of two new Municipal Solid Waste (MSW) landfill cells at Inkerman Landfill. Daniel was responsible development of the detailed design including all design documentation and provided project management assistance.

Design Engineer and CQA Engineer | Dunmore Waste and Resources Recovery Centre | Shellharbour City Council | Dunmore, NSW | 2021 – 2023

Daniel was responsible for the development of the capping concept design for the crest of the landfill and the detailed design for capping Stage 1 including the preparation of Basis of Design Reports, Design Reports, Technical Specifications and CQA Plans. Daniel undertook a site leachate balance assessment including HELP modelling to inform the capping design of the site. Daniel prepared a high-level closure and post-closure cost estimate for the site. Daniel also provided the CQA services for the construction of the new MSW landfill Cell 6 at the site, including full time site supervision of the geosynthetics installation of the cell and as-constructed landfill cell reporting.

Superintendents' Representative | Inkerman Landfill Stage 6 Cells 1 and 2 Construction | Cleanaway Solid Waste | Inkerman, SA | 2022 - 2023

Daniel provided project management services as Superintendent's representative for the early-mid phase of construction of Inkerman Landfill Stage 6 Cells 1 and 2. Daniel was responsible for contract management including assessment of variations, progress claims and extension of time as well as undertaking quality inspections, and the documentation of regular site meetings. Daniel also assisted with the engagement of quality assurance organisations, procurement of geosynthetic and other construction materials.



Qualifications

Master of Civil and Structural Engineering

Bachelor of Civil Engineering

Professional accreditations and affiliations

MEng Aust

Geosynthetics Certification Institute – Inspectors Certification Program (GCI-ICP) – Certified Inspector

Skills and expertise

Waste Management Engineering

Civil Engineering

Structural Engineering

Construction Quality Assurance (Geosynthetic Materials and Compacted Clay Liner)

Earthworks

Geosynthetic Installation

Subdivisions

AutoCAD

QGIS

Daniel's civil engineering experience is strengthened with a focus on environmental sustainability.

Project Engineer | Nuriootpa Landfill Cap Remediation | Cleanaway Solid Waste | Nuriootpa, SA | 2023 – 2024

Daniel provided remediation solutions for the erosion and poor vegetation growth issues occurred on the Nuriootpa landfill phytocap. Daniel was responsible for site investigation, erosion and soil assessment and preparation of the remediation documentation including preparation of a remediation action plan, stormwater water control elements redesign, Technical Specification, CQA Plan and Bill of Quantities.

Project Engineer | Waste Strategy and Waste Management Facility Upgrade Design | West Daly Regional Council | Wadeye, NT | 2022 - 2023

Daniel conducted area investigation to understand Council's needs and prepared a Waste Management Strategy that covered the townships of Wadeye, Palumpa and Peppimenarti. Daniel was also responsible for the concept design of the upgrade of the Wadeye Waste Management Facility.

Design Engineer | Boonoo Boonoo Landfill | Tenterfield Shire Council | Tenterfield, NSW | 2022 – 2023

Daniel provided detailed design services for a new MSW landfill cell and a new leachate pond at the Boonoo Boonoo Landfill. Daniel was responsible development of the design documentation and provided project management assistance.

Project Engineer | Buronga Landfill Expansion | Wentworth Shire Council | Buronga, NSW | 2023

Wentworth Shire Council are expanding their existing landfill facility to provide increased waste disposal capacity for the Mildura and Wentworth region. Daniel was responsible for development of the Landfill Environmental Management Plan (LEMP) and assisted in the Stage 1 capping design for the expansion project which is a state significant development.

Additional experience

- Port Pirie Landfill Cell Detailed Design | Design Engineer | Port Pirie Regional Council | 2023 - 2024
- West Musgrave Landfill Cell Detailed Design | Design Engineer | BHP | 2023
- Prominent Hill Landfill Cell Detailed Design | Design Engineer | OZ Mineral | 2022
- Gregadoo Waste Management Centre (WMC) Cell 2.4 Liner Extension Design | Design Engineer | Wagga Wagga City Council | 2022 – Present
- Wattle Glen North Landfill Capping Detailed Design | Design Engineer | Veolia Australia and New Zealand | 2021 – Present
- Monteith Landfill Cap Remediation Investigation | Project Engineer | 2022 - 2023
- Sandyridge Landfill LEMP Development | Project Engineer | Sandyridge Holdings | 2021
- Landfill Closure Plans for Barraba, Manilla and Nundle Rural Landfills | Project Engineer | Tamworth Regional Council | 2021 – 2022
- Mildura Landfill Cells Filling Plan | Project Engineer | Mildura Rural City Council | 2023
- Gunnedah Waste Management Facility Phytocap Option of Costing | Project Engineer | Gunnedah Shire Council | 2023
- Kempsey WMC Cell 4 Design | Project Engineer | Kempsey Shire Council | 2021 - 2022
- Caroline Landfill Cell 4A Construction | CQA Engineer | City of Mount Gambier | 2023 – Present
- Nammoona Landfill Cell 6 Construction | CQA Engineer | Richmond Valley Council | 2023
- Breakout Creek Wetland Stage 3 Construction | CQA Engineer | SA Water | 2023
- Hawkesbury Landfill Cell 6 and Capping | CQA Engineer | Hawkesbury City Council | 2022 – 2023
- Glenfield Landfill Cell 9 Construction | CQA Engineer | Veolia Australia and New Zealand | 2022 – 2023

Mamdoh Ibrahim

Principal Waste Engineer

Mamdoh is an experienced Chartered Professional Engineer (CPEng) in Civil Engineering specialised in Waste Management with 23 years' industry experience. He brings a strong track record of performance in design, construction supervision and operation of landfills.

Mamdoh has worked in NSW, Australia for over 7 years. Prior to this he worked in Oman and Egypt for many of the major waste management companies and the Omani Government.

His key areas of specialisation include Waste Management Strategies, landfill site selection studies, Landfill Environmental Management Plans, Landfill Master Planning, Landfill gas and Leachate management, Landfill Capping design, Landfill Closure and Post Closure Plans and Quarry Management.

He likes to share his experience and ensure that lessons are learned from each project and is passionate about the delivery of projects that enable the construction of solutions that will benefit communities.

Recent, relevant experience

Principal Engineer – Waste | Tonkin | Sydney, NSW | 2023 - current

- Providing comprehensive technical support to the Waste and Environmental team, focusing particularly on waste management and landfill projects
- Leading the process of landfill site selection, including the identification of necessary approvals and conducting technical studies. Developing concept designs and management strategies tailored to each site
- Serving as the team leader and primary reviewer for critical aspects of landfill projects, such as landfill cell design, filling plans, stormwater management plans, and environmental management plans (LEMP). Additionally, oversee cap design to ensure regulatory compliance and environmental sustainability
- Conducting rigorous Construction Quality Assurance (CQA) inspections and provide detailed review and approval of CQA reports, ensuring the highest standards of construction quality and environmental protection
- Assessing current landfill site operation practices and provide expert advice on potential improvements, optimizing efficiency and environmental impact.

Landfill Manager | Elizabeth Drive Landfill | Cleanaway and Suez | Sydney, NSW | 2016–2023

Mamdoh's role as Landfill Manager for this project included the following:

- Establish, review and update landfill masterplan
- Identify CAPEX and budget needs
- Review and approve design work for landfill cells, lining systems, surface water management system, leachate management system, landfill capping and landfill gas collection systems
- Manage excavation of 1.5M cubic meters of Shale and Clay to create the landfill airspace with a total cost of \$15M
- Manage cell construction, lining system and leachate collection systems carried out by contractors for 3 General Waste Cells with total construction cost of \$3.5M and 2 Restricted Waste Cells with a total cost of \$2.5M



Qualifications

Bachelor of Engineering (Civil)

Professional accreditations and affiliations

MIEAust, CPEng, NER (Civil Engineering)

Waste Management & Resource Recovery Association (WMRR), Australia

Skills and expertise

Waste Management

Landfill Engineering

Environmental Engineering

Construction Quality Assurance

Project Management

Driving excellence through dedication to quality deliverables, authentic and honest communication and innovation.

- Manage all other construction and infrastructure works in the landfill including internal roads, surface water management, landfill gas collection system works carried out by contractors
- Preparation of tenders, tender evaluation, supervision of works, contract management and review quantity survey reports
- Managed the landfill operation activities receiving around 1M tonne per annum including site team and contractors' teams to achieve the operational KPIs
- Ensure compliance with EPA licence, DA consent and other requirements and report to NSW EPA, Penrith Council, Mine Safety and other authorities. Manage the Landfill Expansion.

Landfill Engineer | Oman Environmental Services Holding Company| Muscat, Oman | 2010 – 2015

- Management and Supervision of 3 landfills' operation contracts being Multaqa Landfill, Barka Landfill and Sur Landfill receiving a total of 1.5M tonne per annum
- Review and approval of the design and construction method statements as well as ensuring the functionality of the landfill facilities for 8 engineered landfills and waste management facilities, including Multaqa landfill expansion, Barka landfill, Thumryat Landfill Ezz Landfill, Al Buraimi Landfill, Sohar Landfill, Sur Landfill Expansion and Duqm Waste Treatment Project
- Supervision of projects engineers and attending site visits and major inspections and meetings for several landfill design and construction projects
- Scoping, tendering and supervision of specialised consultants carrying out multiple site selection studies, Environmental Impact Assessment (EIA) studies, topographic survey and geotechnical investigation studies for waste management facilities.

Team Leader and Reviewer | Environmental Assessment Report and the Aftercare Management Plan for the Closed Landfills | Coolum Landfill and Woombye Landfill | Sunshine Coast Council, QLD | 2023 - 2024

In this project, Mamdoh applied his extensive experience in capturing any signs of contaminations resulting from the closed landfill, identifying any potential environmental risks, and suggested practical mitigation measures to control the identified risks.

In conducting this project Mamdoh carried out sites inspections for both landfills to identify any changes in the site, the improvements completed by the Council, damages, failures, contamination to the environment, also carried out the update of the Environmental Risk Assessment and the provided recommendations for improvements.

Coolum (closed) Landfill and Woombye (closed) Landfill are owned by Sunshine Coast Council. The Landfills are closed and capped. The project included an Environmental Risk Assessment and Aftercare Management Plan and presents recommendations for effectively enhancing control over the related environmental risks.

Providing technical support and site inspections | Construction Quality Assurance (CQA) for the lining of cell 6 | Dunmore Landfill | Shellharbour City Council, NSW | 2023

Providing technical advice to the Council and the Cell Construction Contractor to ensure the installation of the lining system is completed to satisfy the design requirement, and solve the onsite construction difficulties, approve and sign off the different liner layers and the leachate collection system.

Construction quality assurance (CQA) services for the Cell 6 at Dunmore landfill and the associated as-constructed reporting. The services were provided to a high quality and in a timely manner. Due to our involvement in sourcing suitable materials, timely intervention and resolution of construction issues and absence of outstanding CQA matters, potential delays and risks to Council were minimised.

Review Cell Design | Port Pirie Contaminated Soil Landfill Cell Design | Port Pirie Landfill | Department for Energy and Mining (DEM), SA | 2023

Provide practical insight to the cell design to ensure the highest capacity with the optimum excavation and backfilling works and compliance with the SA EPA Guidelines.

Mamdoh undertook the cell design review completed by the design team against the requirements set within the basis of design, the Client requirements, the site survey, the site stormwater management plan and the EPA guidelines.

Tonkin undertook the design for a Contaminated Soil Cell at the Pt Pirie Landfill (the site), located at Pt Pirie South, SA. The construction of a Contaminated Soil Cell which consists of 4 sub cells is considered as a solution for the disposal of waste streams including lead contaminated soils generated from the Port Pirie Lead Abatement Program (TLAP).

Team Leader and Reviewer | Bunya, Caboolture and Dakabin Waste management Facilities Filling Plan and Storm Water Management Plan | City of Moreton Bay, QLD | Bunya Caboolture and Dakabin Landfills | 2023 - 2024 |

Utilising his expertise in landfill operations, Mamdoh led the Tonkin team to develop practical filling plans that inform the operational teams on preparing for each filling stage, including tasks such as access road preparation and stormwater management. The approach includes realistic estimations of available airspace and recommendations for best practices to optimize waste compaction and airspace utilization.

Mamdoh has undertaken site inspection for the 3 landfill sites and guided the project team through the concept staging planning and review of the filling plans and the storm water management plans as well as liaison with the Council team and project management aspects.

The project included updates to the current landfill filling plans and stormwater management plans for each of their three major waste management facilities located within the City of Moreton Bay being the Bunya, Caboolture and Dakabin Waste Management Facilities. The plans are intended to: allow to plan for new capital works projects and improve operational efficiencies, recommend the sequence and timing of staged filling at the site, consider the alternate daily cover currently being used by Council in lieu of soil, consider access and egress, roads and wet weather pads, include estimated airspace consumption rates and remaining airspace calculations, include capping and rehabilitation progress recommendations, address the management of surface water runoff, include the minimisation of exposure of runoff to waste resulting in leachate generation, address stormwater management infrastructure.

Team Leader and Reviewer | West Daly Waste Management Strategy and Wadeye Waste Management Facility Concept Design | West Daly Regional Council, NT | 2023 - 2024

Mamdoh collaborated closely with the Council to pinpoint the optimal concept design and management strategy for upgrading the landfill. This involved identifying future facilities and processes aimed at enhancing recycling and environmental management.

Tonkin has been engaged by the West Daly Regional Council (WDRC) to undertake engineering concept design for the upgrade of the existing Wadeye Waste Management Facility (the site) located at Wadeye, NT. The site is owned and operated by WDRC.

Principal Waste Engineer | Wurrumiyanga Landfill Upgrade | Wurrumiyanga Landfill | Tiwi Island Regional Council, NT | 2023

Mamdoh undertook the development of a consultant's scope of service for the environmental approvals, design and documentation of an additional landfill cell as part of the Wurrumiyanga Landfill Upgrade.

Utilizing his experience in initiating and expansion of landfill sites, Mamdoh has undertaken a thorough review of the relevant legislation and guidelines in Northern Territory. He has compiled a list of necessary studies, investigations, designs, and documentation required for constructing an additional cell in the Wurrumiyanga Landfill. Additionally, he has provided an opinion of the anticipated costs associated with conducting these studies, investigations, designs, and obtaining the necessary approvals.

The Project was awarded to Tonkin by Tiwi Island Regional Council to provide a high order list of the feasibility surveys, studies and engineering investigations as well as a high-order list of the environmental studies and likely approvals that are likely to be required based on one upgraded/new landfill cell along with a list of the design (including typical drawings) and documentation required for the design of a new landfill cell.