Broken Hill Waste Management Facility - Landfill Environmental Management Plan

Version 3, February 2019

BROKEN HILL
CITY COUNCIL

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Report Title:	*Broken Hill Waste Management Facility*
Project:	*Landfill Environmental Management Plan*
Client:	*Broken Hill City Council*
Prepared By:	*Geolyse Pty Ltd*
Report Ref.:	*216074_LEMP_BHCC_001C.docx*
Status:	*Version 3 – FINAL*
Issued:	*February 2019*

Part of Premise

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The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

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Forward

This Landfill Environmental Management Plan (LEMP) is a functional document, and it will be periodically updated. The operational controls used to meet the Environmental Goals will continue to grow and be modified as new initiatives are implemented and new procedures and responsibilities emerge.

For this reason, document control is an important part of the environmental management system. It is critical that it is always known who has copies of the LEMP, and that only the latest version is in use. Details on the version, the date of issue, are recorded on each page on the LEMP in the bottom left hand corner.

Revised and updated versions of the LEMP will always be issued with a covering memo summarising the changes.

In summary this LEMP is a functional document; it is designed to help personnel at the Broken Hill Waste Management Facility undertake their tasks with minimal environmental risk and understand their environmental responsibilities.

The structure and scope of this LEMP reflects the requirements of the Environmental Protection Authority's Environmental Guidelines: Solid Waste Landfills, (Second Edition) 2016, and in doing so, embodies the principles of best practice environmental management.

Through using this LEMP, it will be possible to improve, monitor and demonstrate the environmental performance of the landfilling operations. If you have any suggestions or amendments, additions or improvements, please discuss these with your supervisor.

Adopted: 30 June 2016

Last Amended: February 2019

Copies of this plan can be viewed on-line at www.brokenhill.nsw.gov.au

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Abbreviations

AHD	Australian Height Datum
BHCC	Broken Hill City Council
BHWMF	Broken Hill Waste Management Facility
BOM	Bureau of Meteorology
dB	Decibels
DP	Deposited Plan
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
GAP	Groundwater Assessment Plan
LEMP	Landfill Environmental Management Plan
m	Metres
mg/L	Milligrams per litre
mm	Millimetres
m/s	Metres per second
OEH	Office of Environment and Heritage
PIRMP	Pollution Incident Response Management Plan
RL	Reduced Level

Section 1. Introduction

1.1 Purpose

This Landfill Environmental Management Plan (LEMP) details the procedures required to manage and operate the Broken Hill Waste Management Facility (BHWMF) to meet the relevant Environmental Goals specified in the Environment Protection Authority (EPA) Environmental Guidelines: Solid Waste Landfills (Second Edition), 2016 (the Guidelines).

1.2 Environmental Guidelines

This LEMP details the procedures required to manage and operate the BHWMF in accordance with the relevant environmental issues and goals in landfilling specified in the Guidelines. In the context of this LEMP, the relevant broad goals for landfilling in NSW identified in the Guidelines include:

- Landfills should be sited, designed, constructed and operated to cause minimum impacts to the environment, human health and amenity.
- The waste mass should be stabilised, the site progressively rehabilitated, and the land returned to productive use as soon as practicable.
- Wherever feasible, resources should be extracted from the waste and beneficially reused.

1.3 Regulatory Controls

The BHWMF is a licensed premise pursuant to the requirements of the *Protection of the Environment Operations Act, 1997*. The facility is regulated through Environmental Protection Licence (EPL) No. 5898 issued to Broken Hill City Council by the NSW EPA under this Act.

A copy of this licence is included as **Attachment A, Section 4**, of this LEMP.

1.4 Landfill Category

The BHWMF is a scheduled facility, whereby the activity 'Waste disposal (application to land)' as defined by Schedule 1 of the *Protection of the Environment Operations Act, 1997* is permitted under EPL 5898. The facility accepts the following waste categories in accordance with Licence Condition L2:

- General solid waste including putrescible and non-putrescible waste
- Tyres - permitted if became waste outside the Sydney metropolitan area. Special conditions apply if tyres became waste within the Sydney metropolitan area
- Lead contaminated soil / dust from residential and commercial premises - No more than 5 tonnes per annum, and disposed in accordance with the *Contaminated Waste Management Plan* ***Appendix C***
- Sewage sludge and residues (including nightsoil and septic tank sludge) - permitted whilst no other premises within the Broken Hill local government area is licensed to accept this waste.
- Grease trap waste - permitted whilst no other premises within the Broken Hill local government area is licensed to accept this waste
- Waste subject to general or specific exemption(s)
- Clinical and related wastes (excluding recognisable body parts, sharps waste, cytotoxic waste and radioactive waste), generated from outside the Sydney metropolitan or extended regulated area - No more than 200 kg per load,
- Asbestos waste in bonded matrix or fibre / dust - No more than 350 tonnes per annum,

The total of waste classified as 'Special Waste', which includes clinical and related waste, waste tyres or anything classified as special waste under an EPA gazettal notice, may not exceed 30 tonnes per reporting period.

The total of all wastes may not exceed 60,000 tonnes per reporting period.

Further, the activity 'Waste storage' as defined by Schedule 1 of the *Protection of the Environment Operations Act, 1997* is permitted under EPL 5898, however this activity applies solely to storage (stockpiling) of waste tyres, up to a quantity not exceeding 450 tonnes.

1.5 LEMP Structure

This LEMP is structured as follows:

- **Section 2** provides a site and facility overview;
- **Section 3** details the operational controls to be employed to meet environmental goals of The Guidelines;
- **Section 4** includes attachments and forms; and
- **Section 5** includes site layout and staging drawings.

Section 2. Site Overview

2.1 Background

Broken Hill City Council (BHCC) operates the BHWMF, located on a site of approximately 70 hectares, and is understood to have been operating since the early 1900s, receiving municipal waste from Broken Hill and the surrounding district.

2.2 Environmental Characteristics

2.2.1 Location and Land Use

The BHWMF is situated approximately 4.5 kilometres south-west of the Broken Hill town centre, and includes portions of Lot 9 in Deposited Plan (DP) 757294, Lot 17 in DP 39679 and Lot 7 in DP 757294 within the Parish of Nadbuck, County of Yancowinna (refer **Figure 2.1**). The site is zoned SP2 – Infrastructure (Waste or Resource Management Facility) under the *Broken Hill Local Environmental Plan 2013*.

The area adjoining the site is unutilised 'Rural Landscape' zoned land to the west and north, and 'Environmental Conservation' zoned land to the east (excluding the Wills Street Wastewater Treatment Plant). The portion of Lot 7300 in DP 1179131 adjacent the site to the south, as well as Lots 1974 and 1975 in DP 757298, are also zoned SP2 – Infrastructure, for possible future expansion of the BHWMF.

The Wills Street Wastewater Treatment Plant is located approximately 600 m east of the site, and includes digesting infrastructure and settlement lagoons. The Broken Hill Solar Plant is located approximately 2 km west of the site, and occupies an area of approximately 140 hectares.

The nearest residence to the BHWMF is located approximately 420 m to the north.

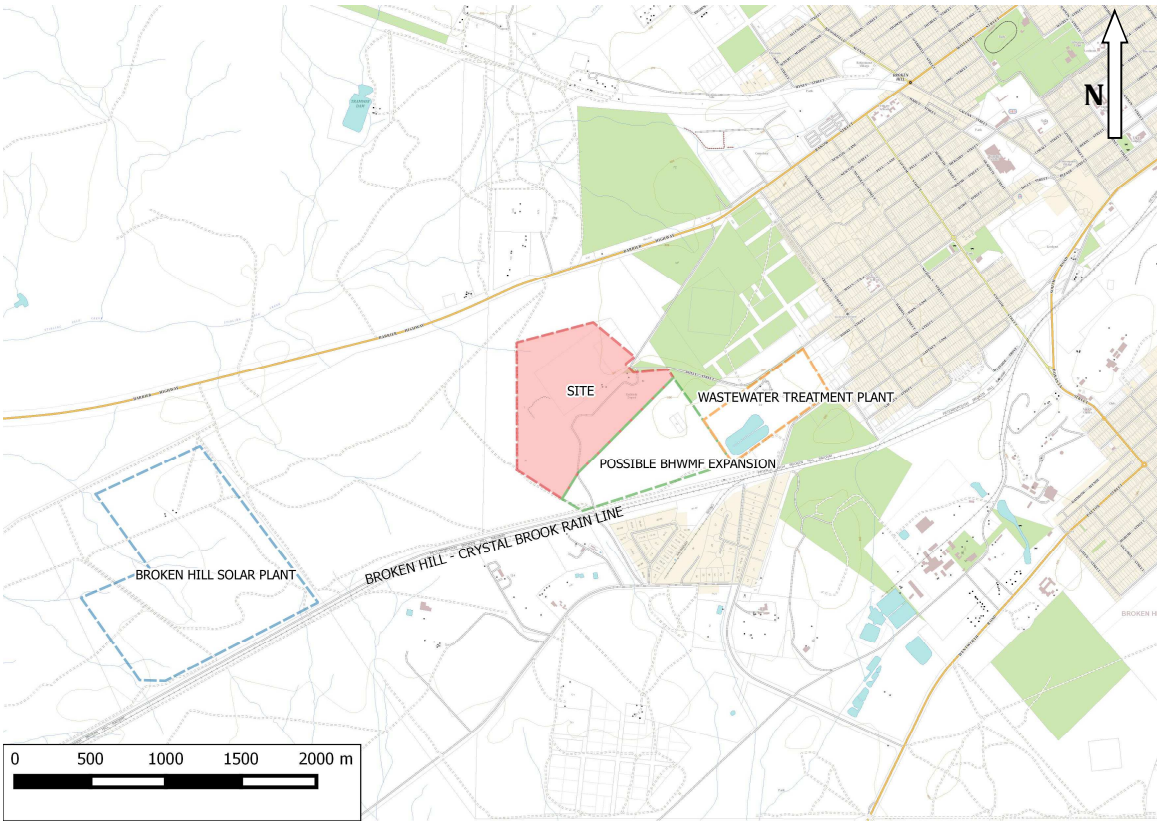

Figure 2.1: Location Plan of the BHWMF

2.2.2 Climate

The Broken Hill district is located within an arid region that has a hot desert climate, characterised by mild winters and hot summers (refer **Figure 2.2**). Temperature data compiled from the Bureau of Meteorology Station at the Broken Hill Airport Automated Weather Station (AWS) (5 kilometres south-east of the BHWMF) indicate the mean daily temperatures range from a minimum of 4.8°C in July through to a maximum of 33.8°C in January.

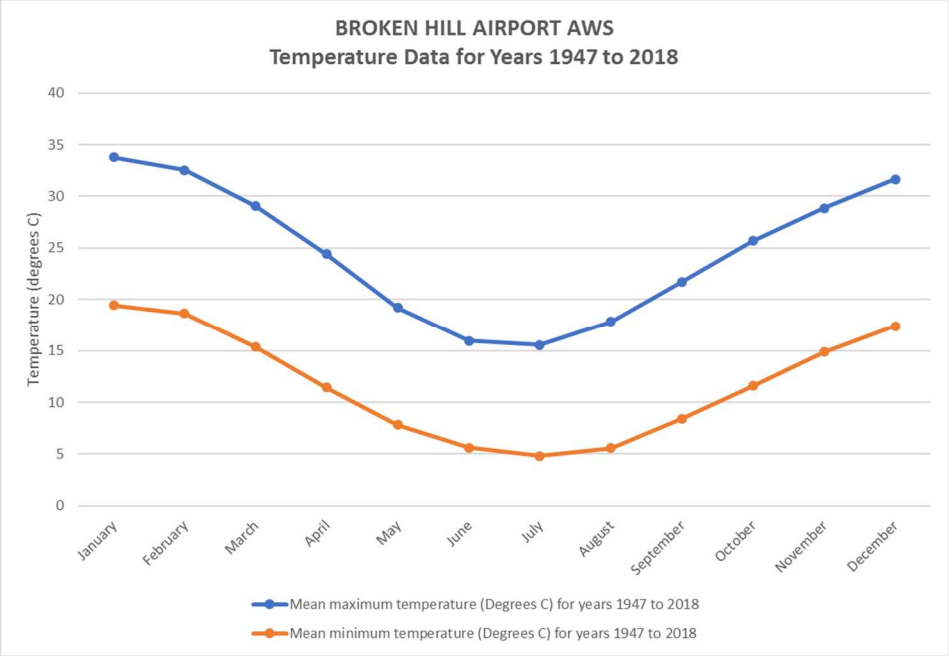

Figure 2.2: Mean Daily Minimum and Maximum Temperatures (Source: BOM)

Rainfall is low but somewhat variable throughout the year. The wettest month is January, with June being the driest month on average (refer **Figure 2.3**).

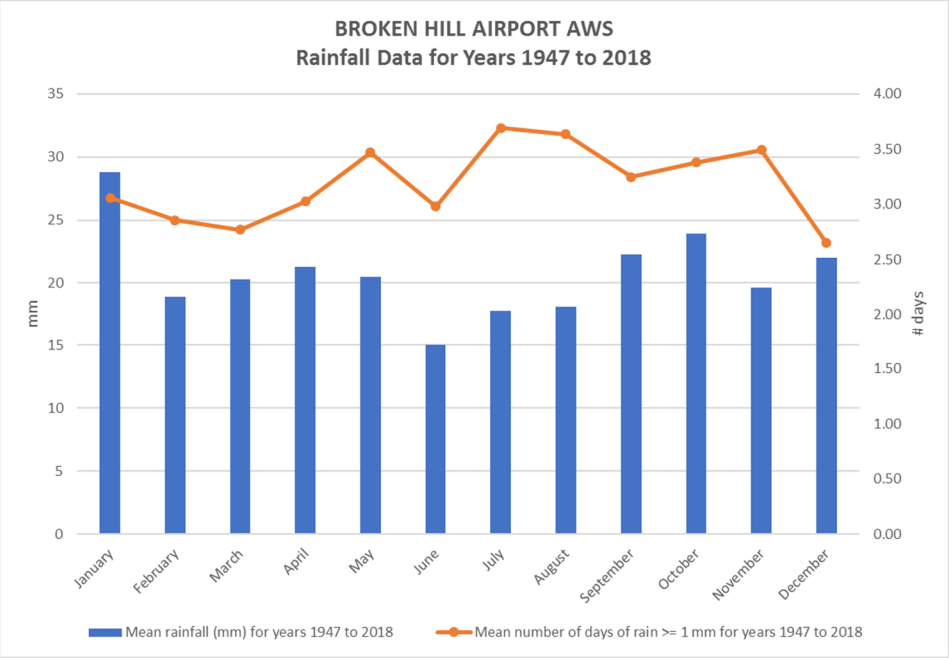

Figure 2.3: Average Monthly Rainfall and Rain Days (Source: BOM)

Evaporation data for Broken Hill (annually averaging 2,602 mm – Source: BOM) is indicative of a significant moisture deficit in the region, with average annual rainfall being recorded at 248 mm.

Morning wind conditions predominantly consist of southerlies averaging 10 – 30 km/hr and less frequent northerlies to north-westerlies averaging less than 20 km/hr. Afternoon conditions generally consist of southerlies averaging 10 – 30 km/hr (refer **Figure 2.4**).

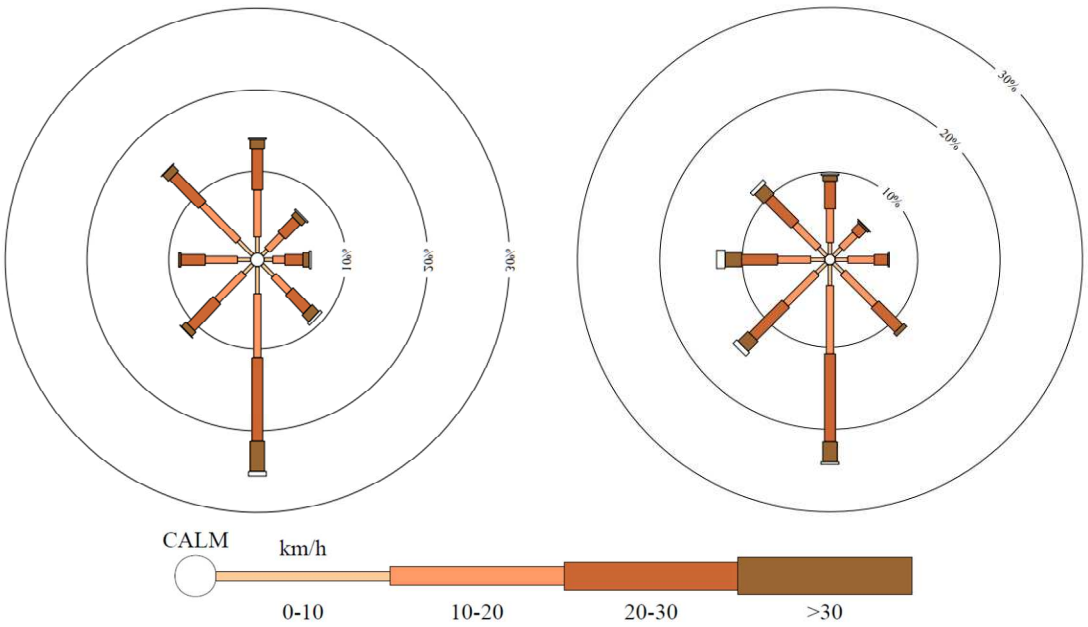

Figure 2.4: Wind Frequency Analysis, 9 am (left) and 3 pm (right) – Broken Hill (Source: BOM)

2.2.3 Surface Water

There is negligible off-site stormwater draining onto the site owing to the dry climate. The landfill is located on a relatively elevated position with some small catchments falling towards the site. A natural watercourse runs parallel to the south east boundary which drains in a south westerly direction. A second natural watercourse commences at the north western corner of the site and drains to the west of the site.

Clean water diversion drains have been installed at several locations within and external to the site (see **Section 5**, **Drawing 216074_01A_C001** – *Stormwater Catchment Areas*) and are in good condition.

A 2015 survey of the site shows that the dirty water collection and transport system is relatively informal however the site has been shaped generally to drain the previously filled areas and currently exposed areas of the site to the on-site dams / sedimentation basins.

No surface water quality monitoring program is currently in place, nor is such monitoring required by the EPL due to the significant moisture deficit in the region. In the rare occurrence of surface water being discharged from the site, quality monitoring of the discharge will be undertaken, as discussed in **Operational Control 3.5** and would trigger incident reporting protocols, described in **Operational Control 3.14**

2.2.4 Groundwater and Geology

The geological units underlying the BHWMF, as indicated in the Broken Hill Stratigraphic 1:100 000 Geological Sheet, 1st edition (Geological Survey of New South Wales, 1989), is underlain by non-graphitic metasediment of the Sundown Group. Cainozoic rock units consisting of soil, sand gravel and/or clay overly the Sundown Group bedrock.

Six piezometers are located within the BHWMF site (see **Section 5**, **Drawing 216074_02A_EV01** – *Site Layout and Filling Areas*). Routine monitoring of groundwater levels and quality for three piezometers (BH1, BH2 and BH3) is conducted biannually in May and November each year, in accordance with EPL 5898.

Groundwater levels have been recorded to be relatively consistent based on the data available from 2013 to 2015, however a slight decreasing trend in the standing water level may be occurring (refer **Figure 2.5**).

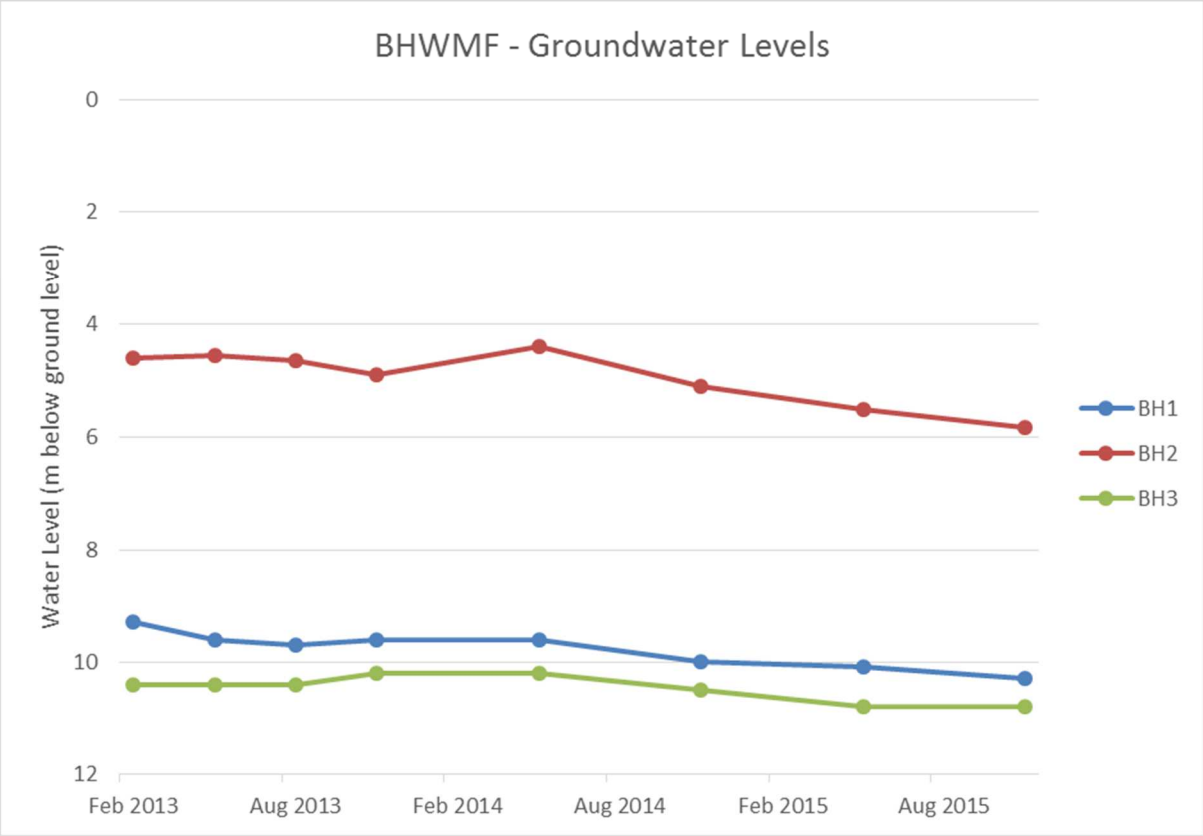

Figure 2.5: Groundwater Monitoring Results – Standing Water Level

Groundwater quality is generally indicative of impact by landfill leachate, characterised by elevated dissolved nitrate and sulfate concentrations. The locations of the three existing piezometers are understood to be within or adjacent to areas of historic landfilling, however bore construction data which may provide information on the relationship between leachate and groundwater is not available.

2.2.5 Flora and Fauna

There is minimal remnant vegetation across the site. Undisturbed areas surrounding the site consist of native shrub and grass species.

Eucalyptus revegetation areas are located to the north and north-east of the site.

Fauna species in the surrounding area has been recorded to include reptiles, birds and mammals, including invasive species of cats, rabbits, goats and foxes (data from BioNet Atlas of NSW Wildlife, accessed January 2019). No 'threatened' species, as described in the Biodiversity Conservation Act (2016) have been recorded within 2 km of the site, however the 'vulnerable' bird species *Pyrrholaemus brunneus* (redthroat) has been recorded approximately 600 m to the north-west. It is considered that the highly disturbed nature of the site is unlikely to provide favourable habitat for threatened or vulnerable species.

2.3 Site Facilities and Services

2.3.1 Access

Access to the BHWMF is via Wills Street, which is sealed, near the intersection of Depot Road. From the single entrance the BHWMF is accessed by a series of sealed and unsealed access roads leading to the various defined tipping areas.

2.3.2 Fencing

The BHWMF is fully enclosed with 1.8 metre chain mesh security fencing. Designated areas within the BHWMF are also enclosed with fencing to mitigate hazards associated with unauthorised access, e.g. clinical waste disposal area.

2.3.3 Security

Lockable security gates are in place at the main access to the BHWMF. The gates are locked outside of operating hours (refer **Operational Control 3.2**).

Section 3. Operational Controls

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3.1 Introduction

3.1.1 Minimum Standards

The performance of the BHWMF is managed against one or more of the following environmental goals:

- Minimum impacts to water;
- Minimum impacts to air;
- Stabilisation and rehabilitation of land; and
- Prevention of hazards and preservation of amenity.

Table 3.1.1 lists the primary environmental goals and EPA's 'minimum standards for landfills' designed to achieve the goal. It also lists whether the minimum standard is adopted at the BHWMF and which Operational Control incorporates the standard.

Table 3.1.1 – Environmental Issues, Goals and Minimum Standards

Environmental Goal	Minimum Standard	Adopted	Operational Control
1 •Minimum impacts to water	1. Leachate Barrier System	No	-
	2. Leachate Storage and Disposal	No	-
	3. Stormwater Management	Yes	OC3.5
	4. Water Quality Monitoring	Yes	OC3.6
2 •Minimum impacts to air	5. Landfill Gas Management and Monitoring	No	-
	8. Covering of Waste	Yes	OC3.7
	9. Final Capping and Revegetation	Yes	OC3.11
	10. Closure	Yes	OC3.12
3 •Stabilisation and rehabilitation of land	8. Covering of Waste	Yes	OC3.4 OC3.3
	9. Final Capping and Revegetation	Yes	OC3.12
	10. Closure	Yes	OC3.12
	11. Quality Assurance	Yes	OC3.4
4 •Prevention of hazards and preservation of amenity	6. Amenity Issues: Odour, Dust, Noise, Litter and Fire Control	Yes	OC3.4 OC3.7 OC3.8 OC3.9 OC3.10 OC3.11
	7. Waste Acceptance and Site Security	Yes	OC3.2
	11. Quality Assurance	Yes	OC3.2 OC3.13 OC3.14 OC3.15

3.1.2 Management Structure

BHCC's Chief Operations Officer and the Landfill Supervisor are responsible for management of the BHWMF. Responsibilities assigned in each Operational Control refer to these positions.

3.1.3 Compliance with Standard

Relevant Minimum Standard	Compliance
Quality Assurance (11)	Yes

3.2 Site Supervision, Control and Training

3.2.1 Environmental Goals

Ensure that environmental responsibilities for appropriate management at the BHWMF are clearly defined and understood and prevent unauthorised entry.

3.2.2 Procedures

3.2.2.1 Site Supervision

The BHWMF must be supervised at all times when open for the receipt of wastes. The BHWMF will be staffed by a qualified and experienced Landfill Supervisor and support personnel. All BHWMF personnel will conduct themselves in a courteous and inoffensive manner at all times.

3.2.2.2 Traffic Control

The Landfill Supervisor will responsible for internal traffic control. A speed limit of 20 km/hour is in place, as signposted at the site entrance, and one-way sections of access roads have been identified.

3.2.2.3 Safety

Landfill equipment used in the movement, spreading, compaction and covering of wastes must be operated in such a way as to minimise the risks to persons disposing of waste or vehicles delivering waste.

3.2.2.4 Scavenging

No members of the public are permitted to scavenge at the active tip face. Recovery of recyclable and reusable materials, where feasible, will be performed by landfill personnel under the direct supervision of the Landfill Supervisor.

3.2.2.5 Opening Hours

Public opening hours are set as:

- 8:00 am to 5:30 pm, Monday and Friday
- 8:00 am to 4:00 pm, Tuesday, Wednesday, Thursday and Weekends
- Closed Anzac Day, Good Friday and Christmas Day
- 8:00 am to 2:00 pm, Other Public Holidays

The facility is staffed 1 hour either side of opening hours.

3.2.2.6 Tipping Fees

General household waste, recyclables, green waste and clean fill or rubble may be deposited at BHWMF without incurring tipping charges.

Fees apply for depositing of waste from other sources (e.g. commercial / industrial waste, tyres, dead animals).

3.2.2.7 Monitoring

Monitoring of daily operations will be undertaken by the Landfill Supervisor.

3.2.2.8 Staff Training

All landfill personnel are required to be inducted onto this LEMP and attached documents (including the pollution incident response management plan – PIRMP) prior to commencing site supervision activities and/or implementing operational controls. The staff training register, attached as **Form 3.14c**, includes the induction records for personnel at the BHWMF.

3.2.2.9 Responsibilities

BHCC Chief Operations Officer

Responsible for:

- Inducting or coordinating induction of landfill personnel to the LEMP, and PIRMP attached to this LEMP as **Attachment B**.
- Ensuring all current BHWMF personnel have been recorded on the staff training register (**Form 3.14c**).

Landfill Supervisor

Responsible for:

- Monitoring daily operations to ensure compliance with the LEMP;
- Issue of invoices to vehicles required to pay tipping charges;
- Maintaining site security;
- Traffic control and safety within the waste disposal area; and
- Ensuring that variations to operational hours are approved in advance.

3.2.3 Compliance with Standard

Relevant Minimum Standard	Compliance
Waste Acceptance and Site Security (7)	Yes
Quality Assurance (11)	Yes

3.3 Landfill Staging

3.3.1 Environmental Goals

Manage activities at the BHWMF in a manner that minimises the landfill space used and facilitate progressive rehabilitation.

3.3.2 Procedures

3.3.2.1 Staging

The landfill will be staged in sequence as shown in **Drawings 03A_EV01** to **Drawing 03A_EV06**. The relative stage volumes are specified in **Table 3.3.1**. Stage 1 is understood to have commenced filling in April 2018.

Table 3.3.1 – Landfill Staging Volumes

Stage	Approximate Volume (m^3)	Elevation Relative Level (RL) mAHD	Estimated Completion Date
1	247,735	295.0	2020
2	1,451,535	300.0	2035
3	1,671,395	305.0	2053

Based on aerial Light Detection and Ranging (LiDAR) data completed 2012

The staging of the BHWMF is based on measured tonnages for the period from 2012/13 to 2014/15 (based on NSW EPA vehicle weight conversion factors) and compaction estimates which are calculated from filled waste density and volumetric survey data.

For modelling purposes, approximately 95,000 m^3 of void space at the BHWMF is estimated to be consumed each year, comprised of:

- 85,000 m^3 waste (at average density 0.375 tonnes/m^3);
- 4,300 m^3 daily cover material, at thickness 0.15 m;
- 5,700 m^3 intermediate cover material, at thickness 0.30 m.

Waste is placed in lifts no greater than 4.55 m in height. Cover material 0.15 m in thickness is applied daily atop the landfilled waste, and once each stage is completed 0.30 m of intermediate cover will be applied, bringing the total height of each lift to 5.0 m.

The maximum height for completed areas at the BHWMF has been set at 15 m above the surrounding topography, comprised of a series of 3 lifts above existing landfilled material. Therefore the final filling stage of the BHWMF is projected to have a cap level of RL 305.0 mAHD graded at 1% to allow drainage. Perimeter batters are to be graded to the outside of the landfill at 4 H : 1 V gradient.

3.3.2.2 Filling Plan

The filling plan for Stages 1, 2 and 3 is shown on **Drawing 03A_EV03 Drawing 03A_EV04 and Drawing 03A_EV05**, respectively. The filling plan identifies:

- The sequence of filling; and
- Reserved areas for development of a public drop-off waste transfer station.

Excavation will generally not be required as the filling plan is limited to areas atop previously filled cells.

Broken Hill City Council has commissioned a concept design for future development of a public drop-off waste transfer station near the site entrance. Development had not been completed at the time of preparation of this LEMP.

3.3.2.3 Cell Construction

Cells Overlying Filled Areas

Stages 1 to 3 are to be prepared, filled and capped in accordance with the general construction details shown on **Drawing 03A_EV03 Drawing 03A_EV04 and Drawing 03A_EV05**.

Waste is placed in lifts not exceeding five metres in depth. The impervious cover between the lifts will be comprised of 0.15 m of daily cover and 0.30 mm of intermediate cover. Accordingly, the cell height (depth of waste material) will not exceed 4.55 metres.

Cells In Unfilled Areas

No unfilled areas of the BHWMF are to be subject to filling as prescribed in this LEMP. In the event of a future amendment to the filling plan to utilise these areas, filling would proceed as described below:

- Excavations for waste cells at depths greater than 3 m below the existing grade are to include a leachate collection system(s) to minimise the potential for leachate to impact groundwater. Excavations for waste cells at depths greater than 12 m below the existing grade (corresponding to 4 m above the minimum anticipated depth to groundwater) are not considered to be suited to the local geology and hydrogeology.
- The leachate barrier system would be limited to an impervious clay liner, based on the identified climatic moisture deficit (annual evaporation averaging 2,602 mm, as compared to annual rainfall averaging 248 mm), where excavations of 3 m up to 12 m below the existing are proposed.
- A compacted clay liner would be at least 1,000 millimetres thick, with an in situ hydraulic conductivity of less than 1 x 10^{-9} metres / second.
- The leachate collection system would be designed by longitudinally sloping the floor of the cell by at least 1% grade (and 3% grade transversely) to a slotted vertical riser (minimum 150 mm diameter) which would be progressively extended as adjacent waste deposition and capping occurs.
- Filling and capping would be carried out as to avoid damage to the installed riser.

3.3.2.4 Final Levels

Each stage will be filled to the final contour levels shown on **Drawing 03A_EV03 Drawing 03A_EV04 and Drawing 03A_EV05**.

3.3.2.5 Capping

Progressive capping of external batters will occur after the stage has reached final design levels. This will be in accordance with **Operational Control 3.12 – Landfill Rehabilitation and Closure**.

3.3.3 Monitoring

3.3.3.1 Adherence to Staging and Filling Plan

The Landfill Supervisor will ensure adherence to the staging and filling plan.

3.3.3.2 Annual Survey

An annual filling plan survey will be conducted by a registered Surveyor to determine the progress of filling, confirm the volume of landfill space used in the past 12 months and update calculations relating to remaining capacity.

3.3.4 Responsibilities

Landfill Supervisor

Responsible for:

- Adhering to the staging and filling plan.

BHCC Chief Operations Officer

Responsible for:

- Ensuring the annual survey, calculation and preparation of filling plans for each stage are complete.

3.3.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Covering of Waste (8)	Yes
Final Capping and Revegetation (9)	Yes
Closure (10)	Yes

3.4 Waste Receipt and Management

3.4.1 Environmental Goals

Manage activities at the BHWMF in a manner that minimises the landfill space used and facilitate progressive rehabilitation.

3.4.2 Procedures

3.4.2.1 Waste Placement and Compaction

All waste will be deposited, spread, covered and compacted in lifts not exceeding five (5) metres depth. The cover between the lifts (intermediate cover) will be 0.30 m.

Deposited waste should be placed and compacted to achieve a maximum effective density. Current landfill plant is understood to achieve an approximate density of 350 to 400 kilograms of waste per cubic metre of landfill space, however this could be improved through acquisition and operation of a specialised compaction vehicle.

3.4.2.2 Disposal of Animal Product / Offal

Individual livestock, animal product and offal must be deposited away from the public area and covered with a minimum of 0.3 m of soil immediately. A minimum of 0.5 m of earth fill between carcasses and ground level should be maintained.

3.4.2.3 Excavation and Daily / Intermediate Cover

Cover material should be sourced from excavations at the BHWMF and stockpiled adjacent to the landfilling area for use at the end of each day. Excavations are not to extend greater than 12 m below the existing grade, which corresponds to 4 m higher than the minimum encountered depth to groundwater (at 16 to 18 m depth).

0.15 m of cover material is to be applied over all exposed landfilled waste prior to ceasing operations at the end of each day. An intermediate cover must be applied to a depth of 0.30 m over surfaces of the landfilled waste at the premises which are to be exposed for more than 90 days.

At least two weeks cover material must be available under all weather conditions.

3.4.2.4 Capping

Completed areas will be capped as soon as is practicable after reaching the final design level. Notwithstanding this, capping will commence within 90 days of completion of landfilling operations.

Capping will comprise:

- A revegetation layer of 0.9 m thickness; and
- 0.1 m topsoil.

Revegetation of capped areas is described in **Operational Control 3.12**.

3.4.2.5 *Permitted Wastes*

The BHCC and any contractors 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 **Table 3.4.1** below.

Table 3.4.1 – Permitted Wastes

Waste	Description	Activity	Other Limits
Tyres	Waste Tyres	Waste Disposal (application to land) Waste Storage	Where sourced from within the Sydney metropolitan area (SMA), tyres must be delivered in a load containing less than 25 whole tyres, and have a diameter of greater than 1.2 metres. Tyres from the SMA must not be received unless they have been processed, or are to be processed at the BHWMF, in accordance with Section L2.9 of EPL 5898: Tyres stockpiled must: • not exceed 450 tonnes at any 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.
Contaminated Soil	Soils contaminated with a substance or waste referred to in Parts 1 or 2 of Schedule 1 of the *POEO (Waste) Regulation* 2014	Waste Disposal (application to land)	Lead contaminated soil/dust must not exceed 5 tonnes per annum. Waste must be disposed of in accordance with the *Contaminated Waste Management Plan*[1] for the Broken Hill Waste Management Facility.
Sewage sludge & residues	Sewage sludge and residues including nightsoil and septic tank sludge	Waste Disposal (application to land)	Sewage sludge and residues must only be accepted at the premises where there is no other facility available within the Broken Hill City Council area to legally accept the waste
Grease trap waste	Grease, oil, solids, water or other matter that: (a) results from the preparation or manufacturing of food, and (b) is collected in a grease trap in the usual course of the operation of the grease trap	Waste Disposal (application to land)	Grease trap wastes must only be accepted at the premises where there is no other facility available within the Broken Hill City Council area to legally accept the waste
General or Specific exempted waste	Waste material for which an exemption under clauses 91 and 92 of the *POEO (Waste) Regulation* 2014 applies.	Waste Disposal (application to land)	None
Clinical and related wastes	Clinical waste which does not contain any of the following: • recognisable body parts • sharps waste • cytotoxic waste or • radioactive waste and which was generated outside the Sydney metropolitan or extended regulated area	Waste Disposal (application to land)	Disposal of waste cannot exceed 200 kg at any one time.

[1] Appended to this LEMP as **Attachment C**

Table 3.4.1 – Permitted Wastes

Waste	Description	Activity	Other Limits
Asbestos waste	Waste including asbestos waste in bonded matrix and asbestos fibre and dust waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems.	Waste Disposal (application to land)	Disposal of asbestos must be in accordance with Clause 80 of the *POEO (Waste) Regulation* 2014. No more than 350 tonnes per annum of asbestos waste in bonded matrix or fibre / dust may be disposed at the BHWMF
General solid waste (putrescible and non-putrescible)	General solid waste classified as putrescible or non-putrescible following *Part 1: Classifying Wastes* of the *Waste Classification Guidelines* (2014).	Waste Disposal (application to land)	none

Source: EPL No. 5898

The total of waste classified as 'Special Waste', which includes clinical and related waste, waste tyres or anything classified as special waste under an EPA gazettal notice, may not exceed 30 tonnes per reporting period.

The total of all wastes may not exceed 60,000 tonnes per reporting period.

Limitations Specific to Waste Tyres

The storage and/or disposal of waste tyres at the BHWMF is in accordance with Section 76(7) of the Protection of the Environment Operations (Waste) Regulation 2014, specifically:

The occupier of any premises to which a load of waste tyres is delivered must cause the EPA to be given the following information (in the prescribed form and manner) within 3 days after the delivery:

(a) the date and time of delivery,

(b) the weight (in kilograms) of waste tyres in the load (rounded to the nearest kilogram and, if the amount to be rounded is 0.5 kilogram, rounded up),

(c) the number of tyres in the load if the weight of the load is less than 200 kilograms,

(d) any other information specified in the Asbestos and Waste Tyres Guidelines.

In addition to the requirements of the POEO (Waste) Regulation 2014, the following limit conditions are prescribed in EPL 5898:

L2.7 The licensee must not dispose of any tyres on the premises which;

(a) have a diameter of less than 1.2 metres; and

(b) are delivered at the premises in a load containing more than 25 whole tyres; and

(c) became waste in the Sydney Metropolitan Area.

L2.8 Tyres stockpiled on the premises must:

(a) not exceed four hundred and fifty (450) tonnes of tyres at any one time; and

(b) be located in a clearly defined area away from the tipping face; and

(c) be managed to control vermin; and

(d) be managed to prevent any tyres from catching fire.

L2.9 Tyres from the Sydney Metropolitan Area must not be received at the premises unless:

(a) they have been shredded into pieces measuring no more than 250 mm in any direction; or

(b) they have had their walls removed; or

(c) the facility has the capacity, at the time of receiving the tyres, to recycle or reprocess the tyres into a saleable product (including retreading the tyres); or

(d) the facility has the capacity, at the time of receiving the tyres, to shred the tyres or remove the walls from the tyres; or

(e) the tyres are from a domestic load containing no more than 5 tyres having a diameter of less than 1.2 metres.

Currently, the BHWMF conducts shredding of tyres which are disposed in the active landfill cell or collected by a contractor.

Waste management of tyres (including tyres and tyre pieces) must include measures to avoid catching on fire, or causing the spread of disease by vermin.

Limitations Specific to Asbestos Waste

The disposal of asbestos waste at the BHWMF is in accordance with Section 80 of the Protection of the Environment Operations (Waste) Regulation 2014, specifically:

Asbestos waste disposed of at the site is covered with virgin excavated natural material

(a) initially (at the time of disposal), to a depth of at least 0.15 metre, and

(b) at the end of each day's operation, to a depth of at least 0.5 metre, and

(c) *finally, to a depth of at least 1 metre (in the case of bonded asbestos material or asbestos-contaminated soils) or 3 metres (in the case of friable asbestos material) beneath the final land surface of the landfill site.*

Areas of the BHWMF where asbestos waste has been disposed are recorded to ensure adequate capping has been applied during final capping and closure.

Receipt and placement of asbestos is also addressed in the BHCC Contaminated Waste Management Plan, appended to this LEMP as **Attachment C**.

3.4.2.6 Excluded Wastes

The BHWMF will not accept for disposal wastes except those described in **Section 3.4.2.5**. All other wastes are to be excluded. Such waste materials may include, but not be limited to, any of the following (or combination thereof):

- Liquid waste (with the exception of sewage sludge and residues, and grease trap waste);
- Restricted solid waste;
- Hazardous waste;
- Clinical waste (or related waste) comprised of radioactive material, hospital sharps, cytotoxic waste and/or recognisable body parts; or
- Clinical waste (or related waste) generated within the Sydney metropolitan or extended regulated areas.

3.4.2.7 Screening of Received Wastes

Waste material received at BHWMF arrives from three sources:

1) Members of the public

2) Council works / projects and municipal collection

3) Commercial and Industrial Sector

The following practices apply to screening of each of the waste streams:

Table 3.4.2 – Waste Sources and Screening Practices

Source	Screening Practice
Members of the public	Green waste and recyclables (glass, aluminium, cardboard, oil): • Dropped-off in the applicable area of the waste transfer precinct Scrap metal, tyres and household waste: • Directed to the public tipping areas (until a drop-off area is available within the waste transfer precinct) • Public to segregate scrap metal and household waste to respective areas • Tyres are collected from the public tipping areas and diverted to the tyre shredding area Animal carcasses: • Directed to current 'meat-hole' area Public access is only permitted during opening hours • 8:00 am to 5:30 pm, Monday and Friday • 8:00 am to 4:00 pm, Tuesday, Wednesday, Thursday and Weekends • Closed Anzac Day, Good Friday and Christmas Day • 8:00 am to 2:00 pm, Other Public Holidays Monitoring intermittently and randomly by site operator to ensure excluded non-approved wastes are not being disposed
Council works / projects and municipal collection	Municipal waste: • Directed at weighbridge to current filling area (may include wet-weather area) Council works / projects waste: • Directed at weighbridge to: – Current filling area (or wet-weather tipping area, as appropriate) – Demolition waste area – Green waste processing area – Tyre shredding area
Commercial and Industrial Sector	• Waste material inspected at weighbridge, and directed to: – Current filling area (or wet-weather tipping area, as appropriate) – Demolition waste area – Green waste processing area – Tyre shredding area – Current 'meat-hole' area – Clinical waste area – Contaminated soil area – Grease trap waste area Monitoring intermittently and randomly by site operator during disposal to ensure excluded non-approved wastes are not being disposed

3.4.2.8 Suspected Excluded Wastes

The following steps will be undertaken for vehicles suspected of containing excluded wastes:

- The vehicle will be refused permission to deposit waste until the waste is verified as being acceptable;

- If necessary, the Landfill Supervisor will obtain evidence from the driver (e.g. test or classification certificate) that the waste does not include excluded substances.

3.4.2.9 Identified Excluded Wastes

The following steps will be undertaken if excluded wastes are identified:

- If identified at the **point of entry** the vehicle will be refused entry and the driver advised to contact the EPA for advice on the proper disposal of the excluded waste. The incident will be reported as described in **Section 3.4.2.12**.
- If identified **during unloading** the Landfill Supervisor will advise the driver that the waste is not acceptable and organise for the waste to be loaded back on the vehicle, where practicable and safe to do so. The Landfill Supervisor will then escort the load off-site and advise the driver to contact the EPA for advice on the proper disposal of the excluded waste. The incident will be reported as described in **Section 3.4.2.12**.
- If identified **during waste spreading and compaction** the sanitary Landfill Supervisor will make all practicable efforts to identify the source of the waste (e.g. labelling, waste type). The Landfill Supervisor is responsible for then contacting the EPA for advice on the proper disposal of the excluded waste and will dispose of the excluded waste in accordance the EPAs requirements. In the event that the EPA cannot be contacted, the wastes will be relocated to a nominated quarantine area. The incident will be reported as described in **3.4.2.12**.

3.4.2.10 Reporting Excluded Wastes

The BHCC Chief Operations Officer is to be notified immediately, and an Incident Report will be prepared (as per **Operational Control 3.14**) including the details of the type of excluded waste, the source of the waste and vehicle driver identification.

3.4.2.11 Recycling

Designated areas for household recyclables including paper, glass, aluminium, paint, oil and batteries will be maintained.

The following types of waste will be directed to the appropriate area or removed from the landfill, where practicable, and stored in designated recycling areas as shown on the site layout and filling areas diagram (**Drawing 216074_02A_EV01**).

- Cardboard;
- Scrap metal;
- Sump oil;
- Automotive batteries;
- Green waste / garden waste;
- Gas bottles / cylinders; and
- Tyres.

Green-waste is mulched on site, and made available for use by Council in the rehabilitation of the site or on off-site projects. Material too large to be put through the chipping equipment is buried within the landfill.

Automotive batteries are stored on site and removed from site when sufficient stocks have accumulated.

Sump oil is collected in a 55,000 L bunded collection unit for removal by a designated and licensed contractor.

Council has an agreement with a contractor for the collection of all scrap metal.

3.4.2.12 Waste Recording

All commercial vehicles entering the facility will be recorded by the Landfill Supervisor or staff. Records will include:

- Received waste quantity and destination within BHWMF;
- Waste type;
- Source of waste received; and
- Quantity and destination of waste transported from BHWMF.

3.4.3 Monitoring

Records of wastes entering and exiting the landfill will be kept. The Landfill Supervisor or staff will be present at the site during operational hours to ensure that wastes are deposited and disposed in the appropriate area of the landfill.

Annual volumetric surveys will monitor the volume of landfill used.

The density of the compacted waste will be monitored by calculation, from records of wastes received and volume used (from annual volumetric survey).

3.4.4 Responsibilities

Landfill Supervisor

Responsible for:

- Ensuring correct procedures for waste receipt and management are implemented.
- Approving access to the depot outside of normal hours (Waste Coordinator)

BHCC Chief Operations Officer

Responsible for:

- Approving access to the depot outside of normal hours (if Waste Coordinator not available);
- Maintaining arrangements for processing of green waste and scrap metal; and
- Organising an annual survey, calculations and submission of annual reports.

3.4.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes
Waste Acceptance and Site Security (7)	Yes
Covering of Waste (8)	Yes
Final Capping and Revegetation (9)	Yes
Closure (10)	Yes
Quality Assurance (11)	Yes

3.5 Surface Water Management

3.5.1 Environmental Goals

Manage activities to prevent pollution of water by leachate. A checklist outlining the requirements for monitoring of surface water is provided as **Attachment F**

3.5.2 Procedures

3.5.2.1 Surface Water Management

Surface water runoff is to be managed in the following way to minimise environmental impact:

- A clean water diversion system separated from waste disposal areas via earth embankments to divert clean water flows from catchments upstream of the landfill site;
- Diverting runoff water away from filling areas to ensure refuse is at no stage inundated with water;
- Holding heavily loaded runoff in sedimentation / evaporation basins to prevent runoff. Water from sedimentation basins may be utilised for dust control and vegetation watering;
- Maintaining sufficient void capacity within sedimentation / evaporation basins to ensure overflow does not occur in storm events (less significant than storm events of 90th percentile and 5 day duration);
- Unpolluted runoff from stable areas is diverted to avoid contributing to polluted runoff.

3.5.2.2 Clean Water Diversion

The clean water diversion drains are separated from waste disposal areas via earth embankments or in the case of the north eastern drain the property boundary fence.

All gross pollutants are to be removed from the clean water diversion drains and only clean fill be used to create the earth embankments separating the clean water diversion drains and dirty areas.

The clean water diversion drains have sufficient capacity to convey the calculated 1 in 20 year average recurrence interval (ARI) peak flows along their length (refer to **Attachment D**, *Surface Water Management Plan*). Flow velocities were above specifications and accordingly Rock Check Dams and/or other check dam systems are required to be installed in the bare soil areas of the drains to reduce velocities.

3.5.2.3 Dirty Water Containment

The existing dams on the site act as Type D sedimentation basins, albeit with no formal discharge outlets. Council staff advised that the dams / basins never fill and captured water evaporates due to the significant rainfall deficit at the site (mean annual rainfall 227 mm, mean annual evaporation 2,592 mm [2])

The volume of the sedimentation basins required for Catchment 1 (29.5 ha) and Catchment 2 (24.9 ha) are 3,345 m^3 and 2,824 m^3 respectively (using the 90th percentile rainfall depth for Broken Hill of 21.6 mm, Cv = 0.35, and 50% of settling zone capacity for sediment storage zone).

The surface area of Dam 1 is 4,400 m^2 and Dam 2 is 2,400 m^2 , meaning that depths of 0.76 m and 1.18 m are required respectively. The available LiDAR data shows that the depths of the two dams are at least this deep and therefore have adequate capacity for their respective catchments. Site survey will confirm the depths of the dams.

[2] Broken Hill Stephens Creek Reservoir BOM station 047031

3.5.2.4 *Surface Water Discharge*

Stormwater may overflow during and for a period immediately after a storm event greater than a 1 in 10 year recurrence at a 5 day duration. Surface water discharge from the site would trigger incident reporting protocols, as described in **Operational Control 3.14**

3.5.2.5 *Surface Water Monitoring*

In the event of a surface water discharge, monitoring of surface water will be conducted within 48 hours of the discharge occurring. Monitoring will include collection of surface water samples at the point(s) of discharge and analysis for the parameters listed in **Table 3.5.1**:

Table 3.5.1 – Surface Water Quality Parameters

Pollutant	Units of Measure	Sampling Method
Calcium	milligrams per litre	Grab Sample
Chloride	milligrams per litre	Grab Sample
Conductivity	microsiemens per centimetre	Probe and Grab Sample
Faecal Coliforms & E.coli	colony forming units per 100 mL	Grab Sample
Magnesium	milligrams per litre	Grab Sample
Nitrate	milligrams per litre	Grab Sample
Nitrogen (Ammonia)	milligrams per litre	Grab Sample
pH	pH	Probe and Grab Sample
Potassium	milligrams per litre	Grab Sample
Phosphorus (Total)	milligrams per litre	Grab Sample
Sodium	milligrams per litre	Grab Sample
Sulfate	milligrams per litre	Grab Sample
Total Organic Carbon	milligrams per litre	Grab Sample

The results of the surface water monitoring will be conveyed to the EPA in writing within 14 days.

3.5.3 Responsibilities

Landfill Supervisor

Responsible for:

- Diverting clean runoff around the active cells;
- Inspection and maintenance of all stormwater drainage to ensure proper functioning and to prevent contaminated runoff leaving the site;
- Initiating incident reporting in the event of a surface water discharge from site;
- Advising the BHCC Chief Operations Officer of any upgrading required to contain or redirect surface water runoff.

BHCC Chief Operations Officer

Responsible for:

- Coordinating surface water quality monitoring in the event of a surface water discharge from the site;
- Coordinating and implementing upgrades to the surface water diversion or containment systems.

3.5.4 Compliance with Standard

Relevant Minimum Standard	Compliance
Stormwater Management (3)	Yes
Water Quality Monitoring (4)	Yes

3.6 Groundwater Management

3.6.1 Environmental goals

Undertake activities in a manner that prevents pollution of groundwater resources and monitor for impacts to detecting water pollution. A checklist outlining the requirements for groundwater monitoring is provided as **Attachment F**.

3.6.2 Procedures

3.6.2.1 Preventing Pollution

The landfill must be operated so as to minimise the risk of groundwater pollution by leachate. This will be achieved by:

- Implementing surface water controls;
- Ensuring adequate compaction of deposited wastes and cover material;
- Capping completed cells;
- Progressively rehabilitating disturbed areas; and
- Ensuring adequate revegetation of completed cells.

3.6.2.2 Leachate Monitoring Program

Waste Cell Monitoring Wells

A leachate monitoring and recovery well is present within waste cells of the former quarry area, and is identified as LW1, as shown on **Drawing Reference 216074_02A_EV01**. Should future landfill cells be constructed in areas not previously filled (discussed in **Operational Control 3.3** 'Landfill Staging'), additional leachate monitoring and recovery wells will be installed, with a slotted vertical riser (minimum 150 mm diameter) installed at the lowest point and being progressively extended as adjacent waste deposition and capping occurs.

The depth to leachate is recorded every six (6) months. Where leachate levels are recorded to be greater than 300 mm from the base of the cell (corresponding to 1.3 m from the base of well LW1 which includes a 1 m sump) pumping of leachate to surface evaporation basins will be conducted.

Evaporation basins are to be clay-lined to prevent re-infiltration of leachate and located within on-site catchments that drain to existing on-site surface water retention dams (to minimise the risk of leachate leaving the site in the event of overflow during a storm event).

3.6.2.3 Groundwater Monitoring Program

Monitoring Network

The groundwater monitoring network is shown on **Drawing Reference 216074_02A_EV01**. It comprises six piezometers, three of which are required by EPL 5898 to monitor groundwater levels and quality. The monitoring points are listed in **Table 3.6.1**.

Table 3.6.1 – Groundwater Monitoring Points

EPA Identification No.	Piezometer No.
1	BH1
2	BH2
3	BH3
N/A	BH4
N/A	BH5
N/A	BH6

Monitoring Schedule

Groundwater levels and quality parameters as described in **Table 3.6.2** are monitored on a bi-annual basis at all monitoring points where liquid is present.

Parameters for Quality Analysis

Table 3.6.2 – Groundwater Quality Parameters

Pollutant	Units of Measure	Frequency	Sampling Method
Cadmium	milligrams per litre	every 6 months	Grab Sample
Calcium	milligrams per litre	every 6 months	Grab Sample
Chloride	milligrams per litre	every 6 months	Grab Sample
Conductivity	microsiemens per centimetre	every 6 months	Grab Sample
Hardness	milligrams per litre	every 6 months	Grab Sample
Lead	milligrams per litre	every 6 months	Grab Sample
Magnesium	milligrams per litre	every 6 months	Grab Sample
Nitrate	milligrams per litre	every 6 months	Grab Sample
Nitrogen (Ammonia)	milligrams per litre	every 6 months	Grab Sample
pH	pH	every 6 months	Grab Sample
Phenols (non-halogenated)	milligrams per litre	Annually	Grab Sample
Potassium	milligrams per litre	every 6 months	Grab Sample
Sodium	milligrams per litre	every 6 months	Grab Sample
Standing Water Level	metres	every 6 months	Inspection
Sulfate	milligrams per litre	every 6 months	Grab Sample
Total Organic Carbon	milligrams per litre	every 6 months	Grab Sample

Source: EPA Licence No. 5898, April 2016

3.6.2.4 Validation Sampling

If monitoring indicates pollution, groundwater in the affected piezometer will be resampled and retested again as soon as possible to confirm the results. If re-sampling confirms the anomaly, the EPA will be notified immediately by telephone and in writing within 14 days.

Contingent on requirements of the EPA, a Groundwater Assessment Plan (GAP) will then be prepared. The GAP is expected to:

- Identify the specific groundwater contaminants;
- Establish the extent of the pollution, including possible source(s);
- Assess the potential impacts to receptors; and
- Outline a proposed sampling plan to obtain sufficient information to prepare a Groundwater Contamination Remediation Plan.

3.6.3 Responsibilities

Landfill Supervisor

Responsible for:

- Implementation of procedures identified in this LEMP so as to minimise the risk of groundwater pollution.

BHCC Chief Operations Officer

Responsible for:

- Coordinating and implementing the Groundwater Monitoring Program, including EPA notification if required.

3.6.4 Compliance with Standard

Relevant Minimum Standard	Compliance
Stormwater Management (3)	Yes
Water Quality Monitoring (4)	Yes

3.7 Air Quality Management

3.7.1 Environmental Goals

Ensure all operations and activities occurring at the BHWMF are carried out in a manner that will minimise the emission of dust and/or potentially offensive odour from the premises.

3.7.2 Procedures

Odour generation is controlled by daily covering of wastes and immediate covering of waste that is producing offensive odours.

Landfill gas generation is controlled by capping and revegetating completed stages with shallow rooted species, as well as minimising the amount of water entering the active landfill area. A previous landfill gas assessment ('*Assessment of Landfill Gas Emissions: Comprehensive Assessment – Broken Hill City Council*, Hyder Consulting, 2009) identified the BHWMF as being "*a dry-tomb site with minimal methane production (i.e. extremely dry conditions limit the bacterial activity that generates methane)*" and accordingly landfill gas monitoring is not considered to be warranted.

Dust generation is kept to a minimum by maintaining gravel seals on access roads; posting speed restrictions within the site; strategic watering of operational areas; and minimising extent of exposed areas.

3.7.3 Monitoring

Air quality is monitored by recording any odour and/or dust complaint received and confirming operational controls are in place.

3.7.4 Responsibilities

Landfill Supervisor

Responsible for:

- Implementation of procedures identified in this LEMP so as to minimise adverse impacts on air quality; and
- Completing complaint forms (**Forms 3.15a** and **3.15b**) and forwarding to the Chief Operations Officer.

BHCC Chief Operations Officer

Responsible for:

- Maintaining records of, and investigating, odour and dust complaints.

3.7.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Landfill Gas Management and Monitoring (5)	Yes
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes
Covering of Waste (8)	Yes
Final Capping and Revegetation (9)	Yes
Closure (10)	Yes

3.8 Noise Control

3.8.1 Environmental Goal

Ensure BHWMF does not adversely affect amenity at nearby receptors through generation of excessive noise.

3.8.2 Procedures

Noise generation will be restricted by:

- Restricting operations to approved times;
- Regularly servicing all equipment on site to ensure sound power levels of each item remains at or below the default or factory-set values; and
- Investigation of any complaint regarding noise.

3.8.3 Monitoring

Noise will be monitored by recording and investigating any complaints received. **Operational Control 3.15** details complaints handling and recording in further detail.

3.8.4 Responsibilities

Landfill Supervisor

Responsible for:

- Correct maintenance and operation of machinery;
- Keeping records of noise complaints received; and
- Completing complaint forms (**Forms 3.15a** and **3.15b**) and forwarding to the BHCC Chief Operations Officer.

BHCC Chief Operations Officer

Responsible for:

- Arranging noise measurements if required; and
- Keeping records of noise complaints.

3.8.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes

3.9 Litter Control

3.9.1 Environmental Goals

Minimise litter to prevent degradation of local amenity. A checklist outlining the requirements for litter monitoring is provided as **Attachment F**.

3.9.2 Procedures

Litter is controlled by implementation of the control measures described in Section 5.0 of the *Litter Control Plan – Broken Hill Waste Management Facility*' (BHCC, 2016) appended as **Attachment E**, and include:

1. Confining the working face of the active fill area;
2. Use of litter fences and screens;
3. Maintaining short pushing distances when placing waste material;
4. Covering waste more frequently during periods of high wind;
5. Restricting waste placement during periods of high wind;
6. Undertaking routine (weekly) litter inspections and pick-ups;
7. Use of portable litter fences for downwind deployment close to the working area;
8. Covering of transfer bins and tip trucks containing waste;
9. Litter collection during inspections;
10. Record keeping by taking photos after litter has been collected;
11. Placement of intermediate cover;
12. Responding to extreme weather to coordinate litter collection, as required;
13. Establishment of cleared buffer zones about the site perimeter;
14. Weekly tool-box talks to discuss litter control.

3.9.3 Monitoring

Litter will be monitored by recording complaints received, recording photographs and through the conduct of spot audit checks, **Operational Control 3.15** details complaints handling and recording further.

3.9.4 Responsibilities

Landfill Supervisor

Responsible for:

- Ensuring the application of daily cover;
- Undertaking litter patrols as required; and
- Implementing control measures described in the *Litter Control Plan*, as appropriate

BHCC Chief Operations Officer

Responsible for:

- Undertaking spot audits.

3.9.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes

3.10 Pest, Vermin and Noxious Weed Control

3.10.1 Environmental Goals

Undertake operations to minimise favourable habitat for pests, vermin and noxious weeds to prevent degradation of local amenity. A checklist outlining the requirements for nuisance monitoring is provided as **Attachment F**.

3.10.2 Procedures

Pests, vermin and noxious weeds will be controlled by ensuring that:

- Odorous wastes are covered immediately;
- Wastes are adequately compacted and covered on a daily basis;
- Litter is controlled;
- The security fence is maintained to prevent access by larger animals;
- Surface drainage minimises ponding on site; and
- Weeds Identified as 'Regional Priority Weeds' in the *Western Regional Strategic Weed Management Plan 2017 - 2022* (Local Land Services - Western, 2017) are reported to Broken Hill City Council for control.

3.10.3 Monitoring

Pests, vermin and noxious weeds will be monitored on an ongoing weekly basis.

3.10.4 Responsibilities

Landfill Supervisor

Responsible for:

- Monitoring pests, vermin and noxious weeds;
- Controlling and, if necessary, destroying pests; and
- Reporting the presence of vermin and noxious weeds to the BHCC Chief Operations Officer.

3.10.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes

3.11 Fire Management

3.11.1 Environmental Goals

Effectively manage potential hazards associated with fires through provision of an adequate firefighting capacity.

3.11.2 Procedures

The procedures detailed below are linked to three separate spheres of action and responsibility. These include:

- Measures to be undertaken to prevent a fire from occurring;
- Actions to be taken in the event that a fire does occur; and
- Action to be taken after a fire incident had been contained.

3.11.2.1 Fire Prevention

The potential for fires to be controlled at the site will be controlled by:

- A security fence to prevent unauthorised entry;
- Maintaining machinery in good working order to minimise the risk of sparks;
- Adequately compacting and covering wastes;
- Regular litter patrols;
- Ensuring fire breaks around the perimeter of the depot (i.e. access roads) and around any combustibles within the site are maintained;
- Slashing heavy stands of grass before the bushfire season commences;
- Access to on-site fire fighting equipment; and
- Accepting only permitted wastes.

3.11.2.2 Responding to a Fire

In the event that a fire occurs on-site, the action required is to follow the procedures detailed in the Pollution Incident Response Management Plan (PIRMP), refer **Operational Control 3.14** – Incident Reporting, and **Attachment B** – PIRMP Supporting Statement.

The first action to be taken is a determination by the Landfill Supervisor as to whether the fire can be contained and extinguished without compromising safety. In the event that the fire can be safely handled by BHWMF personnel, the fire will be controlled by covering it with soil. If there is any doubt as to the ability to safely control the fire, the following actions must be taken (as per the requirements of the PIRMP):

Step 1: Immediately ring the Broken Hill Fire Department on phone number **(08) 8087 2233**.

If there is any problem in making contact then landfill personnel must immediately ring Emergency Services on phone number **000**.

Step 2: Listen to and act on instructions issued by the Fire Service.

Step 3: Organise for evacuation from the BHWMF of all members of the public, expediting a quick but safe exit, as well as preventing other members of the general public from entering the facility.

Step 4: Prepare for the arrival of the Fire Service by:

Extracting the latest plan of the BHWMF that identifies location of different waste types;

Mobilising earth moving equipment so that it is ready for use, as directed by Fire Services.

Step 5: As soon as practicable to do so, contact the BHCC Chief Operations Officer on phone number:

Business Hours: **(08) 8080 3353**

After Hours / Mobile: **0409 016 293**

Step 6: On the Fire Service's arrival at the BHWMF, follow all instructions issued by the *Officer in Charge*.

3.11.2.3 Post Containment Action

After a fire has been contained, the Landfill Supervisor is responsible for preparing an incident report (**Form 3.14a**) and submitting this to the BHCC Chief Operations Officer within 48 hours of the fire.

The Incident Report must include the following information:

- The time and date that the fire was started or reported;
- The cause of the fire (if known);
- The time and date that the fire was either burnt out or extinguished;
- The location of the fire;
- Prevailing wind conditions;
- The amount of waste that was combusted by the fire;
- Action taken to extinguish the fire;
- Any complaints of smoke nuisance from the public or local residents; and
- Observations made in regard to smoke direction and dispersion.

The EPA must be notified of all fires at the premises as soon as practicable.

3.11.3 Monitoring

The premises will be continually monitored for fire.

3.11.4 Responsibilities

Landfill Supervisor

Responsible for:

- Ensuring all of the above procedures are followed in sequence and implemented; and
- Following the procedures identified in the PIRMP.

BHCC Chief Operations Officer

Responsible for:

- Ensuring that all fires are reported to the EPA.

3.11.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes
Covering of Waste (8)	Yes

3.12 Landfill Rehabilitation and Closure

3.12.1 Environmental Goals

Exercise appropriate land management and conservation principles through undertaking progressive rehabilitation and planning for landfill closure.

3.12.2 Procedures

3.12.2.1 Closure Plan

A written closure plan will be submitted to the EPA for approval within three months of the completion of waste receipt operations. The plan will include detail of the final landforms, a post-closure monitoring and maintenance program to ensure the long-term integrity of the landfill.

3.12.2.2 Revegetation

A revegetation layer of not less than 100 millimetres of topsoil will be placed over the capping layer of each completed stage. This will be sown with a mixture of grasses and be fertilised and mulched to assist establishment. A vegetation plan will be included in the closure plan, outlining the grass mix and application rates.

3.12.2.3 Maintenance of Revegetated Areas

Revegetated areas will be inspected monthly to identify areas where revegetation has not been successful. Bare areas will be re-seeded. Areas where revegetation has not been successful will be fertilised.

3.12.3 Monitoring

Rehabilitation areas will be monitored to ensure effectiveness of groundcover and drainage structures.

3.12.4 Responsibilities

BHCC Chief Operations Officer

Responsible for:

- Preparation, submission and implementation of the Closure Plan;
- Coordinating implementation of the revegetation works; and
- Ensuring that adequate funds are set aside to cover rehabilitation and closure of the landfill.

3.12.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Covering of Waste (8)	Yes
Final Capping and Revegetation (9)	Yes
Closure (10)	Yes

3.13 Document Control

3.13.1 Environmental Goals

To ensure that this LEMP (and supporting Pollution Incident Response Management Plan) is reviewed and updated as required, and only the latest version is held by relevant parties, with updates being disseminated in a controlled manner.

3.13.2 Procedures

3.13.2.1 Dissemination

Controlled copies of this LEMP and the PIRMP will be made available to:

- Chief Operations Officer, Broken Hill City Council;
- Landfill Supervisor, Broken Hill City Council; and
- Environment Protection Authority.

3.13.2.2 Review

This LEMP is required to be reviewed by BHCC as per the below schedule:

- Entire document: Every five (5) years
- Operational controls (Section 3): Annually
- Against statutory requirements: Every six (6) months

All reviews with respect to the LEMP are to be recorded on the LEMP Review Record (**Form 3.13a**).

3.13.2.3 Updates

Any updates or revisions to the LEMP and PIRMP will be circulated with detail on the updated version number and date issue. Updated versions of any section of this LEMP or the PIRMP must always be issued with a covering memo summarising changes.

Owners of controlled copies of the LEMP must incorporate new versions and sign off on the Updates Register (**Form 3.13b**).

3.13.3 Monitoring

Periodic internal audits will be conducted to ensure that only the latest version of the LEMP is in use.

3.13.4 Responsibilities

BHCC Chief Operations Officer

Responsible for:

- Conducting reviews of the LEMP in accordance with the schedule specified in **Section 3.13.2.2** and signing off the review record (**Form 3.13a**)
- Ensuring that updates of the LEMP (or sections of it) and the PIRMP are disseminated properly and undertaking periodic audits to check that document control procedures are followed.

Owners of Controlled Copies

Responsible for:

- Actioning updated versions and signing off on the Updates Register (**Form 3.13b**).

3.13.5 Compliance with Standard

Relevant Minimum Standard	Compliance
Quality Assurance (11)	Yes

3.14 Incident Reporting

3.14.1 Environmental Goal

To ensure any incident that causes or threatens material harm to the environment is reported in accordance with the licence requirements, and the PIRMP.

3.14.2 Pollution Incident Response Management Plan

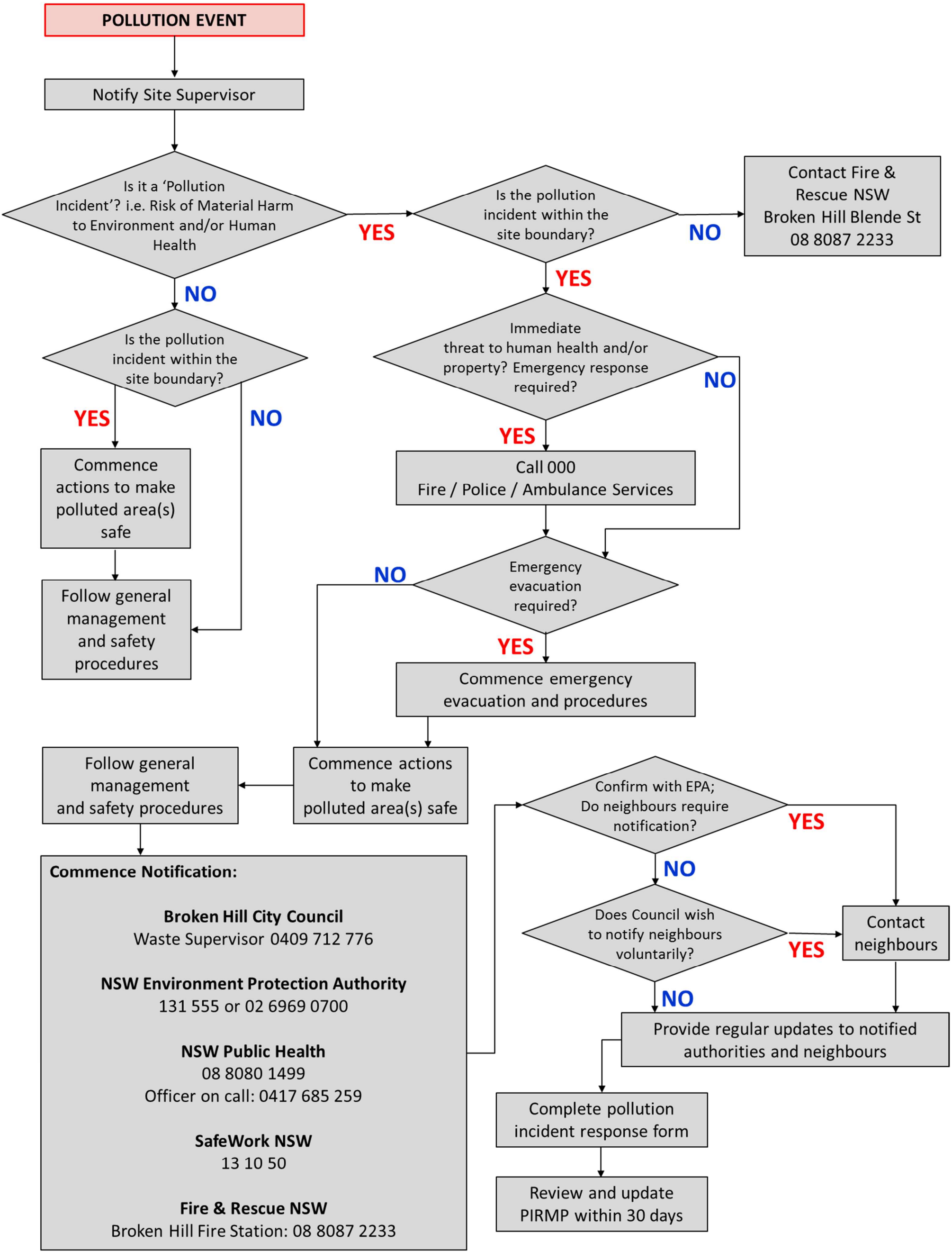
In 2012 a PIRMP was prepared to assist personnel at the BHWMF to correctly identify pollution incidents and detail the procedures for the response and reporting of a pollution incident. The PIRMP and Supporting Statement were last updated in February 2019 and are included in this LEMP as **Attachment B**.

3.14.3 Pollution Incident Classification, Risk Assessment and Contributing Factors

Table 3.14.1 – Pollution Incident Classification, Risk Assessment and Contributing Factors

Description of Pollution Incident	Likelihood	Impact	Contributing Factors
Identifying non-domestic quantities of hazardous substances among waste	Medium	Low	Human errors made during waste screening. Deception by landfill patrons.
Surface or subsurface fires at active landfill, public receival areas or recycling facility	Medium	Medium	High winds, dry weather, prolonged high temps and low humidity. Human errors made during waste screening, poor maintenance of plant and equipment, spontaneous combustion, hot embers in waste deliveries.
Surface or subsurface fires at maintenance and inactive areas	Low	High	High winds, dry weather, prolonged high temps, low humidity and spontaneous combustion.
Mixing of waste and stormwater	Low	Medium	Prolonged periods of heavy rain, and lack of surface water pond and site maintenance.
Identification of any failure of an environmental protection system	Low	Low	Prolonged periods of heavy rain and/or a mechanical failure of the pump at the leachate pond.
Identification of a significant difference in groundwater indicator parameters	Low	Low	Prolonged periods of heavy rain
Acts of vandalism or target of terrorist activity	Medium	Medium	Increased risk during hours of closure
Any other incident or observation that could potentially pose an immediate environmental hazard outside normal operating conditions	Low	Low	n/a

3.14.4 Document A - Pollution Incident Decision Flow Chart



3.14.5 Document B – Pollution Incident Emergency Contact details

3.14.5.1 Definition of a Pollution Incident

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act:

> *"(a) harm to the environment is material if:*
>
> *i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
>
> *ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, and*
>
> *(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment."*

3.14.5.2 Notification of a Pollution Incident

Notification Speed of Response

The requirement for notification of a pollution incident has changed from 'as soon as practicable' to 'immediately'. In short, 'immediately' means 'promptly without delay', but it does not mean undertaking notification ahead of doing what is necessary to make safe.

Notification of Relevant Authorities

Where the pollution incident causes or threatens material harm to the environment or human health, all the following authorities must be notified by the Depot Supervisor:

Notification of Relevant Authorities	
Emergency Call Services	
Emergency Hotline Number (24 hours)	**000***
*The Site Supervisor should call 000 if the incident presents an immediate threat to human health and/or property and a combat agency is required (i.e. NSW Fire and Rescue, NSW Ambulance Service, NSW Police Force) and then notify all other parties below including NSW Fire and Rescue via a local telephone number.	
Broken Hill City Council	
Broken Hill City Council	08 8080 3300
Chief Operations Officer, Broken Hill City Council	0409 016 293
Landfill Supervisor	0409 712 776
Council Emergency contact number (after hours)	0408 858 493
The Environment Protection Authority (EPA)	
Griffith Regional Office	02 6969 0700
Emergency Hotline Number (24 hours)	131 555
NSW Public Health	
Broken Hill Regional Office	08 8080 1499
Public Health Officer on Call (24 hours)	0417 685 259
SafeWork NSW	
Hotline Number	13 10 50
Fire and Rescue NSW	
Broken Hill Fire Station	08 8087 2233**
If there is no immediate threat to human health and/or property i.e. a combat agency is not required, then the Depot Supervisor is still required to follow that outlined above except for dialling 000.	

3.14.6 Responsibilities

Landfill Supervisor

Responsible for:

- Ensuring all incidents are reported to the Chief Operations Officer;
- Completing Incident Reporting Form (**Section 4** of the PIRMP) when required.

BHCC Chief Operations Officer

Responsible for:

- Completing the PIRMP Testing and updates register (**Section 5** of the PIRMP);
- Completing the Staff Training Register (**Section 6** of the PIRMP);
- Notifying the EPA of the incident, if required; and
- Ensuring the incident reports are completed and acted upon.

3.14.7 Compliance with Standard

Relevant Minimum Standard	Compliance
Amenity Issues: Odour, Dust, Noise, Litter and Fire Control (6)	Yes
Quality Assurance (11)	Yes

3.15 Complaints Reporting

3.15.1 Environmental Goal

Any complaint received will be investigated and measures for avoiding recurrence will be investigated.

3.15.2 Procedures

3.15.2.1 Reporting

Any complaint received must be reported immediately to the Waste Coordinator and/or the Chief Operations Officer.

3.15.2.2 Documenting Complaint Investigation

Any complaint must be reported on both the **Complaints Register** (**Form 3.15a**) and a **Complaint Report** (**Form 3.15b**). the report must include:

a) The date and time of the complaint;

b) The method by which the complaint was lodged;

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 complainant; and

f) If no action was taken by the licensee, the reason why no action was taken.

All complaints reports must be kept for at least four (4) years and be included in the Annual Report (refer **Operational Control 3.16**).

3.15.2.3 Noting Weather Conditions

On receipt of any complaint the existing weather conditions, including wind direction and approximate speed, will be recorded on **Form 3.15b**.

3.15.2.4 Investigation

Any Complaint Received must be followed up as to the cause of the complaint. Options for avoiding recurrence must be investigated.

Follow-up action will be recorded on **Form 3.15b**.

3.15.3 Responsibilities

Landfill Supervisor

Responsible for:

- Reporting any complaint received by an outside party to the Chief Operations Officer;
- Ensuring that on receipt of any complaint, existing weather conditions, including wind direction and approximate speed, are recorded; and

BHCC Chief Operations Officer

Responsible for:

- Ensuring any complaint received is followed up by an investigation as to the cause of the complaint and assessing options for avoiding recurrence;
- Ensuring that all complaints are recorded.

3.15.4 Compliance with Standard

Relevant Minimum Standard	Compliance
Quality Assurance (11)	Yes

3.16 Annual reporting

3.16.1 Environmental Goal

To ensure that Annual Return Documents are completed and submitted to the EPA in accordance with EPL requirements.

3.16.2 Procedures

3.16.2.1 Scope of Annual Return

Annual Return reports must include:

a) A Statement of Compliance;

b) A Monitoring and Complaints Summary. 3. a Statement of Compliance - Licence Conditions,

c) A Statement of Compliance - Load based Fee,

d) A Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,

e) A Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and

f) A Statement of Compliance - Environmental Management Systems and Practices.

Environmental monitoring is described in **Operational Controls 3.5 and 3.6**. Volumetric surveying to obtain data to calculate the achieved compaction rate is described in **Operational Control 3.3**.

3.16.2.2 Annual Return Submission Deadline

The Annual Return for the reporting period must be supplied to the EPA by registered post no later than 60 days after the anniversary date. The Licence anniversary is 11 September each year and the deadline for receipt of the Annual Return by the EPA is **11 November** each year.

3.16.2.3 Annual Return Copies

A copy of each Annual Return must be kept for a period of four years after the date of submission.

3.16.3 Responsibilities

BHCC Chief Operations Officer

Responsible for:

- The preparation and submission of the annual reports.

3.16.4 Compliance with Standard

Relevant Minimum Standard	Compliance
Quality Assurance (11)	Yes

Section 4. Attachments

ATTACHMENT A

ENVIRONMENTAL PROTECTION LICENCE NO. 5898

Environment Protection Licence

Licence - 5898

Licence Details	
Number:	5898
Anniversary Date:	11-September

Licensee

BROKEN HILL CITY COUNCIL

PO BOX 448

BROKEN HILL NSW 2880

Premises

BROKEN HILL WASTE DEPOT

WILLS STREET

BROKEN HILL NSW 2880

Scheduled Activity

Waste disposal (application to land)

Waste processing (non-thermal treatment)

Waste storage

Fee Based Activity	Scale
Non-thermal treatment of hazardous and other waste	Any annual processing capacity
Waste disposal by application to land	Any capacity
Waste storage - waste tyres	> Any tyres stored

Region

Riverina Far 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 - 5898

Environment Protection Licence

Licence - 5898

Environment Protection Licence

Licence - 5898

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 - 5898

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:

BROKEN HILL CITY COUNCIL
PO BOX 448
BROKEN HILL NSW 2880

subject to the conditions which follow.

Environment Protection Licence

Licence - 5898

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 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 processing (non-thermal treatment)	Non-thermal treatment of hazardous and other waste	Any annual processing capacity
Waste disposal (application to land)	Waste disposal by application to land	Any capacity
Waste storage	Waste storage - waste tyres	> tyres stored

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
BROKEN HILL WASTE DEPOT
WILLS STREET
BROKEN HILL
NSW 2880
LOT 17 DP 39679, LOT 7 DP 757294, LOT 9 DP 757294

A3 Other activities

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

Ancillary Activity
Composting and Related Reprocessing or Treatment

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 The Broken Hill Landfill Environmental Management Plan prepared by RW Corkery & Co Pty Ltd ("the LEMP"), dated February 2005 is not to be taken as part of the documentation in A4.1, other than those parts specifically referenced in this licence.

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.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Groundwater quality monitoring		Piezometer labelled 'Bore (BH1)' as shown on site plan titled 'Figure 3. Landfill Site Layout' of LEMP and on EPA file 235472A1/02.
2	Groundwater quality monitoring		Piezometer labelled 'Bore (BH2)' as shown on site plan titled 'Figure 3. Landfill Site Layout' of LEMP and on EPA file 235472A1/02.
3	Groundwater quality monitoring		Bore outside the landfill northeast boundary fence labelled 'Bore (BH3)' as shown on site plan titled 'Figure 3. Landfill Site Layout' of LEMP and on EPA file 235472A1/02.

3 Limit Conditions

L1 Pollution of waters

Environment Protection Licence

Licence - 5898

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.

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
T140	Tyres	Waste tyres	Waste disposal (application to land) Waste storage	N/A
N120	Soils contaminated with a substance or waste referred to in Parts 1 or 2 of Schedule 1 of the Protection of the Environment Operations (Waste) Regulation 2014	Lead contaminated soil/dust from residential and commercial premises.	Waste disposal (application to land)	Lead contaminated soil/dust must not exceed 5 tonnes per annum. Waste must be disposed of in accordance with the Contaminated Waste Management Plan for the Broken Hill Waste Management Facility.
K130	Sewage sludge & residues	Sewage sludge and residues including nightsoil and septic tank sludge.	Waste disposal (application to land)	Sewage sludge and residues must only be accepted at the premises where there is no other facility available within the Broken Hill City Council area to legally accept the waste.
K110	Grease trap waste	N/A	Waste disposal (application to land)	Grease trap wastes must only be accepted at the premises

				where there is no other facility available within the Broken Hill City Council area to legally accept the waste.
NA	General or Specific exempted waste	N/A	Waste disposal (application to land)	N/A
R100	Clinical and related wastes	Clinical waste which does not contain any of the following: recognisable body parts, sharps waste, cytotoxic waste or radioactive waste and which was generated outside the Sydney metropolitan or extended regulated area may be disposed of at the premises.	Waste disposal (application to land)	This waste can be disposed of in amounts that do not exceed 200kg at any one time.
N220	Asbestos	Waste including asbestos waste in bonded matrix and asbestos fibre and dust waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, and dust from ventilation collection systems.	Waste disposal (application to land)	Disposal of asbestos must be in accordance with Clause 42 of the Protection of the Environment Operations (Waste) Regulation 2005.
NA	General solid waste (non-putrescible and putrescible)	General solid waste classified as putrescible or non-putrescible following Part 1: Classifying Wastes of the Waste Classification Guidelines (2008).	Waste disposal (application to land)	N/A

L2.2 Condition L2.1 only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L2.3 Except as provided by any other condition of this licence, only the hazardous and/or industrial and/or non-aqueous liquid and/or controlled aqueous liquid and/or liquid grease trap waste resulting from the preparation or manufacturing of food and/or liquid food listed above may be treated, processed, reprocessed or disposed of at the premises.

Clinical waste of type specified in condition L2.1 and grease trap and septic tank waste may be disposed of.

L2.4 The total tonnage of wastes defined in condition L2.1 disposed of at the premises must not exceed 60,000 tonnes in any reporting period.

L2.5 The quantity of special waste defined in condition L2.1 of this licence disposed of at the premises must not exceed 30 tonnes per reporting period.

L2.6 The quantity of asbestos waste defined in condition L2.1 of this licence disposed of at the premises must not exceed 350 tonnes per reporting period.

L2.7 The licensee must not dispose of any tyres on the premises which;
a) have a diameter of less than 1.2 metres; and
b) are delivered at the premises in a load containing more than 25 whole tyres; and
c) became waste in the Sydney Metropolitan Area.

L2.8 Tyres stockpiled on the premises must:
a) not exceed four hundred and fifty (450) tonnes of tyres at any one time; and
b) be located in a clearly defined area away from the tipping face; and
c) be managed to control vermin; and
d) be managed to prevent any tyres from catching fire.

L2.9 Tyres from the Sydney Metropolitan Area must not be received at the premises unless:
a) they have been shredded into pieces measuring no more than 250mm in any direction; or
b) they have had their walls removed; or
c) the facility has the capacity, at the time of receiving the tyres, to recycle or reprocess the tyres into a saleable product (including retreading the tyres); or
d) the facility has the capacity, at the time of receiving the tyres, to shred the tyres or remove the walls from the tyres; or
e) the tyres are from a domestic load containing no more than 5 tyres having a diameter of less than 1.2 metres.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

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

O2 Maintenance of plant and equipment

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

O3 Dust

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

O4 Emergency response

O4.1 The licensee must have in place and implement proceedures to prevent fires at the premises as identified in section 5.7 of the LEMP to minimise the risk of fire at the premises.

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

O5 Processes and management

O5.1 The drainage from all areas at the premises which will liberate suspended solids when stormwater runs over these areas must be diverted into in a manner discribed in section 3.4 of the LEMP.

O5.2 The licensee must take all practicable steps to control entry to the premises.

O5.3 The licensee must install and maintain a high wire mesh fence of not less than 1.8 metres around the active tipping area.

O5.4 The licensee must install and maintain lockable security gates at all access and departure locations.

O5.5 The licensee must ensure that all gates are locked whenever the landfill is unattended.

O5.6 The licensee must implement the litter management program specified in section 5.3 of the LEMP.

O5.7 The licensee must control pests, vermin and weeds at the premises.

O5.8 The licensee must train staff in accordance with section 6.3.6 of the LEMP.

O5.9 The licensee must ensure that adequately trained staff are available at the premises in order to administer the requirements of this licence.

O5.10 All work at the premises must be conducted between the following hours:
6 am to 6 pm 7 days a week.

O6 Waste management

O6.1 A leachate collection system designed according to section 3.3.3 & 3.3.4 of the LEMP must be installed on each surface within the premises to be used for the disposal of waste.

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

O6.3 There must be no incineration or burning of any waste at the premises.

Note: In this condition “waste” does not include materials incinerated under the supervision of the NSW Police Force or the NSW Agriculture Department.

O6.4 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.

O6.5 The licensee must manage the disposal of waste at the premises in accordance with the progressive filling plan detailed in section 2 of the LEMP.

O6.6 The licensee must minimise the tracking of waste and mud by vehicles.

O6.7 Cover material must be soil, clay and cracker dust.
a) Daily cover
Cover material must be applied to a minimum depth of 15 centimetres 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 30 centimetres over surfaces of the landfilled waste at the premises which are to be exposed for more than 90 days.
c) Cover material stockpile
At least two weeks cover material must be available at the premises under all weather conditions. This material may be won on site, or alternatively a cover stockpile must be maintained adjacent to the tip face.

O6.8 Any clinical waste disposed of at the premises must be packaged in accordance with the requirements set out in the document called NSW Health: Waste Management Guidelines for Health Care Facilities issued by the Department of Health and dated August 1998.

O6.9 Any clinical waste received at the premises must be:
a) buried, or
b) immediately contained
in a manner that prevents the waste coming into contact with any person or animal.

O6.10 The licensee must submit to the EPA within three months prior to the last load of waste being landfilled a closure plan in accordance with Section 76 of the Protection of the Environment Operations Act 1997.

O6.11 Materials that have absorbed oil must only be disposed in areas where there are clay or HDPE liners acceptable to the EPA.

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.

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 1,2,3

Pollutant	Units of measure	Frequency	Sampling Method
Cadmium	milligrams per litre	Every 6 months	Grab sample
Calcium	milligrams per litre	Every 6 months	Grab sample
Chloride	milligrams per litre	Every 6 months	Grab sample
Conductivity	microsiemens per centimetre	Every 6 months	Grab sample
Hardness (as calcium carbonate)	milligrams per litre	Every 6 months	Grab sample
Lead	milligrams per litre	Every 6 months	Grab sample
Magnesium	milligrams per litre	Every 6 months	Grab sample
Nitrate	milligrams per litre	Every 6 months	Grab sample
Nitrogen (ammonia)	milligrams per litre	Every 6 months	Grab sample
pH	pH	Every 6 months	Grab sample
Phenols (non-halogenated)	milligrams per litre	Yearly	Grab sample
Potassium	milligrams per litre	Every 6 months	Grab sample
Sodium	milligrams per litre	Every 6 months	Grab sample
Standing Water Level	metres	Every 6 months	Inspection
Sulfate	milligrams per litre	Every 6 months	Grab sample
Total organic carbon	milligrams per litre	Every 6 months	Grab 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 after: the date of the issue of this licence.

M6 Other monitoring and recording conditions

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

Environment Protection Licence

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

R1.3 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.

R1.4 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.

R1.5 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').

R1.6 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.

R1.7 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.

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.

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

R2 Notification of environmental harm

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

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.

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.

R3 Written report

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

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

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

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

R4 Other reporting conditions

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

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

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

7 General Conditions

G1 Copy of licence kept at the premises or plant

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

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

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

8 Pollution Studies and Reduction Programs

U1 Litter Management

U1.1 The licensee must ensure that the premises is free of wind-blown litter and litter is managed in accordance with current environmental guidelines for solid waste landfills.
COMPLETION DATE: 1 March 2019.

Environment Protection Licence

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Dictionary

General Dictionary

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

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

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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 Craig Bretherton

Environment Protection Authority

(By Delegation)

Date of this edition: 12-September-2000

Environment Protection Licence

Licence - 5898

End Notes

1	Licence varied by notice 1003187, issued on 25-Mar-2002, which came into effect on 19-Apr-2002.
2	Licence varied by notice 1030272, issued on 13-Oct-2003, which came into effect on 07-Nov-2003.
3	Licence varied by notice 1032348, issued on 25-Nov-2003, which came into effect on 25-Nov-2003.
4	Licence varied by notice 1068037, issued on 05-Jun-2008, which came into effect on 05-Jun-2008.
5	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
6	Licence varied by notice 1093955, issued on 20-Nov-2008, which came into effect on 20-Nov-2008.
7	Licence varied by notice 1512708 issued on 26-Nov-2013
8	Licence varied by notice 1518976 issued on 20-Jan-2014
9	Licence varied by notice 1534737 issued on 15-Oct-2015
10	Licence varied by notice 1542579 issued on 19-Jul-2016
11	Licence varied by notice 1555360 issued on 17-Aug-2017
12	Licence varied by notice 1561459 issued on 12-Feb-2018
13	Licence varied by notice 1563940 issued on 02-May-2018
14	Licence varied by notice 1569966 issued on 20-Sep-2018
15	Licence varied by notice 1573267 issued on 03-Dec-2018

ATTACHMENT B

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN – SUPPORTING STATEMENT

GEOLYSE

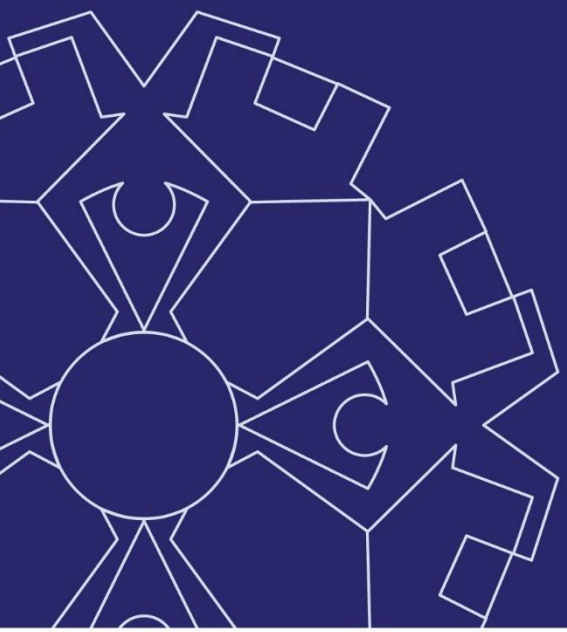
Part of Premise

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN
SUPPORTING STATEMENT

BROKEN HILL WASTE MANAGEMENT FACILITY

PREPARED FOR
BROKEN HILL CITY COUNCIL

FEBRUARY 2019



POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN

SUPPORTING STATEMENT

BROKEN HILL WASTE MANAGEMENT FACILITY

PREPARED FOR:

BROKEN HILL CITY COUNCIL

FEBRUARY 2019

GEOLYSE

Part of Premise

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Report Title:	*Pollution Incident Response Management Plan – Supporting Statement*
Project:	*Broken Hill Waste Management Facility*
Client:	*Broken Hill City Council*
Report Ref.:	*216074_PIRMP_001B.docx*
Status:	*Final*
Issued:	*February 2019*

Geolyse Pty Ltd and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All information contained within this report is prepared for the exclusive use of Broken Hill City Council to accompany this report for the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes apart from those stated therein.

Geolyse Pty Ltd accepts no responsibility for any loss, damage suffered or inconveniences arising from, any person or entity using the plans or information in this study for purposes other than those stated above.

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Foreword

This is the Supporting Statement for the Pollution Incident Response Management Plan (PIRMP). The PIRMP is a functional document. It is designed to assist personnel at the Broken Hill Waste Depot (BHWMF) to correctly identify pollution incidents and detail the procedures for the response and reporting of a pollution incident.

The structure and scope of this Supporting Statement and PIRMP reflects the requirements of the Environmental Protection Authority's *Guidelines: Preparation of pollution incident response management plans, March 2012* and in doing so embodies the principles of best practice environmental management.

Utilisation of this PIRMP aims to improve, monitor and demonstrate environmental performance. If you have any suggestions for amendments, additions or improvements, please discuss these with your supervisor.

.....
Broken Hill City Council
General Manager (or Delegate)

Date: .....

Introduction

1.1 PURPOSE

This Supporting Statement and PIRMP have been prepared in accordance with the *Protection of the Environment Operations Act 1997 (POEO Act)* and reflects the requirements specified in the NSW Environment Protection Authority's (EPA's) *Guidelines: Preparation of pollution incident response management plans, March 2012.*

The PIRMP details:

- Procedures for notifying a pollution incident to relevant persons;
- Actions to be taken to reduce and/or control pollution; and
- Procedures for coordinating those notified and any action taken in combating the pollution.

1.2 DEFINITION OF POLLUTION INCIDENT

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the *POEO Act 1997*:

> *"(a) harm to the environment is material if:*
>
> *i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
>
> *ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and*
>
> *(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment."*

1.3 IDENTIFIED POLLUTION INCIDENT RISKS

The primary potential hazards to human health or the environment associated with the activity undertaken at this site – i.e. '*Pollution Incidents*' - include the following:

- Identifying non-domestic quantities (more than 200 millimetres per tonne or 200 grams per tonne) of hazardous substances among waste;
- Surface or subsurface fires;
- Mixing of waste and stormwater;
- Identification of any failure of an environmental protection system;
- Identification of a significant difference in groundwater indicator parameters;
- Acts of vandalism or target of terrorist activity; or
- Any other incident or observation that could potentially pose an immediate environmental hazard outside normal operating conditions.

Site Overview

2.1 SITE OVERVIEW

The Broken Hill Waste Depot (BHWMF or the 'facility') has been operating continuously at the current site since 1952. The 73 hectare property is owned by Broken Hill City Council. The expected lifespan of the landfill is estimated to reach capacity in 2053.

A weighbridge has been constructed at the site entrance and commenced operation in July 2015. A proposal to extend the landfill site to encompass an area approximately 18 hectares located directly to the south-east of the existing BHWMF is currently being considered.

The BHWMF does not have planning approval as the operation pre-dates planning instruments. The Environment Protection Authority (EPA) has issued Environment Protection Licence (EPL) 5898 in accordance with *Section 5.7 of the Protection of the Environment Operations Act 1997.* A Landfill Environmental Management Plan (LEMP) exists for the facility, which details the procedures to manage and operate the BHWHF to meet the relevant Environmental Goals specified in the NSW EPA *Environmental Guidelines: Solid waste landfills* (Second edition), 2016.

The BHWMF is a **Scheduled Waste Facility within the meaning of the Protection of the Environment Operations (Waste) Regulation 2014**. The facility accepts wastes approved under EPL 5898. Excluded waste types are detailed in **Section 2.4** of this PRIMP Supporting Statement.

A Bitumen Heating Plant operates within the landfill site, however this operation is not subject to EPL 5898 and as such is not covered by this PIRMP.

2.2 SITE CHARACTERISTICS

The BHWMF is located approximately 4 km south-west of Broken Hill (see Drawing 09A_EV01) and comprises lots 7 and 9 of deposited plan (DP) 757294 and lot 17 of DP 39679.

The area surrounding the facility to the north, east, west and south is predominantly low level grazing by stock. Infrastructure of the Sewage Treatment Plant (STP) owned by Essential Water exists to the west and the Barrier Highway is approximately 400 m to the north. The Adelaide-Broken Hill Railway and industrial properties beyond are approximately 200 m to 300 m from the southern boundary.

The nearest residential property to the facility is located approximately 450 m from the north-western corner of the boundary. Further details of neighbouring properties (residential, commercial and industrial categories) are provided in drawing **09A_EV02**.

Access to the BHWMF is via Wills Street. Wills Street is a two lane sealed road. From Wills Street the facility is accessed by a primary sealed road. Within the site, sealed roads and formed gravel access roads lead to the various defined tipping areas and processing pads. The south-central and central portions of the site are currently used for landfilling, with public recovery shop and receivable areas, recycling and maintenance sheds located around the site entrance to the east.

The BHWMF is fenced along all boundaries with 1.8m chain mesh security fence.

Previous and current landfilling practices have altered the local topography significantly, creating numerous rises, as such, the current landfill area no longer retains the natural topography but is designed to channel surface water and minimise off-site impact of the landfill operations.

The site topography and drainage have been engineered to ensure that there is negligible stormwater runoff into and out of the site, thus minimising any offsite impact. Site generated surface water is channelled around the edge of the premises and also through the centre towards five on-site collection ponds.

The Broken Hill region experiences very low annual rainfall and very high annual average temperatures. In these consistently dry conditions it has been found an evaporation deficit results in nil leachate generation occurs from the landfill and almost all surface water collected in the on-site dams is lost to evaporation. Therefore, on the extremely rare occasions when the surface water ponds reach capacity, water filters in channels towards the south-west corner of the site and drains south along a service road and underpass beneath the Adelaide-Broken Hill Rail Line and through industrial properties beyond (see drawing **09A_EV02**).

Groundwater is routinely monitored through a system of 3 piezometers at three locations around the landfill (see drawing **09A_EV03**).

There is no remnant natural vegetation over the site. The northern and western capped areas of the landfill have been revegetated with a perennial grass mix. Plantations of native trees have been established along the northern, eastern, western and southern boundaries act as visual and wind buffers.

2.3 SITE SUPERVISION AND CONTROL

The BHWMF is open to the public at the following times:

- 8:00 am to 5:30 pm, Monday and Friday
- 8:00 am to 4:00 pm, Tuesday, Wednesday, Thursday and Weekends
- Closed Anzac Day, Good Friday and Christmas Day
- 8:00 am to 2:00 pm, Other Public Holidays

Access to the site outside of these hours (e.g. for special circumstances and emergency waste disposal) is subject to the approval of the Group Manager Sustainability.

The BHWMF is supervised at all times when open for the receival of wastes. The facility is staffed by qualified and experienced personnel. These include a Depot Supervisor and up to two waste facility operators and a gatehouse attendant. Two waste facility operators are generally present during normal operation.

Waste deposited in the active landfill cell is immediately spread and compacted, and is lightly covered with soil at the end of daily operations. The cover material is sourced from excavation of adjacent new cells.

Lockable security gates are in place at the access points to the facility. All gates are locked outside of the specified opening hours except for when approved by the Group Manager Sustainability in special circumstances. Sections of the site are monitored by CCTV both during and out of hours.

All light vehicles, trailers and up to two tonne loads use the main entrance and upon entry are directed to the public receival area which is distributed appropriately according to waste type. Council maintains the sealed access road from the facility entry to the Public Receival Station. Commercial waste vehicles with loads of waste in excess of two tonnes are directed to the landfill face and/or operating site for the applicable waste type. Council staff are responsible for internal traffic control.

A daily checklist for monitoring, recording activities and incidents that occur during operation of the facility is kept by the Site Supervisor.

No members of the public are permitted to scavenge at the active tip face. Recovery of recyclable and reusable materials for the Recovery Shop is performed by contractor under contractor agreement.

Any asbestos received is taken to the dedicated asbestos cell at the landfill and immediately covered with soil. On the rare occasion contaminated soil is received, this soil is taken to the active and lined tipping face of the landfill and aired to allow volatilisation of hydrocarbons.

2.4 EXCLUDED WASTES

The BHWMF does not accept the following types of wastes:

- Radioactive material, sharps, cytotoxic waste, bulk blood, body fluids, recognisable body parts, infectious waste, microbiological and pathological wastes, laboratory chemicals, poisons and pharmaceutical waste;
- Any inflammable liquid material derived from grease, oil, tar, petroleum, shale or coal.
- Any sludge or material (unless proven to be innocuous or harmless) being the refuse from any industrial process carried out in any tanning or leather processing plant, any petroleum or petrochemical plant, any chemical plant, any metal treatment plant, any paint-manufacturing plant;
- Any material containing arsenic, cyanide or sulphide;
- Any toxic soluble salt of barium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, silver, zinc;
- Any pesticide or herbicide and in particular organochlorine pesticides, fluorinated hydrocarbons, organophosphate pesticides, phenols; and
- Any soluble acid or alkali, acidic or basic compounds.

If an excluded waste was to be discovered on the site, the Waste Coordinator would be notified immediately. If it is considered hazardous and of small volume, it would be first moved to the Community Recycling Centre (CRC) and secured in one of the Hazardous lock-up cupboards, as this location is secure and relatively isolated. Larger items that would not be suitable to be taken to the CRC would be assessed and transferred to the contaminated waste area and isolated. The EPA would then be contacted and Council would then await their instruction. The incident is recorded on the daily checklist kept by the Site Supervisor.

If the waste is leaking, the local fire brigade would be contacted and requested to bring a drum for the containment of hazardous materials.

Any of the above wastes may only be disposed of at the BHWMF following EPA approval. Signs defining excluded wastes and penalties for the deposition of excluded wastes are prominently displayed at the point of entry to the site. The excluded waste is recorded on the Daily Checklist including details of the type of waste, the source of waste and vehicle and driver identification.

2.5 SITE SAFETY EQUIPMENT

The BHWMF maintains a water cart which consists of a 15,000 litre water truck, pump and hose. This can be mobilised immediately to the site of a fire as and when required. The Recycling Shed and Recovery Shop is protected from fire by several hose reels, fire extinguishers and hydrants.

To manage leaks, chemicals such as diesel fuel are kept on mobile self-bunded trolleys to allow their safe use in less well protected areas of the site. Spill Sorb (or similar) is present on site to manage fuel and oil spills. The used Spill Sorb is then deposited in the landfill. In the event of a chemical spill, PPE is provided for onsite staff which consists of safety goggles, safety vests, ear plugs and protective gloves.

Staff are required to wear steel cap boots, long pants and long sleeve high visibility shirts at all times whilst on site.

The extra protective gear of safety glasses, ear plugs and protective gloves are also stored on site. These are checked daily and replaced if required.

Spill kits are provided at the waste oil area, the new shed/lunchroom area and at the bitumen area.

Risk Management and Pre-emptive Actions

3.1 INTRODUCTION

The following section outlines current operational procedures and design intended to minimise and manage risk. Members of staff working on site are responsible for being aware and notifying the Site Supervisor of any potential pollution incidents on the premises. All management procedures detailed within the LEMP must be adhered to.

3.2 PRE-EMPTIVE ACTIONS

3.2.1 IDENTIFYING NON-DOMESTIC QUANTITIES OF HAZARDOUS SUBSTANCES

The following practices apply to screening of incoming wastes:

- Public access is only permitted during opening hours;
- Drivers are asked to describe the type of waste to be deposited on entry to the Facility;
- Inspections of waste loads are made when required;
- Drivers are directed to the correct area of the facility for disposal of specific loads (e.g. builder's wastes, greens, whitegoods, tyres, derelict cars etc.);
- Wastes are monitored and inspected as they are being discharged to ensure excluded non-approved wastes are not being disposed; and
- Wastes are monitored and inspected during spreading, compaction and covering.

The following steps are undertaken if non-domestic quantities of hazardous wastes are identified.

- If identified **at point of entry** the vehicle is refused entry and the driver advised to contact the EPA for advice on proper disposal of the hazardous waste. The incident is reported as described in **Section 2.4**.
- If identified **during waste deposition** the waste facility operators immediately advise the waste leading hand (Landfill Supervisor). The supervisor advises the driver that the waste is not acceptable and organises for the waste to be loaded back onto the vehicle, where practicable and safe to do so. The supervisor then escorts the load off-site and advises the driver to contact the EPA for advice in the proper disposal of the excluded waste. The incident is reported as described in **Section 2.4**.
- If identified **during waste spreading and compaction** the waste facility operators immediately notify the waste leading hand (Landfill Supervisor). The supervisor makes all practicable efforts to identify the source of the waste (e.g. labelling, waste type). The supervisor is then responsible for contacting the EPA for advice on the proper disposal of the hazardous waste and will dispose of the hazardous waste in accordance with the EPA's requirements. In the event that the EPA cannot be contacted, the wastes will be relocated to the contaminated waste area for isolation. Depending on volume, larger hazardous waste items will be removed to the contaminated waste area for isolation. This is identified in enclosed Site Plan **09A_EV03**. The incident is reported as described in **Section 2.4**.

3.2.2 SURFACE OR SUBSURFACE FIRES

The potential for fires to occur at the site are controlled by:

- A security fence to prevent unauthorised access and acts of vandalism;
- Maintaining machinery in good working order to minimise risk of sparks;
- Smothering immediately with soil or water sprayed from the water cart;
- Adequately compacting and covering waste;
- Mulched green waste has the capacity to spontaneously combust. This risk is minimised via shaping into divided windrows (i.e. small cones) to isolate/contain any fires;
- Regular litter patrols;
- Ensuring fire breaks are maintained around any temporary stockpile of combustibles;
- Access to on-site fire fighting equipment; and
- Accepting only permitted wastes.

In addition to the above preventative measures, operators at the Facility maintain the fire fighting equipment to ensure that the on-site fire fighting capability is maintained. Specifically this involves:

- Ensuring that the water cart permanently located at the facility is full at all times and that it is positioned in a readily accessible location;
- Weekly testing of the tanker pump and checks that the motor is topped with fuel and oil; and
- Weekly checks that the overhead standpipe that feeds the water cart is functional.

3.2.3 MIXING OF WASTE AND STORMWATER

The potential for the mixing of waste and stormwater is controlled by ensuring that the level of the surface water ponds is regularly checked. If the level of a pond is too high and at risk of flooding then the excess water is pumped back onto the active landfill site to create airspace.

3.2.4 ACTS OF VANDALISM OR TARGET OF TERRORIST ACTIVITY

The boundary road fence along Depot Road and Wills Street limits unauthorised access outside operational hours. All staff are required to be vigilant and aware that the site is a potential target for vandalism, particularly by arsonists. The boundary fence is checked daily and maintained as required following these checks.

3.3 INVENTORY OF MAINTENANCE POLLUTANTS

The following pollutants can be stored on site in quantities required for routine maintenance necessary for operations at the facility:

- Bitumen drums and tanks;
- 'Fleet Premium' vehicle wash; and
- Diesel fuel.

Enclosed site plan **09A_EV03** provides details of where these chemicals are stored on the premises as well as those on bunded palettes.

3.4 IDENTIFIABLE WASTE POLLUTANTS

A variety of waste household pollutants can be stored on site until sufficient quantity deems it necessary for the relevant contractor to collect.

Council has installed the Community Recycling Centre (funded by EPA Waste Less Recycle More Grants) where domestic quantities of hazardous household waste items are stored on the premises, including gas cylinders, fire extinguishers, waste oil, car batteries, household batteries, fluorescent

tubes / globes, smoke detectors and paints. There are several by-catch cupboards installed to house more hazardous chemicals that cannot be stored as part of the core materials targeted by the Community Recycling Centre.

3.5 POTENTIAL POLLUTION INCIDENTS

The potential main hazards to human health or the environment – i.e. '*Pollution Incidents*' - associated with the activity undertaken at this site include the following:

- Identifying non-domestic quantities (more than 200 millimetres per tonne or 200 grams per tonne) of hazardous substances among waste;
- Surface or subsurface fires;
- Mixing of waste and stormwater;
- Identification of any failure of an environmental protection system;
- Identification of a significant difference in groundwater indicator parameters;
- Acts of vandalism or target of terrorist activity; or
- Any other incident or observation that could potentially pose an immediate environmental hazard outside normal operating conditions.

It is possible that dumping of hazardous waste may occur outside the boundary, but in close visual proximity to the BHWMF outside of normal operational hours. In this instance, if the pollution is a risk of material harm to the environment and/or human health then the local fire brigade should be contacted immediately. The initial response to the pollution and assessment of the situation thereafter will be managed by the local fire brigade. Refer to **Document A** – Pollution Incident Decision Flow Chart in **Appendix A** for details.

3.6 LIKELIHOOD, IMPACT AND CONTRIBUTING FACTORS TO POLLUTION INCIDENTS OCCURRING

Incidents can be classified as being of low, medium or high risk of occurring (likelihood) based on the past history of the facility, an assessment of management procedures, staff training and site layout.

The impact of an incident can be classed as low, medium or high based on the potential extent of off-site harm to humans and/or the environment.

The following assessment of potential pollution incidents detailed below is summarised in **Table 1.1** of **Appendix A**.

3.6.1 IDENTIFYING NON-DOMESTIC QUANTITIES OF HAZARDOUS SUBSTANCES

Medium Likelihood – Non-domestic quantities of hazardous waste could be discovered at point of entry into the site, during waste deposition, and/or during waste / recycling spreading, sorting and/or compaction.

Low Impact – The site has a protective system of drainage, bunding and holding ponds which are likely to contain and prevent the immediate spread of hazardous substances outside of the premises.

Contributing Factors – Human errors made during waste screening, or deception by landfill patrons.

3.6.2 SURFACE OR SUBSURFACE FIRES

3.6.2.1 Active Landfill, Public Receival Areas and Recycling Facility

The BHWMF often deals with the sorting and deposition of combustible waste, coupled with the storage and use of some highly combustible chemicals and fuels.

Medium Likelihood– The likelihood of a fire within the active landfill area is relatively high, for example kerbside collection can include household fire embers and mulch can self-combust.

Medium Impact – It is probable that a fire of this nature could be contained due to the procedures and equipment in place. Therefore, the impact is classed as medium.

Contributing Factors – Factors which may increase fire risk include high winds, dry weather, prolonged periods of high temperatures and low humidity, spontaneous combustion and hot embers in waste deliveries. Human errors made during waste screening and the poor maintenance of plant and equipment which may spark a fire.

3.6.2.2 Maintenance and Inactive Areas

Low Likelihood – The storage of potential accelerants such as maintenance chemicals and fuels is undertaken onsite, however as these are located in secure facilities and only utilised by trained staff, the risk is considered minimal.

High Impact – If a fire were to initiate within the chemical storage areas, or in an inactive area of the site, there is a high risk of spread offsite and to susceptible surrounding low level stock grazing areas.

Contributing Factors - Factors which may increase fire risk include high winds, dry weather, prolonged periods of high temperatures and low humidity.

3.6.3 MIXING OF WASTE AND STORMWATER

Low Likelihood – the site has a protective system of drainage, bunding and holding ponds which contain surface water and waste sufficient to manage a 1 in 100 year storm event. On-site roads are designed to channel and capture runoff. Evaporation rates are consistently high throughout the year due to low average annual rainfall and high annual average temperatures.

Medium Impact – the site has a protective system of drainage, bunding and holding ponds which are likely to contain and prevent the immediate spread of surface water and waste outside the premises. However the impact is considered to be medium due to the stormwater channel running southwards from the south-west corner of the site. Any pollutants which manage to reach the stormwater channel could cause harm to properties and environmental habitats for some distance south of the site.

Contributing Factors – Prolonged periods of heavy rain and lack of surface water pond and site maintenance may increase risk.

3.6.4 IDENTIFICATION OF ANY FAILURE OF AN ENVIRONMENTAL PROTECTION SYSTEM

Low Likelihood – the site has a protective system of drainage, bunding and holding ponds, and the surface water and groundwater of the premises are regularly monitored.

Low Impact – the site has a protective system of drainage, bunding and holding ponds and the surface water and groundwater of the premises are regularly monitored which means any failure in this environmental protection system is likely to be identified well before there is potential for impact outside of the site.

Contributing Factors – Prolonged periods of heavy rain and/or a mechanical failure of the pump at the stormwater pond may result in the stormwater flowing directly into the adjacent stormwater channel without first being deposited back onto the active landfill cell.

3.6.5 IDENTIFICATION OF A SIGNIFICANT DIFFERENCE IN GROUNDWATER INDICATOR PARAMETERS

Low Likelihood – the site has a protective system of drainage, bunding and holding ponds, and the surface water, groundwater, surface gas and sub-surface gas of the premises is regularly monitored.

Low Impact – the site has a protective system of drainage, bunding and holding ponds and the surface water and groundwater of the premises is regularly monitored which means any significant difference in groundwater indicator parameters is likely to be identified well before there is a potential impact outside of the site.

Contributing Factors – Prolonged periods of heavy rain may increase risk.

3.6.6 ACTS OF VANDALISM OR TARGET OF TERRORIST ACTIVITY

Medium Likelihood – the site is enclosed by secure fencing and some sections of the site are covered by CCTV cameras. Although the site is of limited strategic value in terms of being a potential target for terrorism, the premises may prove attractive to arsonists as it is isolated from habited areas and deals with the sorting and deposition of combustible waste, coupled with the storage and use of often highly combustible chemicals.

Medium Impact – the site is surrounded by low level stock grazing areas susceptible to fire.

Contributing Factors ‑Increased risk during hours of closure and during sustained periods of hot and dry weather.

3.6.7 ANY OTHER INCIDENT OR OBSERVATION THAT COULD POTENTIALLY POSE AN IMMEDIATE ENVIRONMENTAL HAZARD OUTSIDE NORMAL OPERATING CONDITIONS

Low Likelihood – The site has significant and advanced environmental protection measures and monitoring equipment.

Low Impact – The site has significant and advanced environmental protection measures and monitoring equipment which are likely to identify, contain and prevent the immediate spread of environmental hazards outside of the premises even outside of normal operating conditions.

Contributing Factors – N/A.

PIRMP

4.1 DEFINITION OF POLLUTION INCIDENT

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the *POEO Act 1997*:

> *"(a) harm to the environment is material if:*
>
> *i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
>
> *ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and*
>
> *(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment."*

4.2 NOTIFICATION OF POLLUTION INCIDENT

4.2.1 NOTIFICATION SPEED OF RESPONSE

The notification of the relevant authority when material harm to the environment is caused or threated must be '*immediate*', meaning '*promptly without delay*', but it does not mean undertaking notification ahead of doing what is necessary to make the environment safe.

4.2.2 NOTIFICATION OF RELEVANT AUTHORITIES

Where the pollution incident causes or threatens material harm to the environment or human health, the following authorities must be notified by those authorised to notify relevant authorities (see **Table 4.1**):

1. **Emergency Call Services**
   - Emergency Hotline Number (24 hours) 000*

*The Site Supervisor should call 000 if the incident presents an immediate threat to human health and/or property and a combat agency is required (i.e. NSW Fire and Rescue, NSW Ambulance Service, NSW Police Force) and then notify all other parties below including NSW Fire and Rescue via a local telephone number.

2. **Broken Hill City Council**
   - BHCC Waste Supervisor 0409 712 776
3. **The Environment Protection Authority (EPA)**
   - Griffith Regional Office 02 6969 0700
   - Emergency Hotline Number (24 hours) 131 555
4. **NSW Public Health Unit**
   - Broken Hill Regional Office 08 8080 1499
   - Public Health Officer on Call (24 hours) 0417 685 259

5. **SafeWork NSW**
   - Hotline Number 13 10 50

6. **Fire and Rescue NSW**
   - Broken Hill Fire Station 08 8087 2233**

**If there is no immediate threat to human health and/or property i.e. a combat agency is not required, then the site supervisor is still required to follow that outlined above except for dialling 000.

A summary of the above pollution incident notification procedure is provided in Document A – Pollution Incident Decision Flow Chart in **Appendix A.**

4.2.3 INFORMATION TO BE NOTIFIED

Under section 150 of the *POEO Act 1997*, the information about a pollution incident that must be notified is:

- The time, date, nature, duration and location of the incident;
- The location of the place where pollution is occurring or is likely to occur;
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known;
- The circumstances in which the incident occurred, including the cause of the incident, if known;
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known; and
- Other information prescribed by the regulations.

Notification is required by the authorised notifier immediately after a pollution incident becomes known. Any information required that is not known at the time the incident is notified must be provided when it becomes known.

Complying with these notification requirements does not remove the need to comply with any other obligations for incident notification, for example, those that apply under other environment protection legislation or legislation administered by SafeWork NSW.

A Pollution Incident Reporting Form is produced in **Appendix A** to assist the authorised notifier in correctly recording and notifying the relevant authorities detailed in **Section 4.2.2** above.

4.3 ACTIONS TO BE TAKEN DURING OR IMMEDIATELY AFTER A POLLUTION INCIDENT

All site personnel with relevant training must make every effort to contain the pollution incident on site, without putting themselves at risk of harm.

In the case of a fire, attempts must be made – where safe – to extinguish or contain the fire immediately. This could be through the use of a fire extinguisher, fire hose, water cart or smothering with cover material.

In the event of a chemical spill that is not contained by bunding, Spill Sorb (or similar) must be used to restrict the spread of the chemical.

If the surface water ponds are nearing capacity, staff must initiate pumping of liquid back to the active landfill to retain headspace. If pollution is identified through groundwater or surface monitoring, procedures identified in the LEMP will be followed.

4.4 MINIMISING HARM TO PERSONS ON THE PREMISES

In the event of a pollution incident occurring, all members of the public and other Council staff will be mustered by Council site staff to the Emergency Assembly Point at the front entrance of the facility (identified on Site Plan **09A_EV03**), after which they will be safely evacuated from site where appropriate. It is a condition of entry that in the event of an emergency, both the public and staff must adhere to directions given by the Site Supervisor.

4.5 EPA POWERS OF DIRECTION & NOTIFICATION OF NEIGHBOURS

Where the pollution incident causes or threatens material harm to the environment or human health, the EPA is notified in accordance with **Section 4.2**.

Once the EPA is notified, it is then for the EPA to determine whether commercial, industrial and residential neighbours of the site need to be contacted by Council and informed of the circumstances of the incident and what action is being taken in response to it. If deemed necessary, the EPA then has powers to formally direct Council to notify the neighbours of the site.

Irrespective of whether the EPA directs Council to notify neighbours and depending on the circumstances of the particular pollution incident, Council may at their own discretion voluntarily choose to notify neighbours.

Council would notify neighbours by 'door knocking' every neighbouring property identified on enclosed Site Plan **09A_EV02** and detailed below in **Table 2.2**. A summary of the neighbour notification procedure is provided in **Document A** – Pollution Incident Decision Flow Chart in **Appendix A**.

Table 2.1 – List of Neighbours to be Notified

Property	Property Address	Owner
Cremona Stud	700 Barrier Highway, Broken Hill, NSW 2880	Mr Greg Wilkins Tel: 08 8087 5943 0418 600 308
Local Land Services	724 Barrier Highway, Broken Hill, NSW 2880	Local Land Services Tel: 08 8087 3378
Essential Water	33 Wills Street, Broken Hill, NSW 2880	Sewage Farm Office 08 8082 5890 Tel: 13 23 91 (24 hrs)
Transgrid (Electricity Transmission Authority)	76 Pinnacles Road, Broken Hill, NSW 2880	Transgrid Tel: 1800 027 253 (emergencies) Regional Office – Orange Tel: 02 6360 8711
Essential Energy	66-68 Pinnacles Place, Broken Hill, NSW 2880	Senior Resource Supervisor 0427 205 365 Essential Energy Regional Office Tel: 13 23 91 (24 hrs)
Mutooroo Pastoral Company Pty Ltd	62-64 Pinnacles Place, Broken Hill, NSW 2880	Mutooroo Pastoral Company Pty Ltd Tel: 08 8373 1515 (SA Office)
E C Andrews Drillcore Facility	42-56 Pinnacles Place, Broken Hill, NSW 2880	E C Andrews Drill Core Facility Tel: 08 8087 5143
Macro Meats	70-72 Pinnacles Place, Broken Hill, NSW 2880	General Manager 0408 341 252 Tel: 08 8341 2533 (SA Office)

4.6 IDENTIFICATION OF NEIGHBOURS

To assist the EPA in its decision as to whether it needs to direct Council to notify neighbours and to assist Council in visiting all the local neighbours, enclosed is aerial plan **09A_EV02** which identifies the commercial, industrial and residential properties within 500 m of the site boundary.

Implementation

5.1 LEMP

The PIRMP forms part of the BHWMF *Landfill Environmental Management Plan* (LEMP). This Supporting Statement and PIRMP should be filed in the LEMP under **Attachment B**.

Additional copies of the PIRMP and/or this Supporting Statement produced by Council are required to be marked as 'UNCONTROLLED'.

5.2 STAFF TRAINING

All staff and relevant contractors will be inducted under the new plan; further inductions will be completed for new staff members as required. The induction must cover the purpose, requirements and responsibilities detailed in this PIRMP.

All staff should receive sufficient training to enable them to carry out their assigned duties in a competent and safe manner. In particular:

- Staff must be capable of using the fire-fighting equipment;
- Staff must be capable of identifying excluded wastes;
- Staff must be capable of identifying potential pollution incidents; and
- Staff must be familiar with the requirements and procedures contained within this PIRMP.

Staff competency will be monitored through audits, public complaints and pollution incident reports.

At least once every year staff should undertake a simulated pollution incident response exercise, including with emergency services, to familiarise site personnel with the requirements of this management plan. A register of staff training can be found in **Appendix A** and must be kept on site and updated regularly.

Regular site briefings and toolbox meetings should be held when considered appropriate to draw attention to potential pollution incidents and identify improvements to on-site safety procedures.

Consideration of **Section 3.2** *'Site Supervision, Control and Training'* in the LEMP is required, and the staff training register (**Form 3.14c**) is to be updated as required.

5.3 REVIEW AND UPDATE PIRMP

The PIRMP is a living document required to be reviewed, tested and updated at least once every 12 months to ensure accuracy and effectiveness. A review must also be undertaken within one month of any pollution incident occurring.

For these reasons, document control is an important part of the environmental management system. It is critical that PIRMP storage locations are made known to all relevant staff members and that only the latest version is in use. Details of the version and date of issue are recorded on each page of the PIRMP in the bottom left hand corner.

Revised and updated versions of the PIRMP will always be issued with a covering memo summarising the changes. When a new PIRMP is received the old version is replaced in its entirety. A register for updating and testing the PIRMP can be found in **Appendix A** and must be kept on-site and updated regularly.

Four copies of any new PIRMP will need to be produced. They are to be distributed to the following:

- General Manager (or delegate), Broken Hill City Council;

- Waste Coordinator, Broken Hill City Council;
- Administration Manager, Broken Hill City Council; and
- Geolyse Pty Ltd, Orange.

References

Environmental Guidelines Solid waste landfills Second edition, 2016 – prepared by Environment Protection Authority
Environmental Guidelines: Preparation of Pollution Incident Response Management Plans, March 2012 – prepared by Environment Protection Authority
Environment Protection Licence 5898, 3 December 2018 – prepared by Environment Protection Authority
Broken Hill Waste Management Facility – Landfill Environmental Management Plan 2019, February 2019 - prepared by Geolyse Pty Ltd

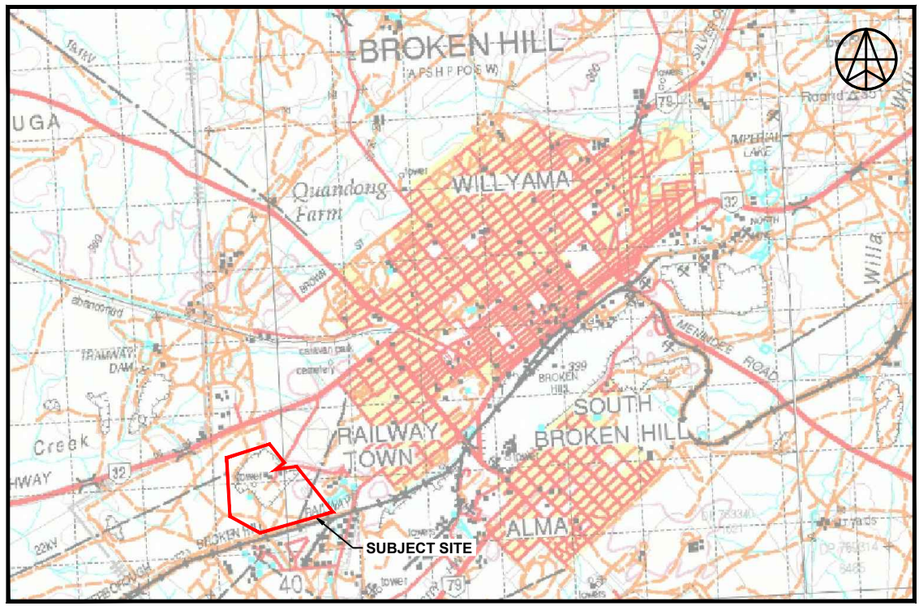
Drawings

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN

BROKEN HILL WASTE MANAGEMENT FACILITY

NETWASTE

SCHEDULE OF DRAWINGS			
SHEET	TITLE	REV.	DATE
09A_EV01	TITLE SHEET, DRAWING LIST, AND SITE LOCALITY	A	25/07/2012
09A_EV02	PLAN OF NEIGHBOURS	A	25/07/2012
09A_EV03	SITE PLAN	A	25/07/2012



SITE LOCALITY

NOT TO SCALE

GEOLYSE
ORANGE
orange@geolyse.com
www.geolyse.com
154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	25/07/12	LP	TS	ISSUED TO CLIENT

PROJECT
POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN
BROKEN HILL WASTE MANAGEMENT FACILITY

FILE REFERENCE: 212102_09A_EV01-EV03.dwg

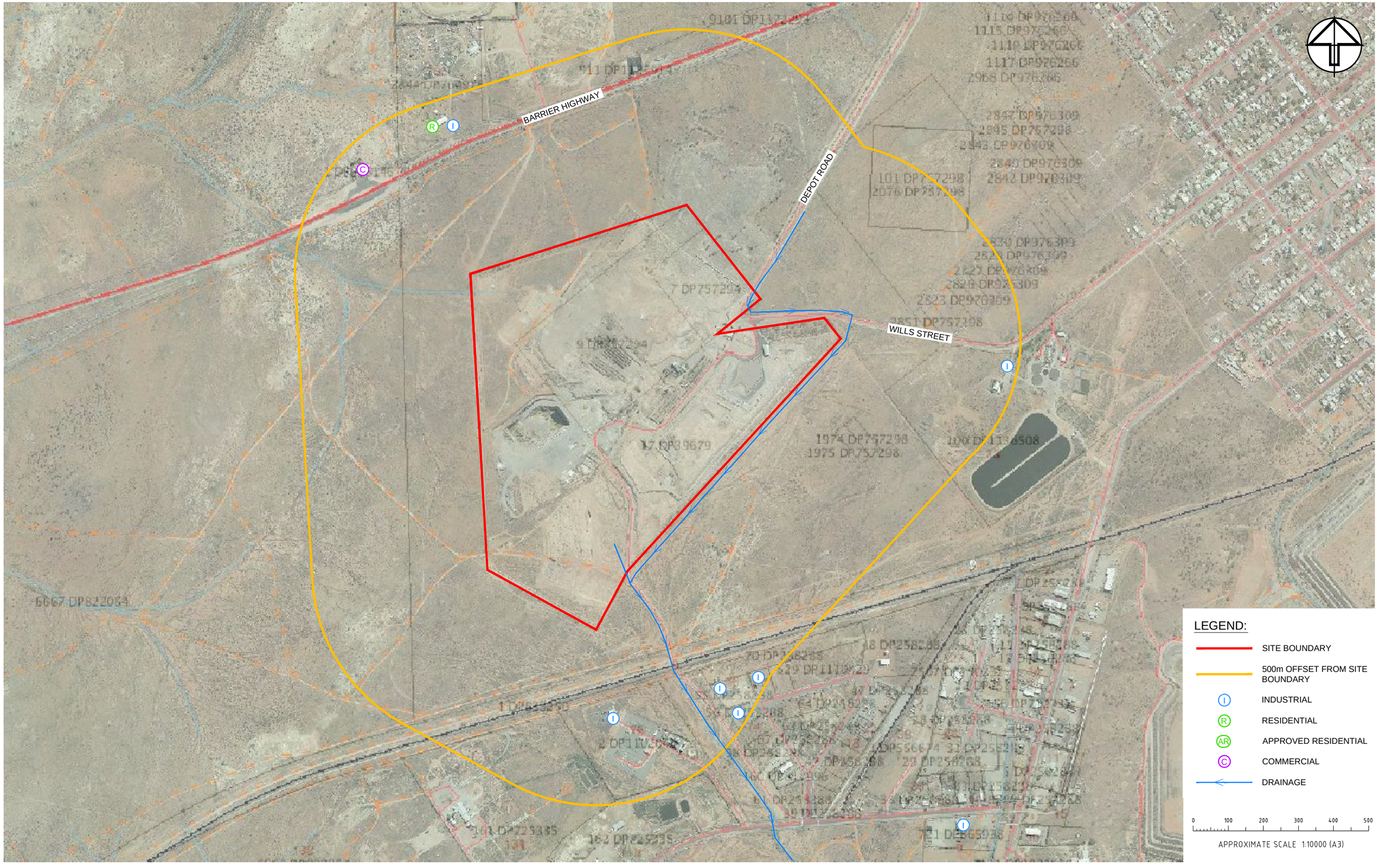
APPROVAL AUTHORITY
BROKEN HILL CITY COUNCIL

CLIENT
NetWaste
A COLLABORATIVE APPROACH

DRAWING
TITLE SHEET, DRAWING LIST, AND SITE LOCALITY

PROJECT NUMBER: 212102 DRAWING NUMBER: 09A_EV01 REV. A

SOURCE: http://imagery.maps.nsw.gov.au/



GEOLYSE
ORANGE
orange@geolyse.com
www.geolyse.com
154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	25/07/12	LP	TS	ISSUED TO CLIENT

PROJECT

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN
BROKEN HILL WASTE MANAGEMENT FACILITY

FILE REFERENCE: 212102_09A_EV01-EV03.dwg

APPROVAL AUTHORITY

BROKEN HILL CITY COUNCIL

CLIENT

NetWaste
A COLLABORATIVE APPROACH

DRAWING

PLAN OF NEIGHBOURS

PROJECT NUMBER: 212102
DRAWING NUMBER: 09A_EV02
REV. A

SOURCE: http://imagery.maps.nsw.gov.au/

LEGEND:

- BW — BUILDING WASTE
- DM — DRUM MUSTER
- GW — GREEN WASTE
- S — PUBLIC SKIP BINS
- SM — HOUSEHOLD SCRAP METAL
- HW — HOUSEHOLD HAZARDOUS WASTE
- R — RECYCLED PAPER, PLASTICS AND GLASS
- CW — CLINICAL WASTE
- B — CAR BATTERIES
- O — OIL COLLECTION TANK
- TV — E-WASTE (COMPUTERS & TVS)
- V — VEHICLE OIL AND PETROL
- T — TYRES
- W — SCRAP TIMBER
- C — CHEMICALS FOR MAINTENANCE PURPOSES

DRAINAGE

GROUNDWATER SAMPLING POINT

SCALE 1:2500(A1)

0 50 100 150 200 250

0 50 100 150 200 250

SCALE 1:5000(A3)

GEOLYSE
ORANGE
154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
Ph. (02) 6393 5000
Fx. (02) 6393 5050
orange@geolyse.com
www.geolyse.com

No	DATE	DRAFTING CHECK	PM CHECK	DETAILS
A	25/07/12	LP	TS	ISSUED TO CLIENT

PROJECT

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN
BROKEN HILL WASTE MANAGEMENT FACILITY

FILE REFERENCE: 212102_09A_EV01-EV03.dwg

APPROVAL AUTHORITY

BROKEN HILL CITY COUNCIL

CLIENT

NetWaste
A COLLABORATIVE APPROACH

DRAWING

SITE PLAN

PROJECT NUMBER: 212102 | DRAWING NUMBER: 09A_EV03 | REV. A

SOURCE: http://imagery.maps.nsw.gov.au/, BROKEN HILL CITY COUNCIL

ATTACHMENT C

CONTAMINATED WASTE MANAGEMENT PLAN (BHCC, 2013)

Contaminated Waste Management Plan for the Broken Hill Waste Management Facility

Background

The location of Broken Hill, the history of mining activities, and the age of the City that has been built around the mines has brought about two contaminated waste issues that require management at the Broken Hill Waste Management Facility.

As a result of the natural occurrences of lead in the soil, and the occurrence of mining activities since 1883, most, if not all of Broken Hill is potentially contaminated with lead. Lead has been distributed from the ore body through a combination of wind, and water erosion contaminating soils, ceiling spaces, wall cavities and internal areas of homes within Broken Hill.

Also much of the building stock in Broken Hill is old, with majority of housing being constructed pre-1987. The current trend is to buy older housing and demolish or renovate these, as vacant land is not so readily available. Asbestos records between 2009 -2012 indicate volumes received for disposal have been between 22 – 43 tonnes, some of these volumes have included larger loads of mixed waste that needed to be treated and received as asbestos waste from incidents such as house fires where the health risk of separating the asbestos was too high. The figures also indicate that asbestos in most cases is being disposed of correctly in the LGA, and volumes are expected to remain at these levels due to the nature of the housing in the community.

Clinical waste is received regularly from the Broken Hill Hospital; it has been included in the management plan as the disposal procedures at the waste management facility are very similar in nature to the lead dust/soil and asbestos disposal.

Issue

In the process of renovating or cleaning out homes residents are highly likely to come across high lead level dust/soil that has accumulated in ceilings, wall cavities etc, and also asbestos products used in the home. To reduce risk of exposure to high lead soils and asbestos fibres residents and contractors in Broken Hill need to manage the removal of these following safety procedures and need to dispose of these wastes safely.

Management objectives

Create a safe disposal option for lead contaminated dust/soil, asbestos and clinical waste for the Broken Hill Community

Safely dispose of contaminated wastes at the Broken Hill Waste Management Facility to reduce risk of contamination being redistributed into the environment

Licensing

The Broken Hill Waste Management Facility is currently licensed (EPA License 5898) as a Solid Waste Class 1 Landfill. Under the Environment Protection Authority's *Environmental Guidelines: Solid Waste Landfill*, Solid Waste Class 1 includes the following waste categories:

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- Inert wastes – wastes which do not undergo environmentally significant physical, chemical or biological transformations and have no potentially hazardous content once land filled. Includes building demolition wastes.
- Asbestos waste – including bonded matrix and asbestos fibre and dust waste.
- Special Waste – selected clinical waste that does not exceed 200kg at any one time, lead contaminated soil/dust from residential and commercial premises, and waste assessed as general solid waste and are subject to immobilisation of contaminants which have certain disposal restrictions.
- Liquid Waste – grease trap waste and sewage sludge can be accepted where there is no other facility available within BHCC area to legally accept the waste.

Packaging and disposal procedures

Residents/ businesses need to pre-arrange the drop off of any contaminated waste from within Broken Hill. Council will only accept contaminated wastes (lead dust/soil, asbestos or clinical waste) if they are packaged correctly for disposal. Staff will meet with the person/company on site to inspect the waste and immediately bury the waste if the inspection finds no non-compliances.

Lead dust/soil

Any dust/soil removed during renovations or house clean ups must be placed in heavy duty plastic bags, half filled to avoid splitting of the bags, clearly labelled “lead dust” and sealed with heavy duty tape.

Asbestos (as per the Asbestos – A guide for householders and the general public)

Asbestos material should be kept wet during removal and packaging.

Carefully package the material (both bonded and friable asbestos), including and offcuts, in two layers (double wrap) of 0.2mm thick polythene sheeting, or double bag with polythene bags.

Keep packages of a manageable size, or if using bags only half fill to avoid splitting and completely seal them with adhesive tape.

Clearly label the packages with “ASBESTOS WASTE” using a permanent marker.

Clinical Waste

Clinical waste is received from the Broken Hill Hospital only. All clinical waste from the hospital that is accepted is bagged and sealed in yellow waste bags before being transported to the Broken Hill Waste Management Facility.

Disposal methods on site

The waste received, whether it is asbestos, lead dust, or clinical waste will be placed in the clinical waste disposal area immediately following delivery. This area is separately fenced and has restricted access, with no public access allowed .As per the *Landfill Environmental Management Plan 2005* any waste received and disposed of in this area is covered with a minimum of 500mm of cover material on arrival.

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These disposal arrangements will significantly reduce the risk of any of the contaminated waste disposed of, from re-entering the environment.

Recording waste received – contaminated waste

Waste Data Form NSW will be used to keep a record of the volume of all contaminated waste received at the site.

Asbestos Waste: Code SN220

Details recorded include:

Date, volume of asbestos, waste consigner and address, address of where the asbestos has come from, description of the waste, details of the transporter and waste consignee (destination)

Clinical Waste: R100 (origin code 8611)

Details recorded include: Date, waste consigner, number of bags delivered, origin, waste consignee (destination)

Lead contaminated dust/soil:

Lead contaminated dust/soil is not a trackable waste and therefore the words '*lead dust/soil'* will be written on the form in place of a code.

Details recorded include: date, details of the person delivering the waste, origin of the waste, volume of waste and waste consignee (destination)

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ATTACHMENT D

BHWMF SURFACE WATER MANAGEMENT PLAN

SURFACE WATER MANAGEMENT PLAN

BROKEN HILL LANDFILL

PREPARED FOR:

BROKEN HILL CITY COUNCIL

JUNE 2016

GEOLYSE

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Report Title:	*Surface Water Management Plan*
Project:	*Broken Hill Landfill*
Client:	*Broken Hill City Council*
Report Ref.:	*216074_REO_001A Surface Water Management.docx*
Status:	*Final*
Issued:	*30 June 2016*

Geolyse Pty Ltd and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All information contained within this report is prepared for the exclusive use of Broken Hill City Council to accompany this report for the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes apart from those stated therein.

Geolyse Pty Ltd accepts no responsibility for any loss, damage suffered or inconveniences arising from, any person or entity using the plans or information in this study for purposes other than those stated above.

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Introduction

1.1 BACKGROUND

Broken Hill City Council (Council) own and operate a landfill at Broken Hill which is licenced by the Environment Protection Authority (EPA), Environment Protection Licence 5898. Following a waste audit conducted at the site in September 2015 Council have commissioned Geolyse to provide an update to the Landfill Environmental Management Plan and associated documents, including preparation of a Surface Water Management Plan (SWMP).

The SWMP will review how surface water is currently managed on the site, check that the existing surface water features are adequately sized and provide recommendations to rectify any issues identified.

Surface Water Management Study

2.1 SITE INSPECTION

A site inspection was undertaken of the Broken Hill landfill on the 17th March 2016. The site inspection reviewed the clean water diversion system, the dirty water system, the active filling area for signs of leachate release, and completed filling areas for signs of rehabilitation.

The weather was clear and sunny during the inspection.

2.2 CLEAN WATER DIVERSION SYSTEM

The landfill is located approximately 3km west of the city of Broken Hill between the Barrier Highway and the Adelaide-Broken Hill Railway. The landfill is located on a relatively elevated position with some small catchments falling towards the site. A natural watercourse runs parallel to the south east boundary which drains in a south westerly direction. A second natural watercourse commences at the north western corner of the site and drains to the west of the site.

Clean water diversion drains have been installed at several locations within and external to the site (see **216074_01A_C001**) and are in good condition.

2.2.1 HYDROLOGIC ASSESSMENT

To determine the peak flows from the clean water catchments upstream of the landfill site an assessment was undertaken of the catchments using aerial photography and topographic mapping available through the NSW Government-Land and Property Information 'SIX Viewer'. The catchment areas were determined using the topographic maps and the catchment characteristics were assessed using the aerial photography and the site inspection.

The catchments draining towards the landfill site are relatively small with slopes of approximately 2%. The catchment boundaries can be seen in **Figures 1 to 3** below.

Figure 1: North Eastern Clean Water Upstream Catchment Extents (LPI)

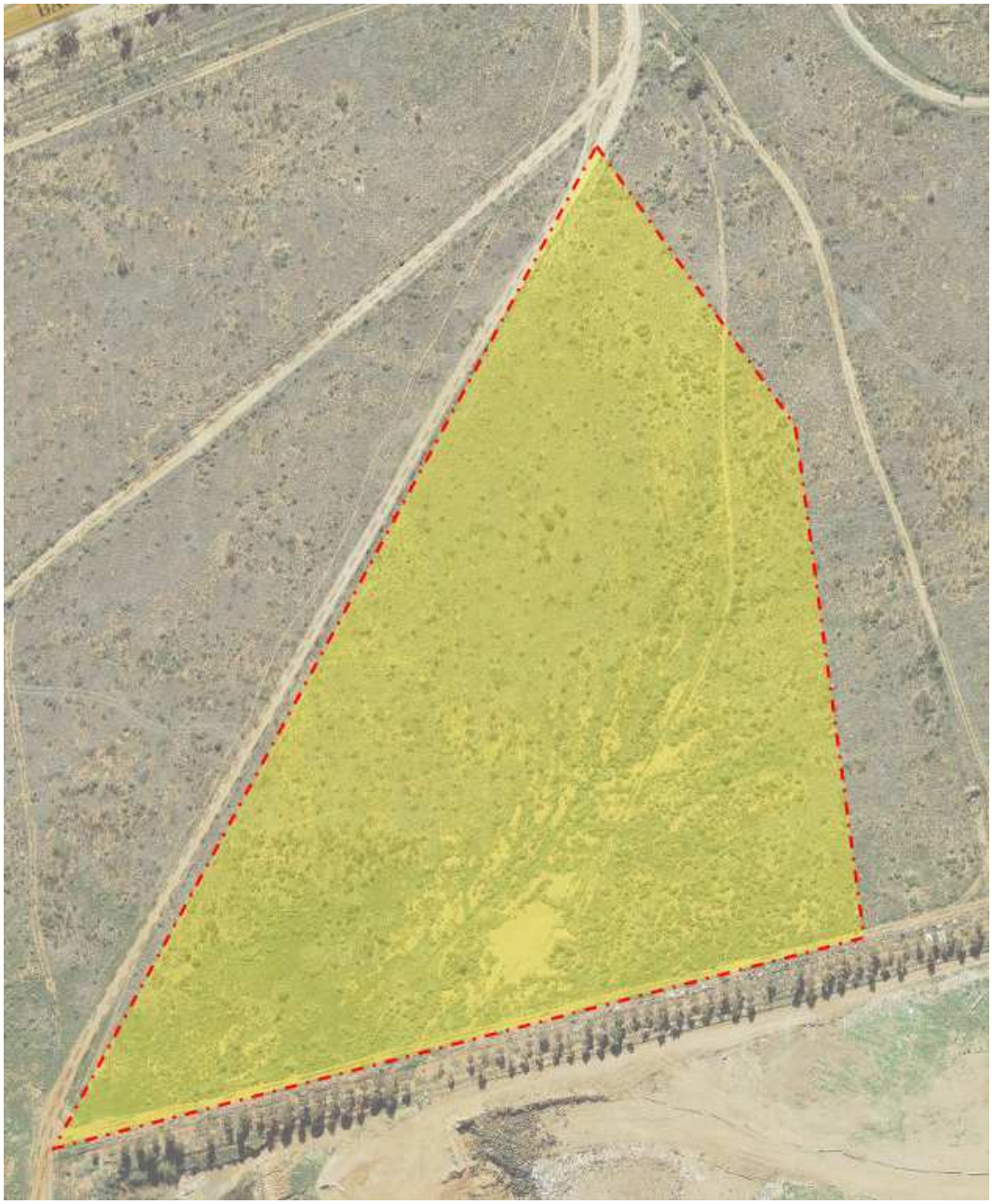

Figure 2: Northern Clean Water Upstream Catchment Extents (LPI)

Figure 3: Western Clean Water Upstream Catchment Extents (LPI)

The hydrologic assessment used XP-RAFTS to determine peak flows for each catchment draining towards the landfill. XP-RAFTS requires the following information for each catchment being modelled:

- Catchment/sub-catchment area (ha);
- Impervious Percentage (%);
- Vectored Catchment Slope (%); and
- Manning's 'n' Roughness Coefficient.

Catchment/sub-catchment areas were calculated using the area measuring tool within the NSW Government-Land and Property Information SIX Viewer software.

The catchments were assumed to be 0% impervious. The vectored slope for each sub-catchment was calculated using the topographic mapping within SIX Viewer.

A Manning's 'n' Roughness Coefficient for the sub-catchments was determined from aerial photography within SIX Viewer and site inspection of the catchments. Generally the following Manning's 'n' value was adopted for the catchments:

- Open Pasture -0.035.

XP-RAFTS models initial and continuing rainfall losses for a catchment. As the entire catchment is rural the initial and continuing losses adopted were 25 mm and 2.5 mm/hr.

A summary of the sub-catchment parameters used in the XP-RAFTS model is provided within **Table 2.1** below.

Table 2.1 – XP RAFTS Catchment Parameters

Catchment	Area (ha)	Vectored Slope (%)
Northern Eastern	12.38	2
Northern	3.62	2
Western	1.74	2

Calibration of the model has not been completed as no flooding level information was available.

A range of storm event durations from 15 minutes to 24 hours was run for the 20 year ARI event (as specified in Table 6.1 of "Managing Urban Stormwater: Soils and Construction" Volume 2B Waste Landfills, (Landcom, 2008)). The calculated 20 year ARI Peak flow for each catchment is shown below in **Table 2.2**.

Table 2.2 – Calculated Peak Flows

Catchment	Peak 1 in 20 year ARI flow (m^3/s)
Northern Eastern	0.37
Northern	0.14
Western	0.07

2.2.2 HYDRAULIC ASSESSMENT

The calculated peak flows above are the flows at the outlet of each of the catchments and hence the clean water drains at the upper end will only be conveying a fraction of the calculated flows. However, for the purposes of this assessment a conservative approach was taken assuming that the clean water diversion drains will need to convey the calculated flows along their entire length.

The clean water diversion drains vary in shape and grade along their lengths and exact measurements of the dimensions of the drains were not taken during the site inspection. Available survey information was used to estimate the smallest cross sectional area of each drain. The estimated channel dimensions were used to check their capacity against the expected flows calculated above.

The hydraulic software package OpenChan was used to determine the capacity of each critical section of each drain. The shape of each drain was modelled using the Trapezoidal channel option, with base width, side slope, depth, longitudinal grade and Mannings 'n' roughness coefficient parameters included in the model. The northern and western drains are essentially a 0.5m high bank, however were modelled conservatively as trapezoidal channels. A Mannings 'n' roughness coefficient of 0.025 was adopted for the channels. The results of the hydraulic modelling are shown in **Table 2.3** below.

Table 2.3 – Hydraulic modelling results

Channel	Dimensional Parameters	Capacity at full depth (m^3/s)	Velocity at full depth (m/s)
Northern Eastern	1m base width, 1 in 8 side slopes, 0.5m deep, 2% slope	5.99	2.4
Northern	5m base width, 1 in 3 side slopes, 0.3m deep, 2% slope	4.04	2.3
Western	5m base width, 1 in 3 side slopes, 0.3m deep, 2% slope	4.04	2.3

The hydraulic modelling showed that the clean water diversion drains have sufficient capacity to convey the calculated 1 in 20 year ARI peak flows along their length. The hydraulic modelling showed that velocities at full depth were above those specified in Table 5.2 of "Managing Urban Stormwater: Soils and Construction" Volume 1, Fourth Edition (Landcom, 2004). As a result it is recommended that Rock Check Dams (SD5-4 "Managing Urban Stormwater: Soils and Construction" Volume 1, Fourth Edition (Landcom, 2004) and/or other alternate check dam system be installed in the bare soil areas of the drains to reduce velocities.

2.2.3 SEPARATION FROM WASTE DISPOSAL AREAS

The clean water diversion drains are separated from waste disposal areas via earth embankments or in the case of the north eastern drain the property boundary fence.

During the site inspection it was evident that some areas had windblown gross pollutants within the clean water diversion drains. No evidence was apparent of dirty water or leachate discharging into the clean water diversion drains. It is recommended that all gross pollutants be removed from the clean water diversion drains and only clean fill be used to create the earth embankments separating the clean water diversion drains and dirty areas.

2.3 DIRTY WATER SYSTEM

2.3.1 COLLECTION AND TRANSPORT SYSTEM

The recent survey of the site shows that the dirty water collection and transport system is relatively informal however the site has been shaped generally to drain the previously filled areas and currently exposed areas of the site to the on-site dams/sedimentation basins.

2.3.2 TREATMENT AND DISCHARGE SYSTEM

The existing dams on the site act as Type D sedimentation basins, albeit with no formal discharge outlets. Council staff advised that the dams/basins never fill and captured water simply evaporates due to the significant rainfall deficit at the site (mean annual rainfall 227 mm, mean annual evaporation 2,592 mm (Broken Hill Stephens Creek Reservoir BOM station 047031)).

The volume of the sedimentation basins required for Catchment 1 (29.5 ha) and Catchment 2 (24.9 ha) are 3,345 m^3 and 2,824 m^3 respectively using the formulae within Section 6.3.4 of "Managing Urban Stormwater: Soils and Construction" Volume 1, Fourth Edition (Landcom, 2004) (using the 90th percentile rainfall depth for Broken Hill of 21.6 mm, Cv = 0.35, and 50% of settling zone capacity for sediment storage zone).

The surface area of Dam 1 is 4,400 m^2 and Dam 2 is 2,400 m^2 , meaning that depths of 0.76 m and 1.18 m are required respectively. The available LiDAR data shows that the depths of the two dams are at least this deep and therefore have adequate capacity for their respective catchments. Site survey will confirm the depths of the dams.

It is recommended that water within the basin be either reused for dust suppression and watering of revegetated areas or treated with flocculants and discharged to maintain adequate storage within the basin for future rainfall events.

2.4 LEACHATE

Several active filling areas exist within the site and therefore separation of leachate from dirty water is not currently being achieved. It is recommended that the active filling area be localised to a single location and earth bunding be used to ensure leachate does not mix with dirty water. Leachate is to be collected and spread over the landfill area as required.

2.5 RECOMMENDATIONS

The following recommendations are made as a result of the Surface Water Management Study for the Broken Hill Landfill:

- Clean water diversion drains be maintained to ensure separation of clean water;
- Rock check dams or other check dams be installed in the bare earth clean water diversion drains;
- Rock check dams or other check dams be installed in any drains on site than exceed 5% longitudinal grade;
- All gross pollutants be removed from clean water diversion drains;
- Only clean fill be used to create earth embankments separating clean water diversion drains from dirty water areas;
- Collected water within the sedimentation basins be either reused on site or treated with flocculants and discharged following each rainfall event to ensure adequate capacity within the basin is maintained for future rainfall events;
- Leachate to be collected and spread over the landfill as required; and
- Any currently exposed areas no longer in use should be stabilised, capped with suitable material and revegetated as soon as practical.

References

Landcom, 2004. Managing Urban Stormwater- Soils and Construction, Volume 1, Fourth Edition.

Landcom, 2008. Managing Urban Stormwater- Soils and Construction, Volume 2B- Waste Landfills

Drawings

THIS PLAN IS PREPARED FROM A FIELD SURVEY FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

SOME SERVICES SHOWN HEREON HAVE BEEN LOCATED BY FIELD SURVEY.

VISIBLE SERVICES HAVE BEEN LOCATED ONLY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

CAUTION: CONTOURS SHOWN HEREON ARE INDICATIVE ONLY PREFERENCE SHOULD BE GIVEN TO SPOT HEIGHTS AS SHOWN.

THIS NOTE IS AN INTEGRAL PART OF THIS PLAN

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

LEGEND
- STORMWATER CATCHMENT BOUNDARY
- DIVERSION BANK
- CONFINED SPACE

MGA

DAM 2
EXISTING WATERCOURSE
BORROW PIT
BUILDERS WASTE
CONTAMINATED WASTE AREA
BH1
BH4
QUARRY
CONFINED QUARRY CATCHMENT
CATCHMENT 2
EXACT BOUNDARY TO BE CONFIRMED FROM SURVEY
BH6
BH5
MEAT HOLE
DAM 1B
BH2
OPERATION AREA
BH3
TO ADELAIDE ROAD
BITUMEN ROAD
WASTE STORAGE
CONFINED ASBESTOS PIT CATCHMENT
FORMATION
DOMESTIC
RECYCING
CATCHMENT 1
WASTE
AREA
FACILITY
DAM 1A
CATCHMENT DAM
GRAVEL ROAD
FROM PINNACLES ROAD
EXISTING WATERCOURSE
8L7.4
643.8
341.98
155.47
308.23
65.24
355.3
201.46
891.4

REV.	DATE	DFTD.	APPD.	DETAILS
A	12/05/2016	BH	AW	ISSUED FOR REVIEW

	FILE	INITIALS	DATE
SURVEY	-	-	-
DESIGN	-	-	-
DRAINS/ HEC-RAS MODELLING	-	-	-
ENGINEERING/ SURVEYING APPROVAL		AW	12/05/2016

DRAWING SCALE

SCALE 1:2000 (A1)

0 50 100 150 200

SCALE 1:4000 (A3)

0 50 100 150 200

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY LANDFILL ENVIRONMENTAL MANAGEMENT PLAN

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DRAWING: STORMWATER CATCHMENT AREAS

PROJECT NUMBER 216074	DRAWING FILE 216074_01A_C001.dwg	ORIGINAL A1
SURVEY MARK -	R.L. - DATUM A.H.D.	
IMAGE SOURCE -		SET 01A
STATUS FOR REVIEW	SHEET C001 OF C001	

BROKEN HILL
CITY COUNCIL

ATTACHMENT E

BHWMF LITTER CONTROL PLAN (BHCC, 2016)

Broken Hill City Council

Litter Control Plan

Broken Hill Waste Management Facility

Broken Hill Waste Management Facility
Wills Street
Broken Hill

Litter Control Plan

Broken Hill Waste Management Facility
Wills St
Broken Hill

Revision History				
No.	Issue Date	Revision Notes	Prepared By	Approved By
1	Sept 2015	Draft provided	Robert Bailey Consulting	
2	February 2016	Updated draft for implementation	Environment, Waste and Recycling Specialist	

DRAFT

Contents

DRAFT

1.0 Background

Council operates the Broken Hill Waste Facility using day labour and is responsible for the control of any litter that may be generated from the various waste activities undertaken at the Facility. Council is also broadly responsible for filling and managing the landfill, operating the weighbridge, controlling the Community Recycling Centre (CRC), for organics processing and for traffic management. The site is required to be operated in accordance with the Landfill Environmental Management Plan (LEMP) and in compliance with the conditions of the Environmental Protection Licence (EPL).

Part O5.6 of the Environment Protection Licence (EPL) states *"The licensee must implement the litter management program specified in section 5.3 of the LEMP."* In keeping with its legislative obligations Council is adopting a more proactive approach to litter management at the Waste Facility in accordance with guidance provided under this Litter Control Plan.

The site currently operates multiple and separate activity areas for mixed solid waste which are difficult to control and are inefficient through duplication. These activity areas include active tipping area for kerbside collected residual waste (former quarry), the active tipping area for commercial/industrial wastes and the self-haul domestic waste drop off area. Over the next 18 months (Jan 2016 – June 2017) the number of active areas will be reduced, as part of the upgrades to the Waste Management Facility.

2.0 Introduction

In a waste management context, litter can be described as any material or substance that detracts from the visual amenity of an area or represents a nuisance to the community in the vicinity of the waste facility. Litter generally consists of paper and plastics that escape from controlled environments and become distributed around, and outside, the facility.

For the Broken Hill Waste Facility, the sources of litter production can be attributed to a number of factors, but the more consistent sources of litter include uncovered loads of waste material entering the site or being transported within the site, operations at the active landfill tipping faces, waste transfer activities and at resource recovery areas.

Actions to control litter fall into two main categories, proactive and reactive. Although it is desirable to prevent litter from occurring, the reality is that not all litter is preventable and that actions must be undertaken to respond to litter occurrences. This litter control plan recognises that litter is a factor in the management of waste facilities and has established actions to respond to litter events.

Litter managed poorly can result in unwanted consequences including -

- Complaints from adjoining neighbours
- An improvement notice from the EPA
- Council not meeting his legislative obligations and reflecting poorly on performance
- Opposition from neighbours on any proposed expansion of the landfill

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operations or changes to existing activities and practices
- Increased risk of fire where litter accumulates
- Poor aesthetics that are construed as overall poor site management
- Increased operating costs

3.0 Purpose

This Litter Control Plan has been prepared to identify best management practices and offer guidance for the facility supervisor and staff for compliance with regulatory requirements for the management of litter. Although regulatory compliance is the predominant objective of this plan, Council should also strive to maintain high standards in its operations of the Waste Facility and therefore has adopted actions identified in the Litter Control Plan to ensure these standards are achieved and maintained.

4.0 Litter and the EPA "Environmental Guidelines: Solid Waste Landfills"

The Environment Protection Authority (EPA) has prepared a document entitled "Environmental Guidelines: Solid Waste Landfills" the purpose of which is to provide a consistent and environmentally responsible approach to managing landfills across NSW. The EPA has selected a performance based approach to achieving best environmental outcomes rather than prescribing actions and offers flexibility for operators in delivering the required performance standards.

These Guidelines have established benchmark techniques for the operation of landfills that are suitable for achieving the environmental goals contained within the Guidelines. Litter falls within the environmental goal of "preventing degradation of local amenity". The Guidelines state that local amenity should not be degraded by litter and windblown litter is a nuisance to the community and should generally be controlled.

In the preparation of its Landfill Environmental Management Plan (LEMP) Broken Hill City Council has adopted the benchmark techniques contained within the "Environmental Guidelines: Solid Waste Landfills".

The Guidelines suggest that litter should generally be controlled by the following techniques -

- The occupier should introduce procedures that prevent the unnecessary proliferation of litter. Such procedures might include continuous compaction of waste material, and use of litter fences, and the occupier is responsible for ensuring that all wind-blown litter that leaves the site is retrieved.
- All litter fences, perimeter fences and gates should be inspected daily and cleared of litter on a daily basis, or as required.
- Entry and exit signs need to advise transport operators that they can be fined for any litter on public roads resulting from their improper transportation of waste.

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- All litter that leaves the site should be retrieved on a daily basis.

It is important to remember that the landfill operation at the Broken Hill Waste Facility is not the only activity within that site that has the potential to produce litter and additional measures need to be implemented in a comprehensive litter control plan.

5.0 Control Measures

Best management practices in the control of litter require a broad spectrum approach in identifying the potential sources of litter, determining control measures, responding to litter events, establishing standards and monitoring performance. The following list proposes control measures in the management of litter at the Broken Hill Waste Facility -

1. Confine the working face of the active fill area. Management of the daily working face should be kept to the smallest practical area with immediate compaction of the placed waste material to minimize the impacts of wind. The current practice of having three active waste placement areas should be consolidated into just one area. During periods of high wind events, clean fill is to be used to cover the compacted waste as a litter control action. Equally, at the end of the day's operations, clean fill is to be used to cover any exposed waste.
2. Use litter fences and screens. Moveable litter fences are usually constructed of pipe frames with chain link in-fills and dimensions of each panel about 3.0 m x 2.0 m. The higher the fence the more efficient it becomes in trapping windblown litter. Moveable litter fences can be erected around the active tipping area and re-located as the tipping face changes.
3. Maintain short pushing distances when placing waste material. Pushing short means that the waste unloading or tipping areas are kept as close as possible to the working face of the landfill. In this manner, the distance that plant operators will have to travel while pushing the waste into place and compacting is minimized. This practice will minimize the wind exposure that the uncovered waste will receive as it is being placed. Plant operators are to ensure that the unloading platform migrates as waste is placed and incoming vehicles are unloading as close as possible to the working face.
4. Cover waste more frequently during periods of high wind. Selective placement of small amounts of cover material can effectively reduce wind dispersal of litter and can save significant amounts of time and cost when compared with litter clean up. Cover material placed for the sole purpose of litter control does not have a minimum thickness requirement and can therefore be placed in a manner that does not consume unnecessarily large volumes of landfill air space in achieving its objective.
5. Restrict waste placement during periods of high wind. It is unlikely that all waste receivals at the landfill can be restricted during high wind events, but activities such as taking bins from the transfer station (to be constructed in the near term) can be delayed, restricting simultaneous arrivals at the tipping face can be managed and reducing the size of the active tipping area can all contribute to better performance.
6. Undertake routine litter inspections and pick-ups. Preventative litter control

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programs will not eliminate all litter problems. For this reason, best practice will require that site operators conduct and document routine litter inspections and remove litter from on-site and off-site areas of accumulation. Litter inspections are to be conducted and recorded in keeping with the Broken Hill Waste Facility environmental monitoring program which requires weekly inspections and corresponding actions in collecting any litter identified within and outside of the site. This includes the road reserve up to two kilometres on either side of the site entrance. Depending on wind conditions and waste types, inspections and litter removal may need to be carried out more frequently. Litter inspection and removal efforts are to focus on likely accumulation areas such as fence lines, borrow pits, drainage swales, culverts, vegetated side slopes and timbered areas of beyond the site boundaries.

7. Use of portable (skid-mounted) litter fences. These may be provided for deployment downwind as close as practical to the working area and, where practical, semipermanent fencing may be provided around the current filling stage as an additional barrier to the migration of litter off-site when litter has not been contained by the portable litter fences. Litter fences and litter screens should be trialled and their effectiveness appraised as part of the implementation of the litter control plan.
8. Cover transfer bins. Waste bins (or tip truck) transported from the proposed transfer station to the active tipping area are to have covers applied or be fitted with hydraulically operated lids to prevent the discharge of litter during the transfer phase.
9. Litter collection. The most common form of litter collection is by hand picking using extending grips and bags for the placement of the collected litter. Should this be the preferred means of litter collection, then Safe Work Method Statements (SWMS) are to be prepared for this activity in conjunction with Standard Operating Procedures (SOPs) and appropriate staff training.
10. Record keeping. Litter can be notorious in re-appearing and it would be good practice for the site operator to take photos after litter has been collected between routine collections to be able to demonstrate the commitment to litter management is being undertaken.
11. Placement of intermediate cover. Intermediate cover is required to be placed over compacted waste at a minimum depth of 300 mm to surfaces that will be exposed for more than 90 days. Ensuring immediate cover is placed and compacted as required will assist in ensuring previous filled areas of the landfill do not result in waste being exposed and litter generated.
12. Responding to weather events. Although the frequency of inspecting the site and collecting litter has been determined as a weekly event, in times of extreme weather where wind can cause an increase in the generation of litter, it will be the responsibility of the site operator to arrange for the undertaking of additional litter collection activities as required.
13. Establishment of buffer zones. Long term management of the landfill site should see cleared buffer zones created about the perimeter of the site to facilitate vehicular access for the collection of windblown litter. This matter should be addressed and actioned.

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14. Tool Box talks. Tool box talks provide an important means to discuss work, health and safety matters associated with the operation of the waste facility. It is the forum whereby operational matters such as litter control can be a standing agenda item and measures put in place to ensure litter is addressed in a formal manner. Tool box talks should be programmed as a weekly activity at the Broken Hill Waste Facility and should include litter control in routine discussions. A standard tool box talk pro-forma can be found on page 11 of this document.

6.0 Monitoring and Reporting

1. Monitoring and reporting should form part of the Council's overall management processes and litter control and are to be included in the standard reports presented to Council's Environment, Waste and Recycling Specialist Officer.
2. Litter control is to be a standing agenda item at the site tool box meetings and responsibilities apportioned to staff and actions determined at each meeting.
3. Council has put in place a Landfill Environment Management Plan (LEMP) that requires the conducting of routine inspection of the site and site activities and to check that measures are enacted to mitigate any potential environmental incident. Litter control is included in the LEMP and is to be reported in the format and timeframes as required.

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7.0 Action Table – Litter Control

Location	Action	Responsibility	Timing	Comment
Gatehouse	Inspect all incoming loads to ensure waste material is being covered during transportation to the site Ensure "cover your load" signage is visible	Gatehouse operator	For all incoming vehicles	To be undertaken in accordance with the SOP
Transfer Station (future)	Ensure transfer bins (or tip truck) are covered or lids secured in the down position during transportation to the landfill tipping face	Transfer station attendant	During transportation of transfer bins	
Active Tipping Area	Consolidate all mixed solid waste disposal to one active tipping area	Site supervisor	Ongoing	
	Confine the working face of the active fill	Plant operator	Daily	
	Use litter fences and screens	Site supervisor	As determined by the site supervisor	
	Maintain short pushing distances when placing waste material	Plant operator	Daily	
	Compact waste using the "four pass" technique on grades of	Plant operator	Daily	

	Cover waste more frequently during periods of high wind	Plant operator	As determined by the plant operator	
	Restrict waste placement during periods of high wind	Site supervisor	As determined by the site supervisor	
Filled and covered areas of the landfill	Placement and compaction of intermediate cover to 300mm depth	Site supervisor	Where surfaces will be exposed for more than 90 days	
Overall site, including drainage swales, embankments, fence lines, adjoining properties, internal roads, resource recovery activity areas, transfer station	Undertake routine litter inspections and pick-ups	Site supervisor	Weekly, or after severe wind events	
Road Reserve	Undertake routine litter inspections and pick-ups	Site supervisor	Weekly	To be undertaken in accordance with SOPs and SWMS
On site	Tool Box talks	Site supervisor	Weekly	With relevant staff. Records to be kept, including proposed actions and responsibilities
	Landfill Environmental Management Plan	Site supervisor	As prescribed in the LEMP	

Broken Hill City Council
Record of Toolbox Meeting

Facilitator - **Date and Time -**

Work Site -

In Attendance:			
NAME	**Signature**	**Organisation**	**Capacity/Role**

Matters Raised:

Action	Responsible Party	Date for Completion	Sign Off

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ATTACHMENT F

ENVIRONMENTAL MONITORING PLAN AND CHECKLIST

Broken Hill Waste Management Facility
Landfill Environmental Management Plan (LEMP) Version 3.0, February 2019
Environmental Monitoring Plan and Checklist #1

Groundwater / Leachate

Date of Monitoring: _____ Weather: _____ Sampled by: _____

	Time	Standing Water Level	Purging			Volume Water Removed	Description	# Sample Containers Filled					Initials
			Well Dry	or	Parameters Stable*			Metals (Filtered)	Cations / Anions / pH / EC / Hardness	Nutrients	Phenols	TOC	
BH1			☐		☐								
BH2			☐		☐								
BH3			☐		☐								
BH4			☐		☐								
BH5			☐		☐								
BH6			☐		☐								
LW1			*Water level gauging only. Pump out to evaporation basin required if water column height greater than 1.30 m.*										

Laboratory: _____ Sent on: _____ Courier & Consignment #: _____

Date of Monitoring: _____ Weather: _____ Sampled by: _____

	Time	Standing Water Level	Purging			Volume Water Removed	Description	# Sample Containers Filled					Initials
			Well Dry	or	Parameters Stable*			Metals (Filtered)	Cations / Anions / pH / EC / Hardness	Nutrients	Phenols	TOC	
BH1			☐		☐								
BH2			☐		☐								
BH3			☐		☐								
BH4			☐		☐								
BH5			☐		☐								
BH6			☐		☐								
LW1			*Water level gauging only. Pump out to evaporation basin required if water column height greater than 1.30 m.*										

Laboratory: _____ Sent on: _____ Courier & Consignment #: _____

Date of Monitoring: _____ Weather: _____ Sampled by: _____

	Time	Standing Water Level	Purging			Volume Water Removed	Description	# Sample Containers Filled					Initials
			Well Dry	or	Parameters Stable*			Metals (Filtered)	Cations / Anions / pH / EC / Hardness	Nutrients	Phenols	TOC	
BH1			☐		☐								
BH2			☐		☐								
BH3			☐		☐								
BH4			☐		☐								
BH5			☐		☐								
BH6			☐		☐								
LW1			*Water level gauging only. Pump out to evaporation basin required if water column height greater than 1.30 m.*										

Laboratory: _____ Sent on: _____ Courier & Consignment #: _____

** Water quality parameters (pH, conductivity, and temperature) are recorded after purging every 3 litres of groundwater (or 1 litre if purging by 'low-flow'), and are considered to have stabilised when successive measurements are within +/- 10% for all parameters.*

Broken Hill Waste Management Facility
Landfill Environmental Management Plan (LEMP) Version 3.0, February 2019
Environmental Monitoring Plan and Checklist #2

Weekly Checklist

Checklist Completed By: _____ **Date:** _____ **Weather:** _____

Litter Inspections	**Cleanup Required**	
Depot Road / Wills Street	Y ☐	N ☐
Site Entrance	Y ☐	N ☐
Perimeter Fence	Y ☐	N ☐

Surface Water Management

Dam 1A Head Space _____ m *(pump out required if less than 0.76 m)*

Dam 2 Head Space _____ m *(pump out required if less than 1.18 m)*

Locations Where Water Pooling _____

Waste Area Inspections	**Contamination Requiring Transfer**		**Daily Cover Applied**		**Adequate Capacity***	
Animal Burial	Y ☐	N ☐	Y ☐	N ☐	Y ☐	N ☐
Asbestos Cell	Y ☐	N ☐	Y ☐	N ☐	Y ☐	N ☐
Municipal Waste	Y ☐	N ☐	Y ☐	N ☐	Y ☐	N ☐
Public Waste Drop-Off	Y ☐	N ☐	Y ☐	N ☐	Y ☐	N ☐
Recycling Facility	Y ☐	N ☐	N/A		Y ☐	N ☐
Building / Demolition Waste	Y ☐	N ☐			Y ☐	N ☐
Green Waste	Y ☐	N ☐			Y ☐	N ☐
Cardboard	Y ☐	N ☐			Y ☐	N ☐
Steel / Scrap Metal	Y ☐	N ☐			Y ☐	N ☐
Tyres	Y ☐	N ☐			Y ☐	N ☐
Grease Trap / Septic Waste	Y ☐	N ☐			Y ☐	N ☐

** Discuss in 'Other Comments' methodology to address insufficient storage*

Pest Control			**Comments**
Evidence of:			
Noxious Weeds	Y ☐	N ☐	
Vermin	Y ☐	N ☐	

Security and Access			**Comments**
Perimeter Fence Inspected	Y ☐	N ☐	
Locks on all Gates and Compounds	Y ☐	N ☐	
Signs at Entry Visible	Y ☐	N ☐	
Site Roadway Signposts	Y ☐	N ☐	
Access Roads Trafficable	Y ☐	N ☐	
Dust Suppression Required	Y ☐	N ☐	

Other Comments

ATTACHMENT G

OPERATIONAL CONTROL FORMS

Form 3.13a – LEMP Review Record
Form 3.13b – LEMP Updates Register
Form 3.14a – Pollution Incident Report Form
Form 3.14b – PIRMP Testing and Updates Register
Form 3.14c – Staff Training Register
Form 3.15a – Complaints Register
Form 3.15b – Pollution Complaint

Form 3.13a – LEMP Review Record

LEMP REVIEW[1]

Review Date	Amended (Y/N)	Version #	Sign-Off
May 2016	Y	Version 2	
___ 2021			
___ 2026			

OPERATIONAL CONTROL REVIEW[2]

Operational Control Reference		Review Summary							
		__/__ 2017	__/__ 2018	6 / 2 2019	__/__ 2020	__/__ 2021	__/__ 2022	__/__ 2023	__/__ 2024
3.1	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.2	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.3	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.4	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.5	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.6	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.7	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.8	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.9	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.10	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.11	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.12	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.13	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.14	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.15	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____
3.16	Reviewed by: Revision Ref:	_____ _____	_____ _____	Geolyse 3.0	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____

STATUTORY REVIEW[3]

Statutory Article		Review Summary														
		__/__ 2016	__/__ 2017	__/__ 2017	__/__ 2018	__/__ 2018	6 / 2 2019	__/__ 2019	__/__ 2020	__/__ 2020	__/__ 2021	__/__ 2021	__/__ 2022	__/__ 2022	__/__ 2023	__/__ 2023
EPL 5898	Article Amended (Y/N):	____	____	____	____	____	Y	____	____	____	____	____	____	____	____	____
	LEMP requires update:	____	____	____	____	____	Y	____	____	____	____	____	____	____	____	____
POEO Act (1997)	Article Amended (Y/N):	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
	LEMP requires update:	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
POEO (Waste) Regulation 2014	Article Amended (Y/N):	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
	LEMP requires update:	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
Environmental Guidelines: Solid Waste Landfills (2nd Ed., 2016)	Article Amended (Y/N):	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
	LEMP requires update:	____	____	____	____	____	N	____	____	____	____	____	____	____	____	____
Other (Specify): _____	Article Amended (Y/N):	____	____	____	____	____	N/A	____	____	____	____	____	____	____	____	____
	LEMP requires update:	____	____	____	____	____	N/A	____	____	____	____	____	____	____	____	____

Notes:

1 – LEMP requires review every five (5) years

2 – Operational Controls (LEMP Section 3) require review annually

3 – Statutory articles require review every six (6) months

All revisions and amendments to the LEMP are required to be recorded on the Updates Register (**Form 3.13b**).

Form 3.13b – LEMP Updates Register

UPDATES REGISTER			
Section of LEMP	**Latest Version No.**	**Date Issued**	**Sign-Off**
Entire Document	Version 2	May 2016	
Entire Document	Version 3	February 2019	

Form 3.14a – Pollution Incident Report Form *Page 1 of 2*

INCIDENT NO:	TIME:
DATE:	DURATION OF INCIDENT:

NATURE OF INCIDENT:

TEMPERATURE: .....°C **WIND DIRECTION & SPEED:** .....KM/HR

RELATIVE HUMIDITY: ..... % **RAINFALL SINCE 9AM:**.....MM

FIRE DANGER RATING: .....

THE LOCATION OF THE PLACE WHERE POLLUTION IS OCCURRING OR IS LIKELY TO OCCUR:

THE NATURE, THE ESTIMATED QUANTITY OR VOLUME AND THE CONCENTRATION OF ANY POLLUTANTS INVOLVED (IF KNOWN):

THE CIRCUMSTANCES IN WHICH THE INCIDENT OCCURRED, INCLUDING THE CAUSE OF THE INCIDENT (IF KNOWN):

THE CORRECTIVE ACTION TAKEN OR PROPOSED TO BE TAKEN TO DEAL WITH THE INCIDENT AND ANY RESULTING POLLUTION OR THREATENED POLLUTION (IF KNOWN):

Form 3.14a – Pollution Incident Report Form *Page 2 of 2*

HAS COUNCIL BEEN NOTIFIED?	YES	NO
HAS ENVIRONMENT PROTECTION AUTHORITY (EPA) BEEN NOTIFIED?	YES	NO
HAS NSW MINISTRY OF HEALTH (VIA PUBLIC HEALTH UNITS) BEEN NOTIFIED?	YES	NO
HAS WORKCOVER NSW BEEN NOTIFIED?	YES	NO
HAS LOCAL FIRE AND RESCUE NSW BEEN NOTIFIED?	YES	NO

HAS EPA DIRECTED COUNCIL TO NOTIFY NEIGHBOURS?	YES	NO
IF NOT, HAS COUNCIL VOLUNTARILY NOTIFIED NEIGHBOURS?	YES	NO

Signature: ..... **Date:** .....

Signature: .....
General Manager (or Delegate), Broken Hill City Council

Date: .....

Form 3.14b – PIRMP Testing and Updates Register

Date	Routine Testing	Routine Update	Post Incident Updates	4 New Copies Distributed?
March 2013		Contact Details and content check and placed on website	n/a	Trimmed electronically and copy provided for landfill
September 2014		Contact Details and content check	n/a	
October 2014		Placed on web site	n/a	Trimmed electronically and copy provided for landfill
September and October 2015	Training of all waste staff completed Oct 20, 2015, including testing with scenarios. Training run by Geolyse Pty Ltd	Content of document updated to reflect changes at the facility, contact numbers checked and updated as required	n/a	Trimmed and updated copies provided for landfill. Senior staff notified that updated copies are now available.
February 2019		Contact Details Content Check & corresponding amendments.	n/a	

Form 3.14c - Staff Training Register

Date	Staff Member	Brief Description of Training Task

Form 3.15a – Complaints Register

COMPLAINTS REGISTER

Complaint No.	Weather Conditions	Date	Nature of Complaint

Form 3.15b – Pollution Complaint

DATE:	TIME:

COMPLAINT NO:

HOW COMPLAINT WAS LODGED:

COMPLAINT DETAILS:

NATURE OF COMPLAINT:

CAUSE:

CORRECTIVE ACTION:

FOLLOW-UP ACTION REQUIRED?

SIGNATURE:	DATE:

Section 5. Drawings

THIS PLAN IS PREPARED FROM A FIELD SURVEY FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

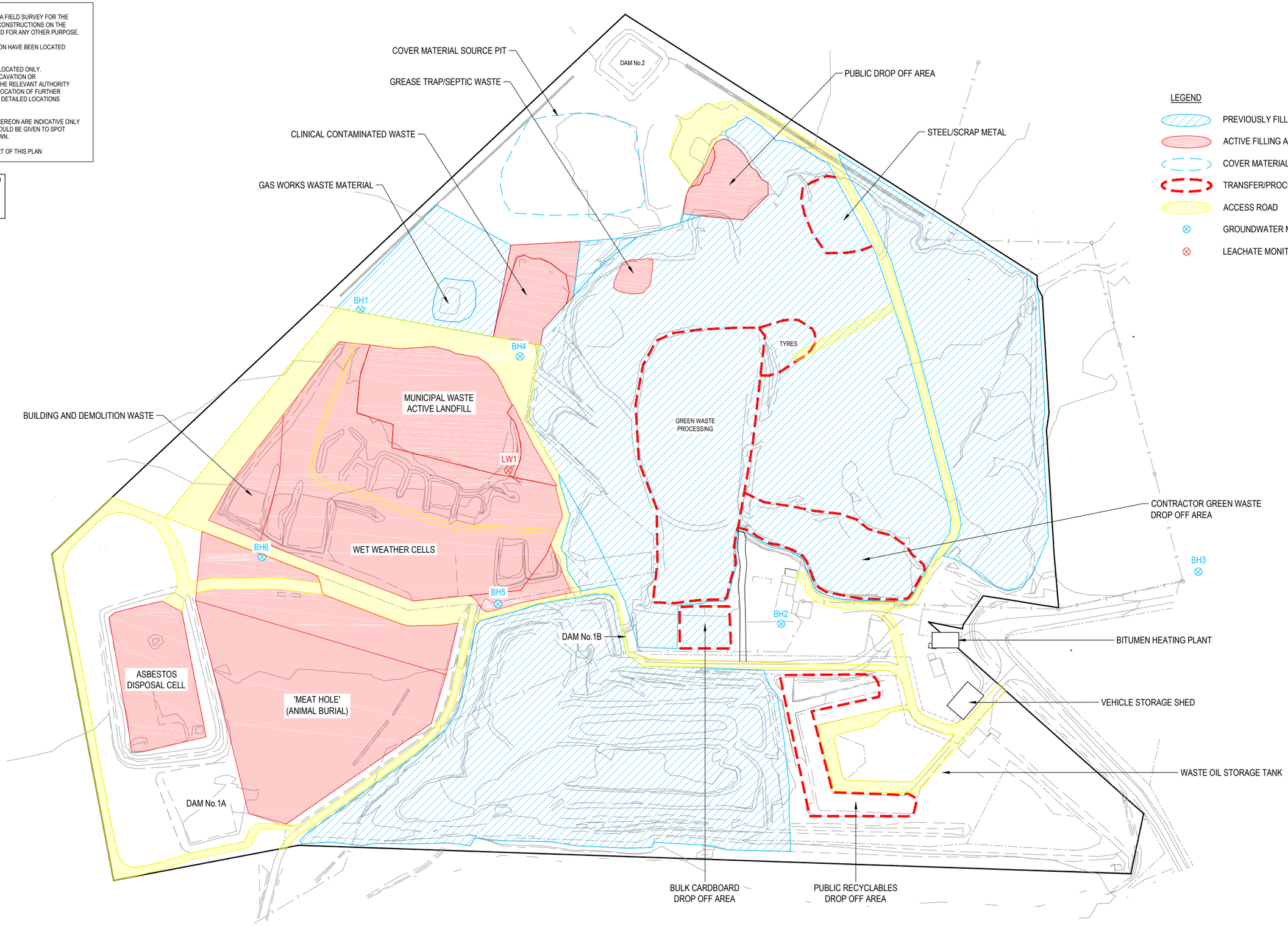
SOME SERVICES SHOWN HEREON HAVE BEEN LOCATED BY FIELD SURVEY.

VISIBLE SERVICES HAVE BEEN LOCATED ONLY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

CAUTION: CONTOURS SHOWN HEREON ARE INDICATIVE ONLY PREFERENCE SHOULD BE GIVEN TO SPOT HEIGHTS AS SHOWN.

THIS NOTE IS AN INTEGRAL PART OF THIS PLAN

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG



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REV.	DATE	DFTD.	APPD.	DETAILS
A	21/06/2016	BH	BS	ISSUED FOR REVIEW

DRAWING SCALE

SCALE 1:2000 (A1)

0 50 100 150 200

SCALE 1:4000 (A3)

0 50 100 150 200

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY LANDFILL ENVIRONMENTAL MANAGEMENT PLAN

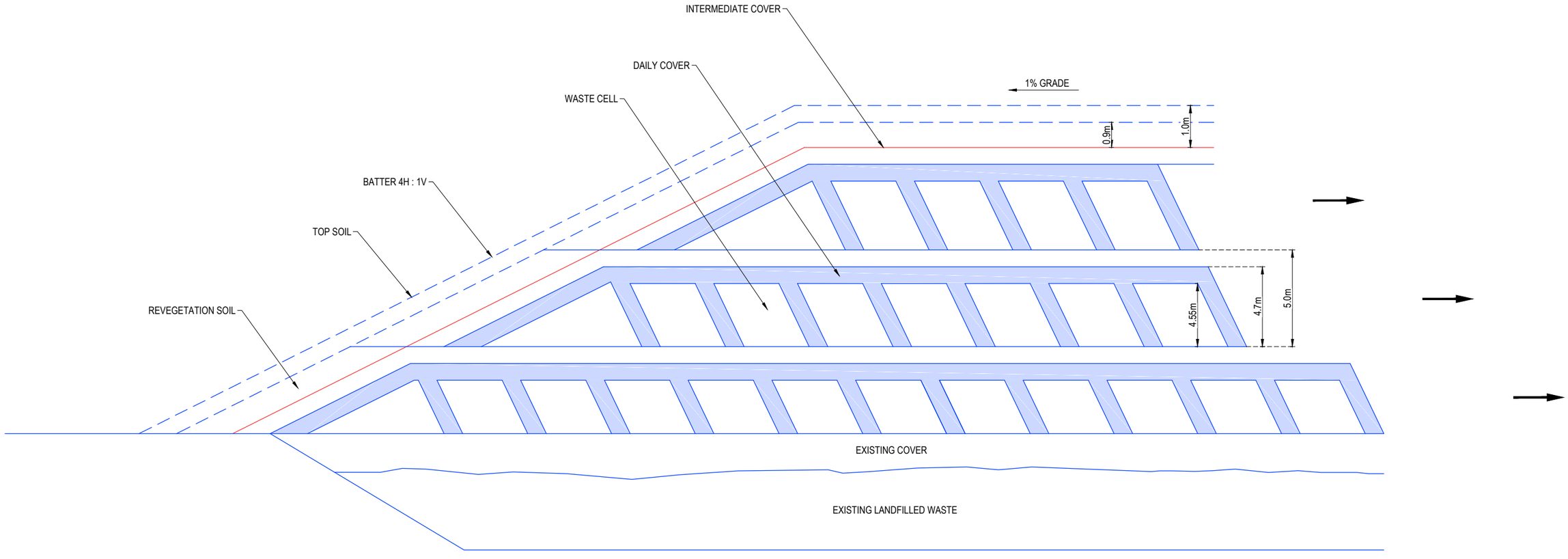
DRAWING: SITE LAYOUT AND FILLING AREAS

PROJECT NUMBER 216074 | DRAWING FILE 216074_02A_EV01-EV02.dwg | ORIGINAL A1

DATA SOURCE -

IMAGE SOURCE -

STATUS FOR REVIEW | SHEET EV01 OF EV02 | SET 02A



CONCEPT DESIGN
NOT FOR CONSTRUCTION

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REV.	DATE	DFTD.	APPD.	DETAILS
A	21/06/2016	BH	BS	ISSUED FOR REVIEW

DRAWING SCALE: NOT TO SCALE

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY LANDFILL ENVIRONMENTAL MANAGEMENT PLAN

DRAWING: FILLING AND CAPPING SCHEMATIC

PROJECT NUMBER 216074 | DRAWING FILE 216074_02A_EV01-EV02.dwg | ORIGINAL A1

DATA SOURCE -

IMAGE SOURCE -

STATUS FOR REVIEW | SHEET EV02 OF EV02 | SET 02A

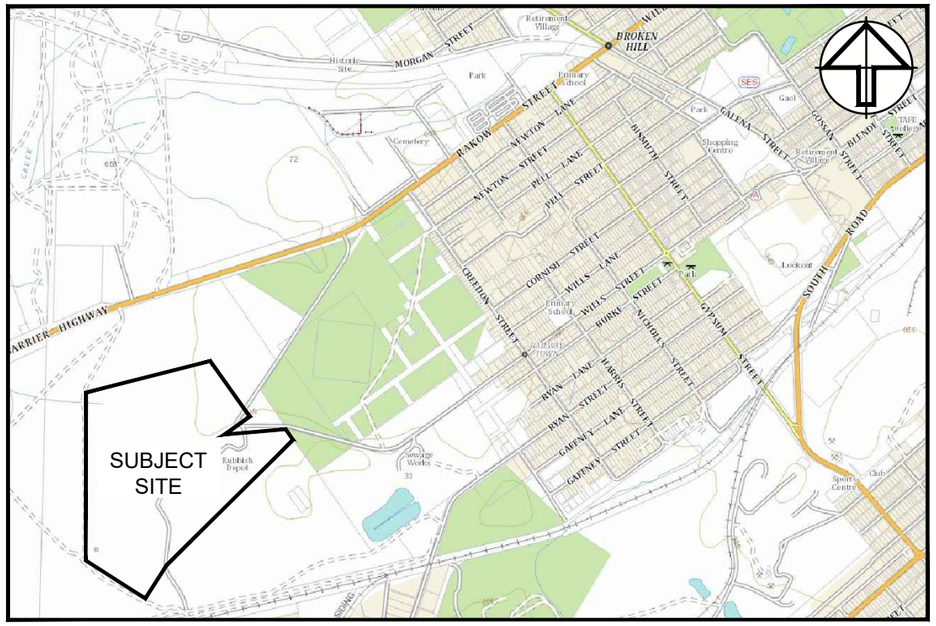
BROKEN HILL WASTE MANAGEMENT FACILITY

DEPOT ROAD, BROKEN HILL

BROKEN HILL CITY COUNCIL

CONCEPTUAL LANDFILL EXPANSION STAGING PLANS

SCHEDULE OF DRAWINGS	
DRAWING	TITLE
EV01	TITLE SHEET
EV02	EXISTING SITE LAYOUT
EV03	CONCEPTUAL LIFT 1 LAYOUT
EV04	CONCEPTUAL LIFT 2 LAYOUT
EV05	CONCEPTUAL LIFT 3 LAYOUT
EV06	CONCEPTUAL LANDFILL TYPICAL SECTIONS



SITE LOCALITY

NOT TO SCALE

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REV.	DATE	DFTD.	APPD.	DETAILS
A	23/06/16	AJD	BS	ISSUED FOR REVIEW

DRAWING SCALE

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: TITLE SHEET

PROJECT NUMBER 216074 | DRAWING FILE 216074_03A_EV01-EV06.dwg | ORIGINAL A1

DATA SOURCE

IMAGE SOURCE LPI TOPOGRAPHIC MAP SERIES | SET 03

STATUS FOR REVIEW | SHEET EV01 OF EV06

NOTES:

1. THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY PREPARED BY GRAHAM F. HOWE (DRAWING REF: C88-M15, DATED 30/06/2015) AND LIDAR SURFACE DATA OBTAINED FROM NEW SOUTH WALES LAND AND PROPERTY INFORMATION (LPI). THE FIELD SURVEY DATA HAS BEEN ALIGNED TO LPI SCIMS PM 83690 AND PM 83691 TO MERGE WITH THE LIDAR SURFACE DATA. THIS PLAN SHALL BE USED FOR CONCEPTUAL DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
2. VISIBLE SERVICES HAVE BEEN LOCATED ONLY. THE RELEVANT AUTHORITIES SHOULD BE CONTACTED FOR THE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
3. CONTOUR INTERVAL 0.5m.
4. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

LEGEND:

- EXISTING FENCE
- EXISTING EASEMENT
- EXISTING BANK
- EXISTING DRAINAGE LINE
- EXISTING ELECTRICITY
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER

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REV.	DATE	DFTD.	APPD.	DETAILS
A	23/06/16	AJD	BS	ISSUED FOR REVIEW

DRAWING SCALE

SCALE 1:2500 (A1)

0 50 100 150 200

0 50 100 150 200

SCALE 1:5000 (A3)

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: EXISTING SITE LAYOUT

PROJECT NUMBER 216074	DRAWING FILE 216074_03A_EV01-EV06.dwg	ORIGINAL A1
DATA SOURCE MULTIPLE		
IMAGE SOURCE		SET 03
STATUS FOR REVIEW	SHEET EV02 OF EV06	

NOTES:

1. THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY PREPARED BY GRAHAM F. HOWE (DRAWING REF: C88-M15, DATED 30/06/2015) AND LIDAR SURFACE DATA OBTAINED FROM NEW SOUTH WALES LAND AND PROPERTY INFORMATION (LPI). THE FIELD SURVEY DATA HAS BEEN ALIGNED TO LPI SCIMS PM 83690 AND PM 83691 TO MERGE WITH THE LIDAR SURFACE DATA. THIS PLAN SHALL BE USED FOR CONCEPTUAL DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
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3. CONTOUR INTERVAL 0.5m.
4. ALL VOLUMES AND LEVELS SHOWN ARE CONCEPTUAL ONLY AND ARE SUBJECT TO DETAILED ENGINEERING DESIGN.
5. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

7300
DP 1179131

6667
DP 822054

7301
DP 1179131

EXISTING BORROW PIT (TO REMAIN)

DEPOT ROAD

ROAD

BITUMEN

EXISTING DAM (TO REMAIN)

EXISTING WASTE STORAGE DAM (TO REMAIN)

CONCEPTUAL LIFT 1
(NS+5m AT SOUTHERN CORNER)
CAPPING LEVEL R.L. 295.000
TOTAL FILLING VOLUME
247735m³
APPROXIMATE LIFE 2.5 YEARS
AT 95000m³ PER YEAR

EXISTING CATCHMENT DAM (TO REMAIN)

EXISTING RECYCLING FACILITY (TO REMAIN)

BITUMEN ROAD

WILLS STREET

7304
DP 1179131

101
DP 757298

2076
DP 757298

7305
DP 1179131

7306
DP 1179131

7300
DP 1179131

LEGEND:

- EXISTING LIMITS OF FILLING
- EXISTING FENCE
- EXISTING EASEMENT
- EXISTING BANK
- EXISTING DRAINAGE LINE
- EXISTING ELECTRICITY
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER

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REV.	DATE	DFTD.	APPD.	DETAILS
A	23/06/16	AJD	BS	ISSUED FOR REVIEW

DRAWING SCALE

SCALE 1:2500 (A1)

0 50 100 150 200

SCALE 1:5000 (A3)

0 50 100 150 200

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: CONCEPTUAL LIFT 1 LAYOUT

PROJECT NUMBER 216074 | DRAWING FILE 216074_03A_EV01-EV06.dwg | ORIGINAL A1
DATA SOURCE INTERNAL
IMAGE SOURCE | SET 03
STATUS FOR REVIEW | SHEET EV03 OF EV06

NOTES:

1. THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY PREPARED BY GRAHAM F. HOWE (DRAWING REF: C88-M15, DATED 30/06/2015) AND LIDAR SURFACE DATA OBTAINED FROM NEW SOUTH WALES LAND AND PROPERTY INFORMATION (LPI). THE FIELD SURVEY DATA HAS BEEN ALIGNED TO LPI SCIMS PM 83690 AND PM 83691 TO MERGE WITH THE LIDAR SURFACE DATA. THIS PLAN SHALL BE USED FOR CONCEPTUAL DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
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3. CONTOUR INTERVAL 0.5m.
4. ALL VOLUMES AND LEVELS SHOWN ARE CONCEPTUAL ONLY AND ARE SUBJECT TO DETAILED ENGINEERING DESIGN.
5. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

7300
DP 1179131

6667
DP 822054

7301
DP 1179131

EXISTING BORROW PIT (TO REMAIN)

CONCEPTUAL LIFT 2
(NS+10m AT SOUTHERN CORNER)
CAPPING LEVEL R.L. 300.000
TOTAL FILLING VOLUME 1451535m³
APPROXIMATE LIFE 15 YEARS AT 95000m³ PER YEAR

DEPOT ROAD

ROAD

BITUMEN

EXISTING DAM (TO REMAIN)

EXISTING WASTE STORAGE DAM (TO REMAIN)

EXISTING CATCHMENT DAM (TO REMAIN)

EXISTING RECYCLING FACILITY (TO REMAIN)

BITUMEN ROAD

WILLS STREET

7304
DP 1179131

101
DP 757298

2076
DP 757298

7305
DP 1179131

7306
DP 1179131

7300
DP 1179131

LEGEND:

- EXISTING LIMITS OF FILLING
- EXISTING FENCE
- EXISTING EASEMENT
- EXISTING BANK
- EXISTING DRAINAGE LINE
- EXISTING ELECTRICITY
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER

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REV.	DATE	DFTD.	APPD.	DETAILS
A	23/06/16	AJD	BS	ISSUED FOR REVIEW

DRAWING SCALE

SCALE 1:2500 (A1)

0 50 100 150 200

SCALE 1:5000 (A3)

0 50 100 150 200

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: CONCEPTUAL LIFT 2 LAYOUT

PROJECT NUMBER 216074 | DRAWING FILE 216074_03A_EV01-EV06.dwg | ORIGINAL A1

DATA SOURCE INTERNAL

IMAGE SOURCE | SET 03

STATUS FOR REVIEW | SHEET EV04 OF EV06

NOTES:

1. THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY PREPARED BY GRAHAM F. HOWE (DRAWING REF: C88-M15, DATED 30/06/2015) AND LIDAR SURFACE DATA OBTAINED FROM NEW SOUTH WALES LAND AND PROPERTY INFORMATION (LPI). THE FIELD SURVEY DATA HAS BEEN ALIGNED TO LPI SCIMS PM 83690 AND PM 83691 TO MERGE WITH THE LIDAR SURFACE DATA. THIS PLAN SHALL BE USED FOR CONCEPTUAL DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
2. VISIBLE SERVICES HAVE BEEN LOCATED ONLY. THE RELEVANT AUTHORITIES SHOULD BE CONTACTED FOR THE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
3. CONTOUR INTERVAL 0.5m.
4. ALL VOLUMES AND LEVELS SHOWN ARE CONCEPTUAL ONLY AND ARE SUBJECT TO DETAILED ENGINEERING DESIGN.
5. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

7300
DP 1179131

6667
DP 822054

7301
DP 1179131

EXISTING BORROW PIT (TO REMAIN)

EV06 6

EV06 5

CONCEPTUAL LIFT 3
(NS+15m AT SOUTHERN CORNER)
CAPPING LEVEL R.L. 305.000
TOTAL FILLING VOLUME 1671395m³
APPROXIMATE LIFE 17.5 YEARS AT 95000m³ PER YEAR

DEPOT ROAD

ROAD

BITUMEN

EXISTING DAM (TO REMAIN)

EXISTING WASTE STORAGE DAM (TO REMAIN)

EV06 5

EXISTING CATCHMENT DAM (TO REMAIN)

EV06 6

EXISTING RECYCLING FACILITY (TO REMAIN)

BITUMEN ROAD

WILLS STREET

7304
DP 1179131

101
DP 757298

2076
DP 757298

7305
DP 1179131

7306
DP 1179131

7300
DP 1179131

LEGEND:

- EXISTING LIMITS OF FILLING
- EXISTING FENCE
- EXISTING EASEMENT
- EXISTING BANK
- EXISTING DRAINAGE LINE
- EXISTING ELECTRICITY
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER

GEOLYSE
ORANGE
154 PEISLEY STREET
P.O. BOX 1963
ORANGE, NSW 2800
orange@geolyse.com
www.geolyse.com
Ph. (02) 6393 5000
Fx. (02) 6393 5050

REV.	DATE	DFTD.	APPD.	DETAILS
A	23/06/16	AJD	BS	ISSUED FOR REVIEW

DRAWING SCALE

SCALE 1:2500 (A1)

0 50 100 150 200

0 50 100 150 200

SCALE 1:5000 (A3)

DO NOT SCALE FROM THESE DRAWINGS. ALL MEASUREMENTS SHALL BE CONFIRMED ON SITE AND WITH GEOLYSE PTY. LTD. PRIOR TO CONSTRUCTION

APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: CONCEPTUAL LIFT 3 LAYOUT

PROJECT NUMBER 216074 | DRAWING FILE 216074_03A_EV01-EV06.dwg | ORIGINAL A1

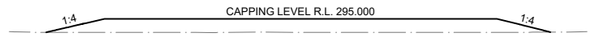
DATA SOURCE INTERNAL

IMAGE SOURCE

STATUS FOR REVIEW | SHEET EV05 OF EV06 | SET 03

NOTES:

1. THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY PREPARED BY GRAHAM F. HOWE (DRAWING REF: C88-M15, DATED 30/06/2015) AND LIDAR SURFACE DATA OBTAINED FROM NEW SOUTH WALES LAND AND PROPERTY INFORMATION (LPI). THE FIELD SURVEY DATA HAS BEEN ALIGNED TO LPI SCIMS PM 83690 AND PM 83691 TO MERGE WITH THE LIDAR SURFACE DATA. THIS PLAN SHALL BE USED FOR CONCEPTUAL DESIGN PURPOSES ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
2. VISIBLE SERVICES HAVE BEEN LOCATED ONLY. THE RELEVANT AUTHORITIES SHOULD BE CONTACTED FOR THE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
3. CONTOUR INTERVAL 0.5m.
4. ALL VOLUMES AND LEVELS SHOWN ARE CONCEPTUAL ONLY AND ARE SUBJECT TO DETAILED ENGINEERING DESIGN.
5. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

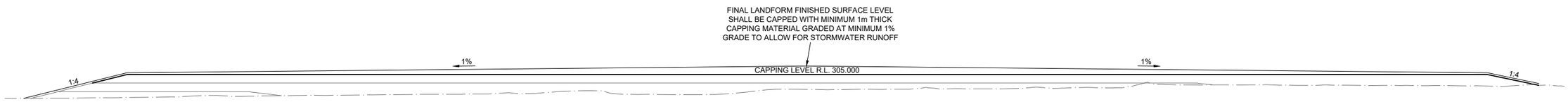


CONCEPTUAL LANDFILL LIFT 1 — 1 / EV03
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

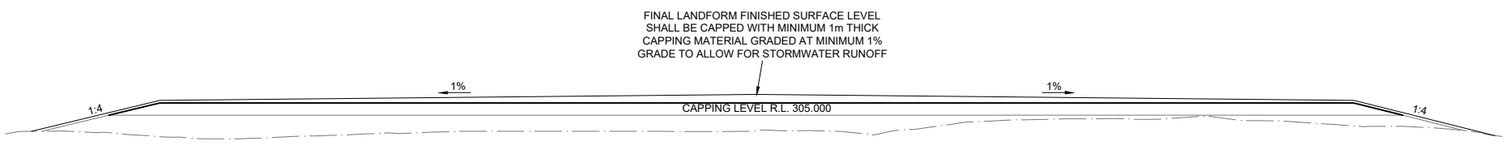
CONCEPTUAL LANDFILL LIFT 1 — 2 / EV03
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

CONCEPTUAL LANDFILL LIFT 2 — 3 / EV04
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

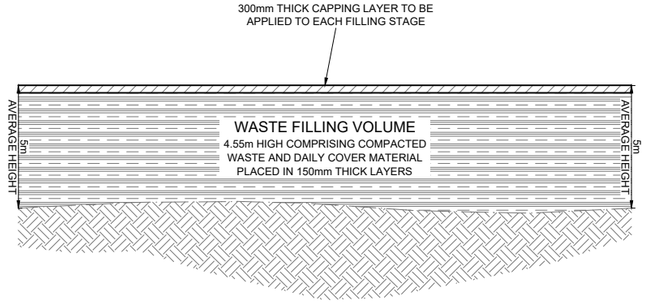
CONCEPTUAL LANDFILL LIFT 2 — 4 / EV04
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)



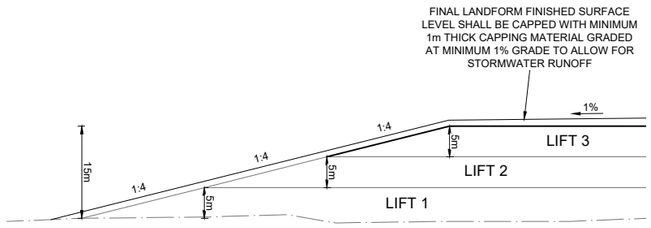
CONCEPTUAL LANDFILL LIFT 3 — 5 / EV05
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)



CONCEPTUAL LANDFILL LIFT 3 — 6 / EV05
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)



CONCEPTUAL LANDFILL LIFT COMPOSITION
SCALE 1:250 (A1)
SCALE 1:500 (A3)



CONCEPTUAL LANDFILL LIFT STAGING
SCALE 1:500 (A1)
SCALE 1:1000 (A3)

LEGEND:

DESIGN SURFACE

NATURAL SURFACE

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ORANGE
154 PEISLEY STREET
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DRAWING SCALE

SCALE 1:2500 (A1)

0 50 100 150 200

SCALE 1:5000 (A3)

0 50 100 150 200

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APPROVAL AUTHORITY: BROKEN HILL CITY COUNCIL

CLIENT: BROKEN HILL CITY COUNCIL

PROJECT: BROKEN HILL WASTE MANAGEMENT FACILITY

DRAWING: CONCEPTUAL LANDFILL TYPICAL SECTIONS

PROJECT NUMBER 216074 | DRAWING FILE 216074_03A_EV01-EV06.dwg | ORIGINAL A1

DATA SOURCE INTERNAL

IMAGE SOURCE | SET 03

STATUS FOR REVIEW | SHEET EV06 OF EV06

BROKEN HILL
CITY COUNCIL

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