ALICE SPRINGS TOWN COUNCIL

Regional Waste Management Facility - Environmental Management Plan 2021-2026

Prepared for:

Alice Springs Town Council
93 Todd St, Alice Springs
NT, 0870

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Alice Springs Town Council (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
620.30166.00000-R01-v1.1	16 Dec 2020	SB, CEK, CH, EJ, SM	CH	CL
620.30166.00000-R01-v2.0	20 Jan 2021	CH	CL	CL
620.30166.00000-R01-V3.0	12 Feb 2021	CH	CL	CL
620.30166.00000-R01-V4.0	12 Mar 2021	CH	CL	CL
620.30166.00000-R01-V5.0	7 Sep 2021	CH	CH	CH

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ABBREVIATIONS

ASTC	Alice Springs Town Council
C&D	Construction and Demolition
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EMP	Environmental Management Plan
FOGO	Food Organics and Garden Organics
EMP	Environmental Management Plan
NSW	New South Wales
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
RWMF	Regional Waste Management Facility

1 Introduction

Alice Springs Town Council (ASTC) currently operates and manages the Regional Waste Management Facility (RWMF) at 80 Commonage Road, Ilparpa (Figure 1). The RWMF operates in accordance with the following documents:

- The Landfill Environmental Management Plan (LEMP) prepared in 2010 by Tonkin Consulting (Document Reference 20091467RA2);
- The Environment-Protection Licence (EPL) 206, issued by the Northern Territory Environment Protection Authority (NT EPA) (see **Appendix A**).

This five-year Regional Waste Management Facility Environmental Management Plan (RWMFEMP) has been prepared by SLR Consulting Australia Pty Ltd (SLR) as an update to the existing LEMP for the RWMF. The RWMFEMP provides the environmental management measures for the RWMF for the period of 2021 -2026.

1.1 Objectives of the RWMFEMP

ASTC operates the RWMF with the objective to enhance the sustainability of Central Australia through a variety of long-term recycling and waste management strategies, providing an advanced waste management and recycling facility for the communities of Central Australia.

The RWMF operates under EPL206, issued by NT EPA. Under EPL206, the RWMF is permitted to undertake the following scheduled activities, as defined under the *Waste Management and Pollution Control Act 1998* (WMPC)*:*

- *Operating premises for the disposal of waste by burial that service, or are designed to service, the waste disposal requirements of more than 1000 persons.*
- *Collecting, transporting, storing, re-cycling, treating or disposing of a listed waste on a commercial or fee for service basis, other than in or for the purpose of a sewage treatment plant.*

Under EPL206, Condition 8, and the Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory NT EPA (2013), the RWMF is required to maintain and implement an Environmental Management Plan (EMP) for the facility.

The objective of the RWMFEMP is to:

- Ensure that the RWMF and the environmental practices and operations at the RWMF are improved;
- Minimise any off-site effects caused to the surrounding environmental and neighbouring areas;
- Provide an easily referenced guide to RWMF staff in relation to operating procedures; and
- Ensure that the management, operation, maintenance and monitoring of the RWMF is undertaken in compliance with EPL206.

1.2 Review of the EMP

This RWMFEMP is not a static document. It is a working document that requires regular review and updating to ensure ongoing suitability and effectiveness for environmental management at the RWMF.

This RWMFEMP shall be reviewed and updated regularly:

- to remain consistent with regulations and guidelines;
- should improvements to the management measures be required;
  - to take advantage of new technologies, innovations and methodologies that are superior to the management measures presented in the current version of the RWMFEMP, or
  - after changes are made with regards to the operation, landform and other aspects of the RWMF and its surroundings that may affect management measures in the current version of the RWMFEMP.

Changes made to the RWMFEMP, as well as the reasons for the changes made, will be documented as part of the review process. The version history of the EMP is:

Table 1 History of the RWMFEMP

LEMP	Title / Author	Summary of Amendments
1	Tonkin Consulting, 2010, Alice Springs Landfill, Landfill Environmental Management Plan (LEMP)	Nil – Original Issue of LEMP
2	SLR Consulting, 2021, Alice Springs Regional Waste Management Facility, Landfill Environmental Management Plan (LEMP) (this document)	Update to 2010 Version Updates to reflect latest NT EPA Guidelines (2013)

Copies of the original RWMFEMP, as well as all future versions of the RWMFEMP, shall be retained by ASTC. The most current version of the RWMFEMP will be made available at prominent locations such as the weighbridge office and staff amenities.

1.3 Compliance with Regulatory Requirements

The following regulatory requirements and guidelines have been considered in preparation of this RWMFEMP:

- Asbestos Disposal in the Northern Territory, NT EPA;
- *Northern Territory of Australia Waste Management and Pollution Control Act 1998* (the Act);
- *Northern Territory of Australia Workplace Health and Safety (National Uniform Legislation) Act 2011;*
- NT EPA EPL206; and
- NT EPA, 2013. Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory (the Guidelines).

1.4 Literature Review

In addition to the regulatory documents identified in **Section 1.3** above, this RWMFEMP has been prepared based on information from the following documents and materials provided by ASTC:

- Brian Blakeman Surveys, 2020, Alice Springs Regional Waste Management Facility, Landfill UAV Survey 2020, drawing number SLR RWMF Landfill 2020, dated 15.09.2020
- Cardno (NT) Pty Ltd, 2018, Landfill Environmental Management Plan Addendum, ASTC Recycling Centre
- EcOz Pty Ltd, 2020, Regional Waste Management Facility Masterplan
- Excel spreadsheet provided by ASTC titled ‘Waste tonnage 2018-19-20'

- Tierra Environment Pty Ltd, 2020, Alice Springs Town Landfill, Environmental Performance Monitoring Report – March 2020
- Tonkin Consulting, 2010, Alice Springs Landfill, Landfill Environmental Management Plan (LEMP)

2 Site Overview

2.1 Site Location and Description

The RWMF is located on 80 Commonage Road, Ilparpa, south west of the centre of Alice Springs, and covers approximately 56.6 ha. The site location is shown in **Figure 1** and further detail is provided in **Table 2**.

Table 2 Site Description

Alice Springs Regional Waste Management Facility	
Address	80 Commonage Road, Ilparpa, Northern Territory
Parcel	7902
Title	CUFT Volume 653 Folio 194
Plan	Survey Plan 88/059
Council	Alice Springs Town Council
Zoning	Community Purpose (CP)
Owner	Alice Springs Town Council

The site includes the existing ASTC landfill, which has operated since the 1960s. Recently, buildings associated with the waste transfer station and the Discovery Centre have been constructed close to Commonage Road.

The RWMF operates as a municipal resource recovery and waste disposal facility, and services domestic and commercial customers from Alice Springs and other areas of Central Australia, including Yulara, McDonnell Regional Council, Central Desert Regional Council and Barkly Regional Council.

Scale: 1:6,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 09-Dec-2020
Project Number: 620.30166

Data Source: Aerial imagery supplied by Nearmap (August, 2019)

SLR

SITE LOCATION PLAN

FIGURE 1

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2.2 Ownership and Zoning

The facility is located on Lot 7902, Township of Alice Springs. Lot 7902 is covered by Crown Lease in Perpetuity (CLP) 1968, which was issued under the *Northern Territory Crown Lands Act* in December 2002 for the purposes of Municipal Waste Management Facility and Ancillary Uses. The RWMFEMP is subject to reservations, provisions, conditions and covenants associated with CLP 1968.

The RWMF is currently zoned as Community Purpose. According to the NT Planning Scheme 2020, the purpose of the zone Community Purpose is to:

- *Provide for community services and facilities, whether publicly or privately owned or operated, in locations that are accessible to the community that it serves.*

The licensee, as identified in EPL206, responsible for managing and operating the RWMF is ASTC. The information for ASTC is below:

Address: Alice Springs Town Council (ASTC)
PO Box 1071
Alice Springs NT 0871
Phone: (08) 8950 0500
Fax: (08) 8953 0558

2.3 Surrounding Land Uses

The RWMF is directly bounded by rural land to the north and west, with the Ilparpa Swamp Wildlife Protected Area located to the west as undeveloped Crown Land under native title, and the Heavitree Range located to the north.

To the south, Commonage Road separates the facility from the Alice Springs Wastewater Stabilisation Ponds facility, which runs along the southern extent of the RWMF. To the north-east, the site is bound by Inarlenge, also known as the Alice Springs Town Camp or Little Sisters), which consists of ten to twenty dwellings, with the closest dwelling located within 250 m of the facility boundary.

Alice Springs town centre is located approximately 5 km to the north of the facility. The Heavitree Range is located to the north-east, and the Todd River is located approximately 500 m to the east of the facility.

The land to the east is zoned as Community Living and Community Purpose. The land to the south is zoned as Utilities and Organised Recreation for the Alice Springs Sewage farm. West of site, the land is zoned as Community Purpose, for the purpose of conservation and the natural environment. The lots east and west of site are also subject to Native Title, under DCD2000/001.

2.4 Physical Environment

2.4.1 Topography

The RWMF is located on undulating slopes within the broader Ilparpa Valley, in the foothills of the Heavitree Range, to the south west of Heavitree Gap.

Based on the recent drone survey undertaken for the RWMF by Brian Blakeman Survey (Brian Blakeman Surveys, 2020), the northern boundary of the RWMF has elevations between approximately 576 to 588 m AHD. The southern boundary, which runs along Commonage Road, is relatively flat and has an approximate elevation of 565 m AHD. The existing landfill has been constructed above ground, and its current central high point is at an elevation of approximately 591 m AHD.

The south-eastern section of the landfill at the RWMF is overlain by capped waste ranges between 10 m and 15 m in height. The northern edge of the landfill has numerous natural ridges running diagonally along it.

2.4.2 Geology and hydrogeology

The RWMF lies at the northern end of the Amadeus Basin. According to the NT Department of Primary Industry and Resources (DPIR) (now Department of Industry, Tourism and Trade (DITT)), the Amadeus Basin is a 'large intracratonic sedimentary basin'. Overtime, the basin has been impacted by intraplate tectonic movements, forming highly deformed rocks. To the north, the basin covers the Warumpi and Aileron provinces. To the south, the basin covers the Musgrave Province, and to the south east, the basin covers the Eromanga and Pedirka basins. The Amadeus Basin has a lithology comprised of dolostone, limestone, shale, sandstone, siltstone, quartzite, evaporate, diamictite and conglomerate.

According to groundwater bore log records from bores located at the RWMF, the local geology consists of clay, gravel, siltstone, dolomite and quartz conglomerate. The geology sheet showing the Alice Springs region, sheet 1:100,000 shows that the facility is located on the board of Quaternary alluvial deposits and Late Proterozoic Gillen Member deposits consisting of dolomites and siltstones.

The RWMF is located above a local aquifer, with consists of fractured and weathered rocks and minor groundwater resources. The aquifer is said to yield up to 0.05-0.5 litres/second. It is expected that the regional groundwater flow is directed east towards the Todd River, however the direction of the flow of deeper aquifers is unknown and not necessarily in the same direction. Based on a landfill investigation undertaken in December 1999, the investigation found evidence to support that local groundwater flow is towards the Todd River. Evidence from the 1999 landfill investigation and subsequent monitoring at site supports evidence that there is radial flow influence from the sewage ponds located south of the landfill.

ASTC monitors groundwater and leachate across the RWMF under the conditions of EPL206 on an annual basis, however due to the age of the landfill, no water quality or level baseline was prepared prior to activities commencing.

2.4.3 Surface Water and Flooding

There are no watercourses within the RWMF. The nearest surface water body to the RWMF is the Todd River, which flows in a north to south direction approximately 600 m to the east. The river is typically dry, only flowing in response to significant rainfall events in the catchment area. The Northern Territory Government Alice Springs Flood Mapping (Town Area – Sheet 1 and Rural Area West – Sheet 2) dated October 2015 indicates that the landfill site is located outside the area subject to flooding in a 1 in 100-year event.

Surface water flow from within the site would typically flow to the south towards Commonage Road. Tonkin (2010) identify that some drainage would flow east towards the Stuart Highway, via overland flow.

2.4.4 Climate and Meteorology

The nearest Bureau of Meteorology (BOM) weather station to the site is the Alice Springs Airport Station (station number: 015590) located approximately 10 km south east from the RWMF.

Details from the BOM on climatic distribution throughout the year are shown in **Table 2**.

Table 3 Climate Data from station number 015590 from 1941 to 2020

Month	Mean Max daily temperature (°C)	Mean Min daily temperature (°C)	Mean monthly rainfall (mm)
January	36.2	21.3	40.6
February	35.1	20.6	41.2
March	32.4	17.5	31.0
April	27.9	12.5	16.4
May	22.9	8.3	18.2
June	19.9	4.9	12.8
July	19.5	3.7	14.7
August	22.4	6.0	8.6
September	26.6	9.9	8.6
October	30.9	14.7	20.0
November	33.7	17.8	28.8
December	35.6	20.0	38.1
Annual	28.6	13.1	282.8

Wind direction information given by BOM indicates the prevailing winds at weather station number 015590 are easterly and south-easterly. Evaporation rates significantly exceed precipitation.

3 Environmental Management Framework

The environmental management framework for the RWMF is based on the principles of:

- ISO 14001 – Environmental management systems, Specifications with guidance for use; and
- ISO 14004 – Environmental management systems, General guidelines on principles, systems and supporting techniques.

3.1 Management Structures and Responsibilities

Responsibility for the RWMF and compliance with this RWMFEMP and the conditions of EPL206 rests with the licensee, ASTC. Landfill operations are managed by Council, or by a contractor engaged to operate the facility on behalf of Council. Responsibilities are set out in **Table 4**.

The licensee may engage specialist consultants or contractors to assist with certain tasks as required. Day to day responsibilities for carrying out operational procedures associated with this RWMFEMP reside with the facility operator, machinery and weighbridge operators, and others providing assistance as necessary.

Table 4 Management Structures and Responsibilities

Project component	ASTC	Technical consultants	Contractors	RWMF Operator	NT EPA
Licensing (original, updates, surrender)	Preparation and submission of license application Public consultation Liaison with NT EPA	Preparation of EMP Liaison with ASTC and NT EPA on technical issues	n/a	Operate site in accordance with EPL206 Operate site in accordance with approved EMP	Review and approve EMP Administer license Intervention or direct action in relation to breach of *Waste Mgt and Pollution Control Act*
Environmental management	Coordinate and manage environmental monitoring and investigations in accordance with EMP Submit annual monitoring reports to NT EPA	Undertake field investigations as required by ASTC	Comply with EMP for onsite construction activities	Operate site in accordance with approved EMP	Review of submitted documents Provide feedback to ASTC Intervention or direct action in relation to breach of *Waste Mgt and Pollution Control Act*
Construction projects, for example, new facilities, closure activities)	Seek development approval for projects Seek tenders for project work Administer construction projects	Design and documentation for projects Inspection / supervision Advice to ASTC	Undertake construction activities in accordance with contract	n/a	n/a
Landfill operation	Provision of annual reports to NT EPA Administer landfill operation contract	Advice to ASTC	n/a	Operate site in accordance with EMP and contract Continuous review and improvement of operations Administer and maintain operating systems, for example, WHS, Quality mgt etc.)	Review of annual reports Intervention or direct action in relation to breach of *Waste Mgt and Pollution Control Act*

Project component	ASTC	Technical consultants	Contractors	RWMF Operator	NT EPA
Weighbridge Operation	Administer weighbridge operation control	n/a	n/a	Operate site in accordance with EMP and contract Continuous review and improvement of operations Administer and maintain operating systems, for example, WHS, Quality mgt etc.)	n/a
RWMF Operations Weighbridge Rediscovery Centre Transfer Station Hazardous Waste Compound Glass Processing Facility Cardboard Compacting Facility	Administer contracts for operation	n/a	n/a	Operate site in accordance with EMP and contract Continuous review and improvement of operations Administer and maintain operating systems, for example, WHS, Quality mgt etc.)	Intervention or direct action in relation to breach of *Waste Mgt and Pollution Control Act*

3.2 Training

The operator is required to develop and administer training in Occupational Health and Safety and environmental awareness. Training will include environmentally sound work practices. Training, and refresher training, should be undertaken on a regular basis, and updated by the RWMF operator and site staff.

As a minimum, training should be conducted at the site by experienced personnel, as follows:

Table 5 Minimum training requirements

Type of training	Description
Environmental induction	This will be a brief introduction to the environmental impacts of the site, to the regulatory requirements for environmental control and to the broad system of environmental monitoring, records and reporting for the site. The fundamental message of the induction will be that environmental management is a necessary and important part of site management, and that the environmental management system will be visible and accessible to all site personnel.
Instruction in Basic Work Practices Aimed at Minimising Environmental Impact	This will include clear definition of work practices for site personnel, such as covering the working face, litter control, dust control, restriction of working hours, and the environmental basis for these practices. Operators of compaction or earthworks equipment are to be trained, skilled and competent at undertaking tasks required of them. Staff responsible for inspecting incoming wastes are skilled at identifying unacceptable waste types and will record all waste data accurately and consistently.
Targeted Environmental Awareness Training	This will be aimed at senior site personnel and key staff involved with the site. Aspects to be considered for this awareness training will be regulatory requirements in more detail, environmental monitoring programs and results, environmental auditing and community awareness.
Work Health and Safety	- Roles and responsibilities for all site personnel; - Summary of existing site conditions; - Evaluation of aspects and impacts; - Measures to mitigate or manage identified aspects and impacts; - Personnel protection standards and safe work instructions and procedures; - WHS monitoring; - Annual reviewing of WHS documents - Training and communication requirements for all involved in the works; - Evacuation procedures and emergency contacts established; and - Emergency Response Plan awareness and training

The training requirements help ensure that the RWMF is operated in accordance with EPL206, this EMP, ASTC policies and procedures, and relevant Regulatory frameworks and Guidelines.

Additional training may be administered by the operator in accordance with in-house requirements.

3.3 Recording and Reporting Procedures

3.3.1 Record Keeping

The following records will be kept on site or at the legal address of the Licensee for a minimum of four years and be made available to Council upon request:

- Copy of conditions of consent and authorisation (the License) under the *WMPC Act 1998;*
- Records of staff training. Records should be kept on site or electronically and maintained by the Contractor, and should include:
    - Who was trained;
    - When the person was trained;
    - The name of the trainer; and
    - A general description of the training content.
- Records of inspects conducted by staff;
- Records of complaints received;
- Records of inspections by NT EPA;
- Records relating to the nature, quantities, and source of waste, other than listed waste, received at the premises in each successive 12-month period following the commencement date of this license;
- Records relating to the activity undertaken and the listed waste handled by the licensee in each successive 12-month period, kept for at least two years, including:
    - Date of collection
    - Source of the listed waste
    - Name of the transport company, if not the licensee
    - Vehicle registration
    - Description of the listed waste
    - Quantity of the listed waste
    - The destination of the listed waste; and
    - Whether the listed waste was stored, recycled, treated or disposed of
- Records of non-conformances and corrective or preventative actions;
- Copy of RWMFEMP, including emergency response and closure and post-closure plan;
- Records showing waste storage locations for future possible retrieval;
- Copies of the Annual Reports.

It is the responsibility of the Licensee to ensure that the above records are kept up to date and are made available to NT EPA upon request.

3.3.2 Daily Records

The operator will complete a daily diary. This will document all relevant details of the day's activities, including, but not be limited to, weather conditions, litter and/or dust problems, and complaints. Further detail relating to any issues will be collected in the relevant reporting logs and referred to in the daily log.

3.3.3 Inspections and Reporting

The Operator will inspect the site weekly to verify that the operations are being conducted in an environmentally satisfactory manner and will complete a Weekly Inspection Report. A copy of the Weekly Inspection Report, together with copies of the Daily Log Sheets for that week shall be retained on site. The Weekly Inspection Proforma is given in **Appendix A**.

During March, June, September and December of each year the Operator will carry out a detailed quarterly inspection of the site. On completion of the inspection, the Operator will prepare a Quarterly Inspection Report. The Quarterly Inspection Report Proforma is given in **Appendix A**.

The reporting proformas for the RWMF are attached in **Appendix A**.

3.3.4 Annual Operations and Monitoring Report

Each year the Licensee will compile the Annual Operations Report and the Environment Monitoring Report. The Annual Operations Report shall be for internal use and the Environment Monitoring Report shall be for internal use and submission to NT EPA. The monitoring report:

- Includes monitoring results for gas, leachate, surface water, groundwater including interpretations of monitoring results by qualified personnel;
- Is prepared in accordance with the requirements of the NT EPA "*Guideline for Reporting on Environmental Monitoring.*"
- Includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years, where data is available, and
- Includes an assessment of the environmental impact from the activity.

3.4 Framework for Internal and External Reporting

As part of the EMS the Licensee shall implement several internal and external recording and reporting procedures, to ensure regular and easy communication between all parties. Informal internal communication will be achieved largely through regular contact among site personnel, but will be supplemented by regular operational meetings, which will provide the opportunity for environmental matters to be raised by on-site personnel. Keeping site personnel informed about environmental investigations, monitoring, reports and trends will assist greatly in sustaining general environmental awareness.

3.4.1 Internal Environmental Audits

Internal environmental audits will be undertaken by the Licensee to annually assess compliance with the Licence conditions and the RWMFEMP. The compliance audit will assess the following:

- Waste and recyclable materials, types and quantities;
- Operational procedures including;

  - road and traffic management;
  - daily cover;
- Leachate collection system;
- Landfill gas management;
- Groundwater testing management, monitoring and test results;
- Stormwater management;
- Landscaping;
- Odour, litter, noise and dust management;
- Bird, vermin and weed control;
- Emergency contingency plans;
- Complaints register and actions or remedies effected.

3.4.2 Communication with NT EPA

Communication with NT EPA will be both formal, through reporting routines, and informal through regular contact. Formal reporting routines include:

- Waste data reporting;
- Annual Operations and Monitoring Reports, RWMFEMP updates.
- Reporting non-conformances (see **Section 3.6)**

Informal or non-routine correspondence may include discussions relating to the following:

- General environment management or operational enquiries;
- Receipt and investigation of environmental complaints, and timely responses in dealing with manageable issues.

3.4.3 Communication with Community

Any need for active engagement or communication with the local community will be considered by Council in consultation with the ASTC Environment Advisory Committee.

3.5 Complaints

A record of complaints received by the facility will be kept by the Operator. An example reporting proforma is given in **Appendix A**. The complaints shall include the following information:

- The person to whom the complaint was made;
- The person responsible for managing the complaint;
- The date and time the complaint was reported;
- The date and time of the event(s) that lead to the complaint;
- The contact details of the complainant if known, or where no details are provided, a note to that effect;

- The nature of the complaint;
- The nature of the event(s) giving rise to the complaint;
- Prevailing weather conditions at the time, where relevant to the complaint;
- The action taken in relation to the complaint, including any follow-up contact with the complainant and
- If no action was taken, why no action was taken.

3.6 Non-Conformance and Corrective and Preventative Action

The EMS requires the use of the Non-Conformance and Corrective/Preventative Action form to be completed in response to events or issues leading to a non-conformance within the RWMF. Activities that may lead to the identification of a non-conformance include:

- Observations or findings from an environmental audit
- Observations made by site personnel and recorded in the daily log or quarterly inspection records;
- From complaints made by the general public or by users of the site, and recorded on a complaint form;
- As a consequence of the interpretation of monitoring data.

Completed Non-Conformance and Corrective/Preventative Action forms will be kept on site to provide a traceable record of non-conformance events or issues and a copy provided to the Site Manager. A sample Non-Conformance and Corrective/Preventative Action form is included in **Appendix A**. Corrective and preventive actions will be specified in non-conformance documentation, which will be signed off by the ASTC Manager and Director - Technical Services when appropriate actions have been completed. The non-conformance and the corrective and/or preventative actions will be documented in the Annual Report.

Many environmental observations made by personnel on site will be most appropriately dealt with through daily inspections, with the non-conformance system used to address environmental issues as necessary. Similarly, complaints made by users or the community may be dealt with through the non-conformance system, as required.

The licensee will keep records of all non-compliances with this license. These records will allow the licensee to comply with the non-compliance notification conditions of EPL206:

- The Licensee must notify the NT EPA of any non-compliance with this license by completing the Non-Compliance Notification via NT EPA Online (https://ntepa.nt.gov.au/make-a-report) or by emailing waste@nt.gov.au, as soon as practicable after, and in any case within 24 hours, first becoming aware of the non-compliance.
- The Licensee must include in the notification of non-compliance the following information:
    - When the non-compliance was detected and by whom;
    - The date and time of the non-compliance;
    - The actual and potential causes and contributing factors to the non-compliance;
    - The risk of environmental harm arising from the non-compliance;
    - The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;

  - Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; and
  - If no action was taken, why no action was taken.
  - A date when an incident investigation report will be submitted to the NT EPA.
- The licensee must implement, maintain and follow an Emergency Response Plan that addresses procedures for responding to emergencies associated with the activity that may cause environmental harm.

4 Site Operations

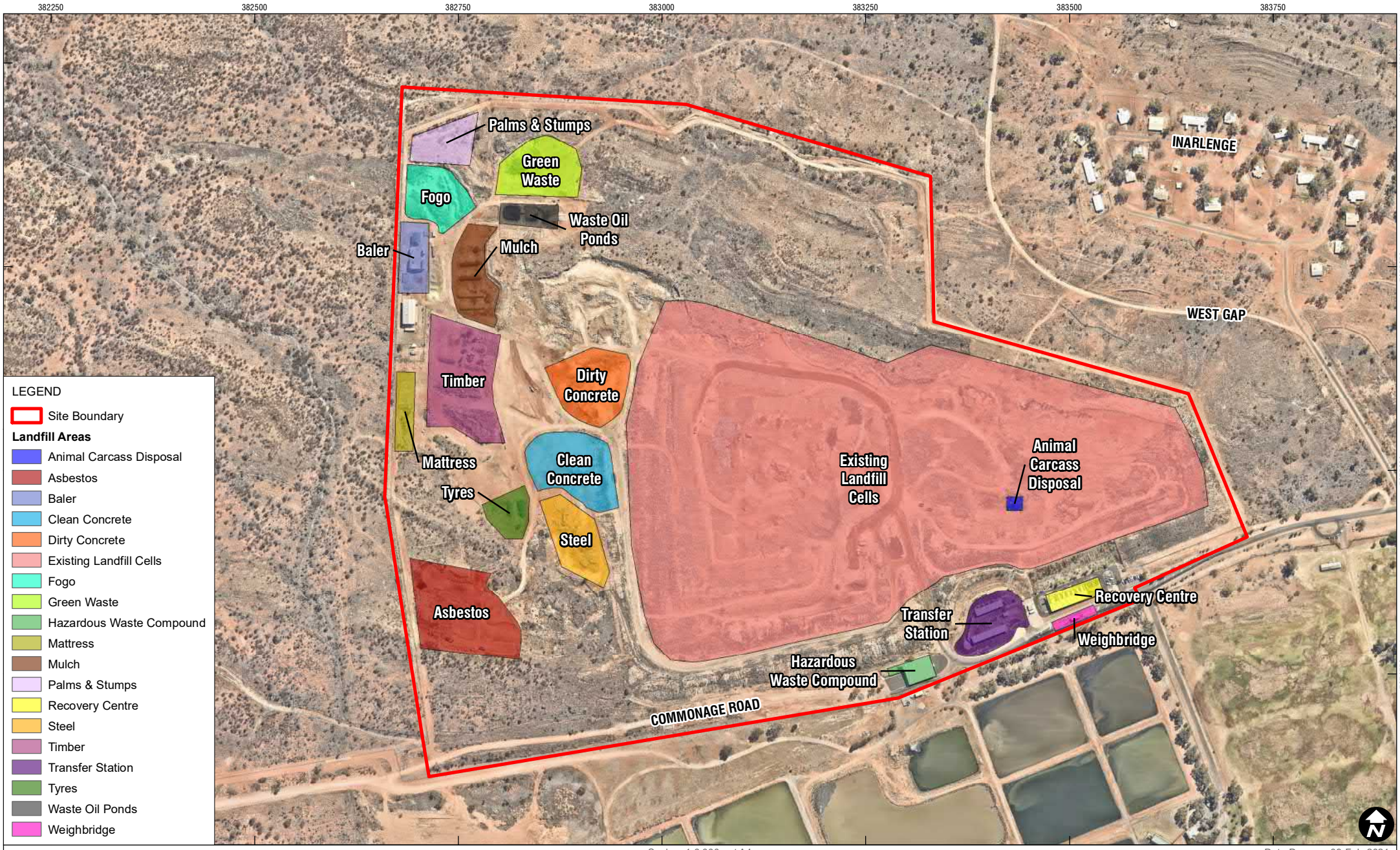
4.1 General Operations

The site shall only be operated in accordance with the activities for which the Licence has been issued as stipulated in the Licence and shall not modify or alter the site to accommodate activities for which the site is not licensed.

The RWMF consists of the following existing facilities and operational areas:

- Gatehouse and Weighbridge;
- Site Office;
- Rediscovery Centre, previously known as the Tip Shop;
- The landfill, comprising a range of areas including temporary stockpiles;
- Transfer Station;
- Hazardous Waste Compound;
- Oil sludge holding ponds;
- Glass Processing Facility; and
- Cardboard Compacting Facility.

A map of the existing facilities is shown in **Figure 2.**



Scale: 1:6,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 09-Feb-2021
Project Number: 620.30166

Data Source: Aerial imagery supplied by Nearmap (August, 2019)

SLR

REGIONAL WASTE MANAGEMENT FACILITY OPERATIONS

FIGURE 2

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4.2 Site Control

4.2.1 Hours of Operation

The RWMF is open to the public seven days a week from 8:00 am to 4:00 pm. The RWMF is closed on Good Friday, Christmas Day and New Year's Day.

4.2.2 Staffing

Staffing will vary across the operational areas of the site. The Licensee will ensure that the RWMF is appropriately staffed by trained, competent and experienced personnel. Training responsibilities are identified in **Section 3.3.**

Generally, a minimum of at least four staff members will be present at the site. The gatehouse is to be attended at all operational hours. If ASTC trucks are required to access the RWMF after hours, at least one RWMF staff member will be in attendance at the site during the time the trucks are present.

4.2.3 Site Security

Outside operating hours, the main entrance will be locked and ASTC will maintain the security of the site. The gatehouse and weighbridge office will be locked outside operating hours.

Keys to gates and buildings will be kept only by necessary ASTC site staff members.

The gates and surrounding fenced areas will be inspected daily.

4.3 Health and Safety Procedures

The Licensee will take all necessary precautions to ensure the safety of all staff, contractors and visitors at the RWMF.

The Licensee will provide and maintain first aid treatment facilities at the staff amenities facility, weighbridge office and landfill, and will have a trained first aid provider on site during operating hours.

Staff shall be familiar with, and able to readily carry out, their required duties in accordance with all relevant workplace health and safety (WHS) regulations and guidelines.

The Licensee shall ensure all staff and contractors are informed of hazards at the RWMF, are aware of their responsibilities with respect to relevant WHS regulations and guidelines and follow all applicable safe work procedures.

4.4 Emergency and contingency procedures

4.4.1 Emergency Management

The Licensee will implement emergency management procedures for the operation of the RWMF including, but not limited to, the following:

- Evacuation procedure;
- Fire emergency procedure;

- Chemical, asbestos and oil spills procedure; and
- Hazardous wash down area procedure.

The Operator will be required to report any accidents and/or incidents relating to the operation of the RWMF, including safety and environmental incidents.

The non-conformance and/or corrective action process will be established by the Operator in accordance with contractual requirements and will require procedures to capture safety incidents, accidents, spills, contamination incidents, toolbox meetings, and safety audits.

Emergency response procedures and spill kits will be available to staff at the RWMF, including equipment operators, and include associated emergency procedures relating to chemical and/or oil spills and asbestos. Any chemicals and/or oils that are spilled and identified from the site will be taken to the hazardous compound on site for storage and disposal. Further details on emergency procedures are presented in Section 12 of this RWMFEMP.

4.4.2 Operation in Adverse Weather

The Licensee will ensure that the landfill is able to accept permitted waste under all reasonable weather conditions without compromising the environmental management of the site.

Should ASTC consider weather conditions will hinder effective environmental management of the site, no further waste will be accepted at the RWMF until weather conditions become more favorable, with respect to environmental management of the site, or alternative environmental management measures are identified and implemented.

4.5 Site Infrastructure

4.5.1 Gatehouse and Entrance Facilities

The RWMF's entrance consists of the entrance gates, employee's car park and visitor's car park, the gatehouse, weighbridges, the office, and amenities.

Photo 1 – RWMF Entrance and Weighbridge

The gatehouse includes a weighbridge used at entry and exit of site. The weighbridge has been in operation since 2013. The weighbridge has dual scales on either side of the gatehouse, which allows ASTC to weigh the incoming residential and commercial waste.

4.5.2 Site office

The RWMF office is used by ASTC staff to undertake meetings, daily safety checks and manage the operations of the site.

4.5.3 Rediscovery Centre

The Rediscovery Centre is a retail business that customers can access to buy second hand recycled and salvage items. Customers can also drop off items to be resold by ASTC at the centre. Items typically sold at the Rediscovery Centre include:

- Recovered building materials;
- Electrical appliances and electronic waste;
- Household items and whitegoods; and
- Bicycles and toys.

Electrical appliances and electronic must be certified by an electrician before being sold to customers. The Rediscovery Centre must be managed effectively to ensure the below:

- The prevention of entry of unauthorised persons or waste;
- The promotion of the sale of salvageable, reusable or recyclable items; and
- A clean, tidy and safe environmental is available for staff and for customers.

Photo 2 – The Rediscovery Centre

ASTC has a document for the Rediscovery Centre titled 'Tip Shop – Operations and Management Guidelines'. The guidelines are attached in **Appendix B**.

4.5.4 Waste Transfer Station

The transfer station began operating in 2013. The transfer station is used by residents to segregate and dispose of their waste.

Photo 3 – Household recycling drop off area

Photo 4 – Household recycling drop off area

Photo 5: Transfer Station

Photo 6: Household recycling drop off area

Incoming waste is screened by ASTC staff before disposal. Recyclables are separated so that they are not disposed to landfill.

4.5.5 Hazardous waste compound

The hazardous waste compound is a fenced area that receives and temporarily stores chemical and hazardous waste. Chemicals received from the public are registered before being stored in the hazardous waste compound.

The household hazardous waste compound accepts:

- Household chemicals less than 5 L. Household chemicals include aerosol cans, insect sprays, pest poisons, household cleaners, pharmaceuticals, mothballs and old smoke detectors;

- Garden chemicals less than 5 L. These include fertilisers, fungicides, herbicides and insecticides;
- Automotive chemicals less than 10 L. These includes batteries and oils such as motor and sump oils; and
- Gas cylinders.

The facility does not accept chemical wastes in containers larger than 5L or commercial, farm or industrial wastes. Commercial or industrial customers are to be directed by ASTC staff to hazardous waste contractors.

The hazardous compound is fenced by a 2.4 m high chain mesh security fence with a barbed wire top. The compound included bunded areas, ventilated shed, used oil receptables and additional storage space to be used if required.

If fires occur at the compound, operators are to inform the NT Police, Fire and Emergency Services. Only NT Police, Fire and Emergency Services are authorised to control fires at the hazardous waste compound.

The hazardous items are periodically removed by waste contractors licensed to remove and appropriately manage the hazardous materials.

Photo 7 - Hazardous Waste Compound

4.5.6 Oil sludge holding ponds

There are two open oil sludge holding ponds on site, used for the storage of fats, oils and greases from commercial customers. The ponds were constructed in 2015 and are lined with compacted clay material and synthetic bidim geotextile to prevent leakage into groundwater. Commercial customers provide grease trap waste, such as from hotels, for treatment into the first pond. After settlement of the solids, the water moves into the second pond, for evaporation.

EPL 206 permits the treatment of liquid wastes to the oil sludge holding ponds only for the purposes of evaporation. Periodically the site operator may require sludge to be collected and disposed of. A contractor should be engaged to remove the sludge who is lawfully allowed to transport this waste to a suitably licensed treatment or disposal facility.

The RWMF procedure for oil management, which includes procedures for vehicles delivering waste oils to the facility, as well as pond and effluent management are included in Appendix B.

Photo 8 – Oily water storage pond

Photo 9 – Oily water storage pond

4.5.7 Glass processing facility

The glass processing facility includes a glass crusher that crushes glass into different grades. The crushed glass is separated and stockpiled into glass of different grades.

Photo 10 – Glass crushing facility

4.5.8 Cardboard compacting facility

The cardboard compacting facility consists of a cardboard compactor that compacts and bales a range of recyclable items. The bales are sent interstate for further processing.

Photo 11 – Cardboard compacting facility

4.5.9 Green waste and mulch processing

Green waste is delivered and stockpiled in the north western corner of the RWMF. Mulch pasteurisation is undertaken on site. Mulch is used as intermediate cover for the landfill.

Mulching practices must be undertaken, at a minimum, 100 m away from any fuel products or infrastructure. The green waste processing area must be surrounded by a 300 mm high soil bund.

Photo 12 – Mulch pasteurisation

Photo 13 – Mulch pasteurisation

Green waste processing is to be undertaken in accordance with best practice standards and guidelines for mulching and with ASTC policies and procedures. A Mulch Standard and a Mulch Production Work Instruction have been developed by ASTC for the processing of mulch. This document adheres to AS 4454-2012 (Australian Standards compost, soil conditioners and mulches. The standards are attached in **Appendix D**.

4.5.10 Tub Grinder

A tub grinder is located on site and is used to grind large pieces of timber.

Photo 14 – Tub grinder

4.5.11 Landfill

The landfill currently has two active cells identified as Stage 1, and Stages 2, 3 and 4 with the latter three stages combined into one active cell. The presence or otherwise of a liner at the landfill is unknown as the lining system is undocumented. It is understood that landfilling started formally in the 1960's.

Asbestos is disposed at the site, in a cell located to the south west of the landfill cells. A grid system is used to record the location details of each asbestos disposal. Animal carcasses are also disposed of in the landfill.

4.5.12 Stockpiles

The north western corner of the RWMF consists of several organised stockpiles. Several of the materials in the stockpiles are reused by ASTC. The stockpiles on site include the below:

- Green waste;
- Mulch;
- Timber;
- Mattresses;
- Plants and stumps;
- Tyres;
- Glass separated by different grades;
- Dirty concrete;
- Clean concrete; and
- Steel.

In addition, additional temporary stockpiles of materials for the Discovery Centre exist within the site.

Photo 15 – Recycling stockpiles (example)

Photo 16 – Recycling stockpiles (example)

Figure 17 – Tyre stockpile

Figure 18 – Green Waste stockpile

4.6 Access and Traffic Management

4.6.1 Gatehouse and Entrance Facilities

The site's entrance consists of the entrance gates, to prevent unauthorised access to the site both during and after hours, for example, operating hours for the landfill are between 8:00 am to 4:00 pm, employee's car park and visitors car park, the gatehouse, weighbridges, the office and amenities.

All visitors to the site other than those disposing of waste or browsing the Rediscovery Centre are required to sign in and out of the site visitor register or as directed by ASTC. Vehicles exit the facility through the same gates. All vehicles entering the landfill must cross the weighbridge before proceeding to the disposal areas as directed by the gatehouse attendant.

Additional requirements for sign-in may be placed upon site visitors in relation to public health requirements.

4.6.2 Site Entrance

Vehicles entering the site must enter through the entrance gates on Commonage Road before proceeding to the gatehouse and weighbridge. Vehicles exit the facility through the same gates. All vehicles entering the landfill must cross the weighbridge before proceeding to the disposal areas as directed by the gatehouse attendant.

4.6.3 Internal Access Road

Vehicles travelling to and from the landfilling area are to only use the access road provided. The main road through the landfill is Commonage Road, for example, which includes sealed and unsealed parts and has a maximum speed limit of 20 km/hour.

The construction specification for the internal access roads will be on a 'fit for purpose' basis, with due consideration being given to local conditions, the levels of traffic and the types of vehicles that will use the road. All roads used for public access shall be constructed for all-weather access with good selection of gravel and non-gravel material and regular maintenance to minimise erosion and access issues. Specifically, roads will be constructed to take into account site drainage requirements.

Generally, all roads that are to be used extensively by external vehicles shall have the following specifications:

- Primary access road wide enough for two (2) vehicles to pass safely (that is, 2-lane) or a minimum of 8 m road surface plus 2.5 m shoulders on each side;
- Secondary access roads wide enough for two (2) vehicles to pass safely (that is, 2-lane) or a minimum of 6 m road surface plus 1 m shoulders on each side;
- Maximum longitudinal gradient 1 (vertical) is to 8 (horizontal); and
- Minimum one-way crossfall 4% (note: two-way (of 2.5%) cross fall is preferred.

Roads constructed within the RWMF will also need to take account of site drainage requirements to comply with water management planning.

4.7 Signage

The Licensee will ensure that all appropriate commercially manufactured signage is installed and maintained as required by the Guidelines, including but not limited to signage indicating:

- That the Licensee holds an authorisation to operate the site as a landfill under the *WMPC Act 1998* and the Authorisation number;
- At the site entrance the types of wastes the site is licensed to receive including listed wastes and gate fees;
- Emergency 24-hour contact details;
- Warning signs displayed prominently;
- Traffic directional signage, appropriate for the safe and orderly management of traffic on the site;
- "Access prohibited to unauthorised persons";
- Speed limits;
- Operating hours;
- Concerns and complaints arrangements;

- Fuel Storage.

Fuel for on-site machinery will only be stored at the site in an appropriately bunded facility that is separate from structures or green waste stockpiles. No fuel will be stored in the disposal cell area; and machinery will refuel at the bunded facility or fuel will be transported to machinery on an "as needs" basis.

4.8 Waste Management – Transfer Station

Items are dropped off as directed by the gatehouse attendant. Users of the transfer station deposit material into single stream vessels through the drive through facility. Waste collected at the waste transfer station is be stored temporarily and processed on-site or off-site, or resold in the Rediscovery Centre.

The following material is accepted at the transfer station:

- Glass;
- Plastic;
- Paper and cardboard;
- Ferrous metals and non-ferrous metals;
- Electronic equipment etc.;
- Reusable products not requiring recycling or reprocessing, e.g. Water tanks, white goods;
- Inert soil materials;
- Building and demolition waste;
- Timber; and
- Tyres.

Green waste is segregated and stockpiles for mulching and reuse by ASTC.

The RWMF accepts fats, oils and greases (FOGs) from commercial businesses. These FOGs are provided by commercial operators into the two oil ponds on side for evaporation. The ponds were constructed in 2015 and are lined with a synthetic liner and compacted material. Residual sludge waste from the ponds may be required to be removed from the ponds periodically to maintain freeboard and effectiveness of evaporation.

4.9 Waste Management – Landfill

The landfill has two active cells, Stage 1 and Stage 2, 3, 4 combined. Stage 1 is for deep burials of animal carcasses. Stage 2, 3 and 4 is for putrescible, construction and demolition (C&D) waste. There is also an asbestos disposal cell to the south west of the landfill.

4.9.1 Waste Types

License EPL206 permits the following waste types to be disposed by burial at the site.

- Putrescible waste
- Solid inert waste; and
- Listed waste as specified in **Table 6** below:

Table 6 Listed Wastes Authorised to be Handled

Listed Waste	Collection	Transport	Storage	Treatment	Recycling	Disposal
Acidic solutions or acids in solid form	✓	×	✓	×	×	×
Asbestos	✓	×	✓	×	×	✓
Basic solutions or bases in solid form	✓	×	✓	×	×	×
Containers that are contaminated with residues of a listed waste	✓	×	✓	×	×	×
Grease trap waste	✓	×	✓	✓	×	×
Lead, lead compounds	✓	×	✓	×	✓	×
Tyres	✓	×	✓	×	✓	✓
Waste mixtures, or waste emulsions, of oil and water or hydrocarbon and water	✓	×	✓	✓	×	×
Soils contaminated with a listed waste	✓	×	✓	×	×	×
Surface active agents (surfactants) that contain principally organic constituents and that may contain metals and inorganic materials	✓	×	✓	×	×	×

✓ Activity authorised by EPL206 × Activity not authorised by EPL206

The RWMF is permitted to dispose of animals within a dedicated cell on the existing landfill. Strict animal disposal procedures are in place (see Appendix B for the detailed management procedure). An animal disposal specific Job Safety and Environmental Analysis register is utilised.

Waste soil will not be accepted from the public or commercial operations unless a soil contamination report by an environmental consultant, including chemical analysis data from a NATA accredited soil testing laboratory, confirms that the soil does not contain contaminants including asbestos beyond acceptable thresholds.

In the event of interstate Listed Waste arriving at the landfill the following procedure will be implemented:

- The transport contractor will be asked to present the Waste Transport Certificate and details of their Listed Waste Licence. Failure to provide the documents will result in the waste materials not being accepted.
- In the case of a Certificate and Licence, the registration number of the delivery truck and the Listed Waste licence and certificate, details of transport contractor, and type, weight of all waste must be recorded.
- In the case of no Certificate or Licence, the registration number of the delivery truck, the details of the trucking contractor and the waste type. The trucking contractor will be instructed of its obligations under the “the National Environment Protection (Movement of Controlled waste Between States and Territories) Measure (Controlled Waste NEPM)”. The relevant NT and interstate environmental state authorities will be informed of the incident.

4.9.2 Waste Quantities

According to weighbridge data[1] provided by the ASTC, 47,350 tonnes of material were received at the RWMF between 2017 and 2018 with 11.39% recycled from the facility. Between 2018 to 2019, 45,862 tonnes were received with 8.04% being recycled, and between 2019 to 2020, 60,958 tonnes were received with 39.5% being recycled. According to the Masterplan prepared by EcOz for the RWMF, the volume of waste landfilled in 2019 was the lowest volume recorded since 2015.

Table 7 below shows the most recent weighbridge data for the RWMF for the year 2019 to 2020.

Table 7 RWMF Weighbridge Data 2019 - 2020

Material	Accepted (tonnes)	Recycled (tonnes)	Total landfilled (tonnes)
Animal Carcass	8.6	-	8.6
Asbestos	430.61	-	430.61
Building Material	-	180.02	-
Cardboard and Paper	540.82	260.88	279.94
Clean Fill	26,994.34	6,029.34	20,965
Concrete	2,387.22	3,472.20	-
Container Deposit	-	38.85	-
Demolition Materials	5,980.69	-	5,980.69
Domestic Bins	6,991.30	-	6,991.30
Drop off (Shop)	-	121.14	-
Electronic Waste	127.91	25.03	102.88
Glass	124.19	61.73	62.46
Green Waste	2,146.38	299.94	1,846.44
Household Goods	-	75.74	-
Liquid Waste	1,184.11	-	1,184.11
Mattresses	208.02	-	208.02
Metals	641.56	1,183.65	-
Mixed Waste	12,495.10	-	12,495.101
Timber and Pallets	670.67	1,656.30	-
Tyres	25.98	5.26	20.72
Total	**60,957**	**13,410**	**47,547**

4.10 Waste Management Operations

4.10.1 Receiving Waste

Once customers enter the site through Commonage Road, waste materials will be inspected and fees collected by the Operator at the gatehouse. Public or contractor vehicles will be directed to the appropriate disposal location, waste transfer station, hazardous waste compound, Tip Shop or green waste area. Listed Waste materials, apart from shredded tyres and asbestos, will be directed to the hazardous waste compound.

Unauthorised waste will be identified, where possible, at the time of disposal and appropriate measures taken to remove it from the waste stream. Where possible waste vehicles containing unauthorised waste will be prevented from tipping their load.

[1] Excel spreadsheet provided by ASTC titled 'Waste tonnage 2018-19-20'

4.10.2 Waste Inspection and Recording

Waste materials will be inspected and fees collected by the Operator at the gatehouse. The Operator is required to record waste quantities received at the site, in accordance with the Schedule set out in **Table 8**.

Table 8 Records of Waste Types and Quantities

Item	Detailed requirement
Key information	Number/type of delivery vehicle Waste quantities, measured using weighbridge Volumetric survey of placed waste and estimate of remaining airspace
Location	Weighbridge
Methodology	Maintain accurate, comprehensive and up to date records Carry out spot checks on incoming loads to ensure compliance
Responsibility	Operator
Frequency	Continuous Annual survey (minimum)
Duration	Operating life of facility
Acceptance Criteria	All key information recorded, stored and reported
Reporting – Internal	Daily returns completed by the weighbridge operator Monthly summaries of returns collated by the Operator
Reporting – External	Annual Report submitted to NT EPA 24-hr emergency contact
Non-conformance Procedures	Refuse non-complying material Check/review adequacy of monitoring procedures Review training/need for training Implement corrective actions and modify procedures as necessary
Management Review	Licensee to review and implement recommendations from Annual Operational and Environmental Monitoring Report

The Operator will monitor waste to be sent to landfill prior to disposal and compaction for recoverable or hazardous materials. When recyclable items or hazardous items such as used tyres, gas cylinders and car batteries are found, they shall be removed and sent to the appropriate storage location at the RWMF until they are removed from site.

4.10.3 Waste Unloading, Deposition, Compaction and Conversion

Waste will be disposed of in a manner that minimises any nuisance or environmental impact.

Customer vehicles will enter the assigned area, deposit waste at or adjacent to the drop-off location, as directed, and exit the area. Barricading is to be provided to separate public vehicles from plant and equipment of contractors.

There is a dedicated C&D waste processing area. C&D waste is deposited and set aside for reuse. This includes C&D waste such as timber, clean and dirty concrete, steel and tyres.

The following measures are to be undertaken to ensure effective and efficient waste disposal and compaction at the site:

- The Operator will remove or appropriately manage bulky items that hinder compaction such as white goods, mattresses, timber pallets, cardboard and tyres.
- Refuse once unloaded, will be pushed up against either a side slope or the previous days refuse.
- The layers should be sloped away from the sides and final surfaces of the landfill, so as to minimise the chance of leachate tracking to the edge of the fill and breaking out on the surface.
- The residual waste at the tip face will be pushed across the working face and will be compacted in layers, comprising 300 mm to 600 mm uncompacted thickness, by trafficking over each layer with specialised waste compaction equipment, until the lift height, approximately 2 m, has been attained;
- With this machinery the Operator should be aiming for three to five passes, one pass being back and forth over the waste, to achieve optimum density. A greater number of passes may not achieve any greater density so will be wasted effort and this will be gauged by the operator.
- The compaction effort should be in the direction upgrade to the slope. This way the braking force of the compactor delivers its force more directly into the waste face. If a working face does not allow compaction upslope, reasonably effective compaction can be achieved along a flat surface. Whenever possible, the Operator should avoid compacting waste in a downslope direction.
- The Operator will aim to achieve a target compacted waste density of 850 kg/m^3, as monitored by topographical survey and weighbridge records, by applying an evenly consolidated load by waste compacting equipment.
- Daily cover is to be stripped back and stockpiled the following day prior to daily filling for reuse as daily cover. Cover soil contaminated with waste shall be used in the first layer of daily cover.
- A minimum of 150 mm of daily cover will be applied to the compacted wastes at the end of each day as a minimum. No putrescible waste shall remain uncovered at the end of the working day. More frequent application of daily cover may be required such as on windy days.
- If clean fill for soil cover totals more than 15% of the total waste received annually at the RWMF, then alternative daily cover options should be investigated.
- Alternative daily cover applications such a sprays, films or waste-derived materials may be used in lieu of or in conjunction with soil application. Alternative measures must be cost effective when compared to soil usage and approved by ASTC and NT EPA.
- At approximate final formation, or if the cell is left for any length of time, for example to commence a new cell, then the surface will be covered with a 300 mm thick layer of interim cover material to prevent exposure of waste for the period until the final capping layer is constructed.
- When waste placement returns to an area covered with interim cover, this cover soil material will be stripped back and stockpiled for reuse as daily cover soil.
- At approximate final formation, the cell where practical will be covered with a cap constructed to the specified design and grades.

4.10.4 Asbestos Management

The RWMF uses a cell grid system to record location details of each asbestos disposal.

An Asbestos Register for the RWMF is attached in **Appendix A** along with the other reporting proformas for the site.

4.10.5 Animal Destruction and Carcass Disposal

The RWMF has dedicated locations within the existing landfill for the destruction and disposal of animal carcasses. Dead animals may be received by ASTC Rangers or via vets or the RSPCA. On occasion, animals will be destroyed at the facility by ASTC Rangers, prior to their disposal. The ASTC Animal Disposal Procedure provides details on the requirements for Rangers and Site Operatives with regard to animal destruction and disposal (Appendix C).

4.11 Mobile Plant and Equipment

All plant and machinery will be operated by persons trained and competent in operation of that equipment, or under the vigilant supervision of a person who is competent in operating the plant. The landfill operator is to be able to provide documentation to ASTC or to an NT EPA authorised person within five days of request, which demonstrates that an employee is competent to operate the machinery directly involved with the Licensed activity.

All plant and machinery will be adequately maintained and operated to ensure efficient and effective use of the equipment. This will promote the reliability of the equipment and reduce potential impacts to the environment such as excessive noise, burning of fuels and emissions to air. The operator will repair or replace broken plant and machinery as soon as practicable and as per service requirements and operations at the RWMF. Fuels and oils associated with the operation and maintenance of plant and equipment will be stored in self-bunded storage tanks in designated areas on site.

Maintenance records will be maintained, including safety checks and be made available to ASTC on request.

4.12 Quality Assurance

4.12.1 Design and Construction

All design and construction work for the RWMF will be undertaken by suitably qualified, competent, and experienced environmental and/or other consultants and contractors in accordance with relevant Australian construction standards, contractual arrangements and industry best practice guidelines.

4.12.2 Operation

Operation of the RWMF will be undertaken in accordance with this RWMFEMP and the license (EPL206).

All environmental monitoring and/or sampling will be undertaken by suitably qualified and experienced ASTC staff and/or environmental consultants.

4.12.3 Quality Assurance Auditing

Internal Quality System audits shall be conducted by ASTC and external audits undertaken as required. Internal auditing requirements are identified in **Section 3.4.1.**

All non-conformances in the Quality System identified by an internal or external audit shall be rectified as soon as possible. Any non-conformances of the Quality System in the construction or operation of the RWMF shall be addressed by repairs to the construction and/or changes in the operation.

4.13 Customer Service Management and Reporting

ASTC will provide an appropriate level of customer service to ensure that all queries and comments concerning the RWMF received by ASTC are addressed. ASTC will provide a Customer Service telephone contact number that is notified to the public for the purpose of receiving queries and feedback from customers and the public. This is currently provided on ASTC's website.

The recording of complaints is to be undertaken as per **Section 3.5**. For customer queries and/or feedback, other than complaints, the Customer Service telephone line, ASTC will record, as a minimum:

- Date and time the correspondence was received;
- Correspondence notification method;
- Any personal details of the correspondent, if provided;
- Nature of the correspondence;
- Subsequent investigations and actions taken by ASTC;
- If no action was taken, the reason why no action was taken.

Customer and public correspondence records will be retained, by ASTC, for at least four years from the date of receipt of feedback.

4.14 Environmental Monitoring and Environmental Morning Record Keeping

All environmental monitoring is to be undertaken in accordance with EPL206. In accordance with EPL206, the Licensee is to provide a Monitoring Report to the NT EPA annually, within 10 business days after each anniversary date of the license, being the 4th of November. The Monitoring Report is to be prepared in accordance with EPL206. Environmental monitoring is to be conducted at the RWMF for:

- Gas;
- Leachate;
- Surface water; and
- Groundwater.

Environmental monitoring will be carried out by suitably qualified and experienced ASTC personnel or environmental consultants. Environmental monitoring requirements are detailed further from **Section 6** of this RWMFEMP.

Monitoring records and reports will be kept by ASTC for at least three years after the monitoring event and will be submitted to the NT EPA upon request and included in the annual Monitoring Report.

5 Environmental Risk Assessment

An environmental risk assessment using the source, receptor and pathway model has been developed to address environmental risks relevant to the RWMF. The risk assessment is an iterative process based on the ISO/Australia and New Zealand Standard for Risk Management (ISO 31000:2009).

The key environmental risks associated with ongoing activities at the facility have been assessed using the probability and consequence ratings, risk matrix and classifications provided in the following sections.

5.1 Risk Matrix

Environmental risks are assessed using a risk matrix, which evaluates the likelihood and consequence of a specific risk to attain an associated level of risk.

5.1.1 Likelihood

The risk assessments 'likelihood' has been defined as the probability of the event occurring or recurring. The likelihood category is determined on the basis of probability of the occurrence of the expected consequence. The likelihood score is the probability of a risk event occurring on site based on the criteria provided in **Table 9**.

Table 9 Likelihood criteria

	Score	Description
Rare	E	May occur only in exceptional circumstances.
Unlikely	D	Not likely to occur in normal circumstances
Possible	C	Could occur at some time for example, history of single occurrence
Likely	B	Will probably occur in most circumstances for example, known occurrences
Almost certain	A	Expected to occur in most circumstances for example, common occurrence

5.1.2 Consequence

This risk assessment has defined 'consequence' as the amount of environmental harm an event or situation can cause to the surrounding environment or communities. The criteria for the level of consequence to be associated with an environmental risk are identified in **Table 10** classified from one – five.

Table 10 Consequence criteria

	Score	Description
Insignificant	1	An incident that has caused negligible reversible environmental impact requiring very minor or no remediation Negligible on-site / off-site environmental impact and of low significance
Minor	2	An incident that has caused minor reversible environmental impact requiring minor remediation No-site / off-site environmental localised impact, immediately contained
Moderate	3	An incident that has caused moderate reversible environmental impact with short term effect requiring moderate remediation On-site / 0ffsite environmental short-term impact, immediately recoverable
Major	4	An incident that has caused serious environmental impact with medium term effect requiring significant remediation On-site / off-site environmental medium-term impact or repeated non-compliance with potential in some jurisdictions for prosecution

	Score	Description
Catastrophic	5	An incident that has caused disastrous environmental impact with long term effect requiring major remediation Significant on-site / off-site environmental long-term harm that is not recoverable. Significant fines and prosecutions at company and individual level may apply in some jurisdictions

5.1.3 Risk Rating

The level of risk is qualitatively assessed based on the combination of likelihood and consequence as shown in **Table 11**.

Table 11 Risk matrix

Likelihood	Consequence					
		1	2	3	4	5
	A	Medium	High	High	Very High	Very High
	B	Medium	Medium	High	High	Very High
	C	Low	Medium	Medium	High	High
	D	Low	Low	Medium	Medium	High
	E	Low	Low	Low	Medium	Medium

5.1.4 Risk Assessment

An environmental risk assessment that incorporates site specific control measures to reduce the level of risk is provided in **Table 12**. This assessment will enable supervisors to assess the environmental risks associated with the RWMF.

Table 12 Alice Springs RWMF Environmental Risk Assessment

Element	Risk	Caused by	Consequence	Risk Rating	Required Control Measures and Justification	Residual Risk Rating
Leachate	Hazard to fauna, flora and groundwater	Inadequate containment of leachate.	Adverse impact to ecosystems	H	Adequate containment systems. Condition of monitoring bores reviewed annually and maintenance undertaken as required Annual monitoring undertaken including preparation of summary report Water quality sampling in leachate boreholes is undertaken on an annual basis. Borehole purging and sampling follows standard practices, for example, low flow sampling, and documented in AS/NZS 5667. Data collated, processed, reduced and analysed using comparison to relevant risk assessment criteria.	M
Stormwater and erosion	Pollution to surrounding environment	Poor surface water and land stability mitigation measures	Contaminated stormwater runoff impacting the surrounding environment	M	Weekly inspections of the site surface water drainage will be undertaken and investigation of any erosion and/or silting that has occurred. Any damage found will be repaired and the infrastructure reinstated as required. Annual monitoring of surface water infrastructure on an annual basis. Assessment against relevant standards and EMP recommendations undertaken during inspections Condition monitoring will be undertaken after rainfall in operational areas.	M
Landfill gas / odour	LFG odour nuisance	Landfill gas venting to atmosphere and producing windblown odour	Decreases in amenity of the local area due to the odour nuisance	M	Application of daily cover to all wastes at the end of each day, or more frequently as required Weekly observations of emitted odour occur at the site perimeter.	L

Element	Risk	Caused by	Consequence	Risk Rating	Required Control Measures and Justification	Residual Risk Rating
Landfill fire	Hazard to human and fauna and flora	Combustion of landfill and associated waste storages	Dangerous fumes from the combustion of waste material released into the receiving environment	H	Implementation of prevention methods documented in the LEMP Potential ignition sources removed Water Supply and Equipment Provisions Fire Breaks and Vegetation Clearance installed and maintained	M
Storage of tyres	Hazard to human and fauna and flora	Inadequate management leads to combustion of tyre storage facility	Dangerous fumes from the combustion of waste material released into the receiving environment	H	Tyres punctured to prevent the breeding of mosquitoes Potential ignition sources removed from the area No storage of flammable materials within 30 metres of a tyre storage No whole tyres disposed of to landfill Adequate separation between site boundaries and stockpile Tyre stockpile to be long and narrow no higher than three meters	M
Bushfire	Hazard to human and fauna and flora	Inadequate prevention measures for the impacts of wildfire	Dangerous fumes from the combustion of waste material released into the receiving environment	H	Water Supply and Equipment Provisions Fire Breaks and Vegetation Clearance installed and maintained Implementation of the evacuation and emergency procedures documented in the LEMP when required	M
Storage of waste hazardous materials	Pollution to surrounding environment	Damaged or broken storage facilities allowing leaking into environment	Contamination impacting the surrounding environment	M	Regular inspections of storage areas undertaken Materials stored in bunded areas, undercover	M
Asbestos	Unsigned potential ACM, friable or fines, uncovered	Public or staff member digging in area of potential ACM	A person or animal becoming exposed to asbestosis material	M	Restricted areas off limits to the public Facility uses a cell grid system to record location details of each asbestos disposal. An asbestos register is utilised along with the other reporting proformas for the site.	M

Element	Risk	Caused by	Consequence	Risk Rating	Required Control Measures and Justification	Residual Risk Rating
Dust	Dust nuisance to surrounding dwellings	Airborne dust from handling material or on-site traffic	Decreases in amenity of the local area due to the dust nuisance	H	Designated all weather access roads are constructed and maintained Water cart is available at all times The requirement for dust suppression on access roads is based on weather and usage Inspection of bare surfaces and stockpiles daily for dusty conditions Traffic speeds kept below 15 km/hour to minimise dust generation Where possible avoid locating crushing plant in the path of prevailing wind towards Little Sisters Camp	M
Noise	Off-site noise nuisance	The use of machinery and site vehicles	Decreases in amenity of the local area due to the noise disturbance	M	All facility equipment is fitted with noise suppressants, including mobile plant for large scale/intensive works Machinery is only operated between approved working hours All facility equipment is adequately maintained Correct operation of all facility equipment All incoming vehicles monitored for noise and if necessary, access refused to vehicles producing excessive noise	M
Litter	Visual impacts and hazard to fauna	Litter blown from pit	Visual amenity impacts on site as well as impacts to the surrounding community Potential for fauna to ingest	H	Litter control measures around current cell, for example, litter fence, provided and daily compaction of waste Area of working face minimised and daily cover applied, or more frequently as required All vehicles entering facility to have loads covered if transporting waste which can produce litter Regular visual checks and weekly litter pick ups Inspection of boundaries and beyond the landfill area for littler each week	M

Element	Risk	Caused by	Consequence	Risk Rating	Required Control Measures and Justification	Residual Risk Rating
Invasive weeds	Spread of invasive weed species	Weeds / weed seed bought to site in green waste	The spread of invasive flor species can impact environment health and amenity of the area. Overflow impacts to surrounding properties and the local community	**M**	The landfill is sprayed in accordance with the annual weed spraying program as part of the weed management activities. Facility does not accept declared weeds, if they are discovered they shall be removed immediately and transferred to the tipface where they can be buried in-situ. Where declared weeds are found growing at the landfill they should be treated and destroyed in accordance with the requirements of the Weeds Branch of the NT Government	**M**
Pests	Presence of pest fauna, dogs, birds and vermin,	Poor waste disposal and inadequate pest animal control	Waste becoming a food source for invasive fauna and vermin leading to elevated populations and spread of disease	**M**	Application of daily cover to all wastes at the end of each day, or more frequently if required If bird numbers become excessive, undertake steps to remedy the situation as appropriate If rats or similar vermin, are observed an improved control program shall be implemented and monitored. 1080 baiting of feral dogs	**M**

6 Groundwater Management Plan

Groundwater monitoring is required to monitor and check compliance with regulatory standards of potential on-site groundwater impact and off-site migration. The groundwater monitoring plan is developed with reference to:

- NT EPA (2013) *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory*.
- NT EPA (2016) *Guideline for Reporting on Environmental Monitoring*
- Environment Protection Licence EPL206
- AS/NZA 5667.1 Water Quality - Sampling
- National Environment Protection (Assessment of Site Contamination) Measure 1999
- Geoscience Australia 2009. Groundwater Sampling and Analysis – A Field Guide

6.1 Groundwater Monitoring Requirements

6.1.1 Monitoring locations

There are currently 13 groundwater monitoring bores at the RWMF. Monitoring is undertaken on an annual basis, with data collected for some boreholes since 2009. Details of the boreholes are shown in **Table 13.** Locations are presented in **Figure 3** .

Table 13 Groundwater Monitoring Bores

Bore	Easting	Northing	Purpose
MW1	383707.9981	7374933.911	Down hydraulic gradient of landfill.
MW2	383018.548	7374708.89	Up-hydraulic gradient of landfill. Downgradient of WWTP
MW3	382798.4767	7375450.467	Up-hydraulic gradient of landfill. Reference bore
MW4A	383336.053	7374783.033	Up-hydraulic gradient of landfill. Downgradient of WWTP
MW5A	382849.4063	7375035.669	Down hydraulic gradient of landfill.
MW6A	383359.3805	7375110.532	Situated within the actively filled area of landfill. Monitors leachate production
MW7A	383635.7915	7375085.787	Down hydraulic gradient of landfill.
MW81	382466.1	7374655.839	Up-hydraulic gradient of landfill. Reference bore
MW82	382680.924	7375090.16	Up-hydraulic gradient of landfill. Reference bore
MW83	382798.508	7375221.734	General monitoring bore for data collection
MW84	383144.102	7375393.931	General monitoring bore for data collection
MW85	383316.16	7375306.515	Down hydraulic gradient of landfill.
MW86	383388.9898	7375159.631	Down hydraulic gradient of landfill.

Scale: 1:6,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 09-Dec-2020
Project Number: 620.30166

Data Source: Aerial imagery supplied by Nearmap (August, 2019)

SLR

MONITORING LOCATIONS

FIGURE 3

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6.1.2 Monitoring parameters

All groundwater samples obtained during field investigation should be subjected to the following laboratory analytical testing. The parameters for monitoring have been established based on the long-term history of monitoring at the RWMF:

Table 14 Parameters for monitoring

Group	Parameters
Field parameters	Temp, redox, EC, DO, pH Standing Water Level
Analytical Suite 1	
Chemical Characteristics	pH, TDS, redox, COD, TOC, TSS
Nutrients	Nitrogen, Nitrite, Nitrate, TKN, BOD, Phosphorous
Major Anions	Chloride, Sulphate, Bicarbonate, Carbonate
Major Cations	Calcium, Magnesium, Sodium, Potassium
Metals (field filtered where appropriate)	Arsenic, boron, cadmium, chromium (Cr,Cr3+,CrVI), cobalt, copper, nickel, lead, mercury, selenium, manganese, silver, titanium, vanadium, zinc, iron (ferrous and ferric)
Organic compounds	PAH, PCB
Other	Fluoride
Analytical Suite 2 (Suite 1 + additional parameters)	
Organic compounds	TRH, VOCs, SVOCs,

Laboratory analysis should be undertaken at a National Association of Testing Authorities (NATA) accredited laboratory. Target laboratory detection levels should, as a minimum, be as set out in AS/NZS 5667.1:1998

6.1.3 Frequency and duration of monitoring

Groundwater monitoring must be undertaken annually as a minimum during operation. Field parameters and groundwater samples should be obtained from all bores where water is present.

Laboratory analysis utilising Suite 1 (**Table 14**) should be undertaken for all samples.

Samples taken from bores MW1, MW5A, MW7A, MW85, MW86, MW6A, MW83 and MW84 should be subjected to Suite 1 and Suite 2.

It is expected that annual monitoring will be undertaken until the point where groundwater quality impacts no-longer require monitoring, anticipated to be after cessation of landfilling activities at the RWMF. This will be dictated by the post-closure monitoring plan.

6.1.4 Field protocols

Sampling of groundwater is to be consistent with AS/NZS 5667:1:1998, AS/NZS 5667.11:1998 Sampling of Groundwaters. Field technicians are to be appropriately trained in the use of sampling equipment and water quality meters.

All containers used for water sampling will be supplied by the nominated laboratories and prepared as described under Australian Standard AS/NZ 5667:1998 and AS 2031:2001.

All samples are to be stored in clean cooler boxes on ice, or equivalent refrigerated conditions at approximately 4ºC. Where practicable, all samples should be delivered to the laboratory within recommended holding times as specified by the laboratory. Any non-conformance should be documented on the Chain of Custody (COC) documentation.

Samples are to be transported under COC documentations. This documentation also provides a legal component of the custody and tracking of the samples collected and submitted to the laboratories for analysis.

All field equipment should be serviced and calibrated as appropriate to manufacturers recommendations. Records of factory servicing, factory calibration, and field calibration should be recorded on a field calibration monitoring sheet and kept on record by ASTC.

6.1.5 Quality assurance / quality control

Sample contamination could occur through various stages of the sampling process; including sample collection, transportation and storage, and during sample preservation. Blanks and duplicate samples are important components of sampling analysis, designed to confirm that robust data has been collated. Field blanks, trip blanks and duplicate samples are registered as individual water quality samples and are named accordingly as detailed below. The following describes the quality control protocols to be adopted. The following tests are also undertaken to identify any potential issues, and improve sampling protocols.

- Field blanks - are clean water samples taken in the field under identical field conditions to samples. The field blank verifies that the sampling procedures are of high standard and identify if contamination is occurring during the sampling process. Clean water for field blanks is provided by the laboratory in advance and will need to be transferred to sample bottles on site.
- Trip Blank – to estimate any potential contamination occurring during the transport and storage of samples from sampling to extraction in the laboratory. AS/NZS 5667:1:1998 recommends one trip blank should be taken per group of samples. It is proposed to undertake one transport blank per sampling visit for the duration of sampling. The appointed laboratory will provide the appropriate water sample for this purpose.
- Duplicate samples - are collected from the same site at the same time using the same sampling equipment and methodology. Each is analysed as a separate sample. This provides the experimental sampling error and can be used to assess sampling precision and understand the natural variability, for example, within a water body. Duplicate samples are generally analysed at the same laboratory, that is, inter-laboratory samples, whilst triplicate samples are generally dispatched to different laboratories, intra-laboratory samples. Inter-laboratory samples are dated and submitted to the standard appointed laboratory with no identifying marker, for example, no sample reference, time. Intra-laboratory samples are dispatched to a second laboratory with the same chemical suites scheduled.

The National Water Quality Management Strategy Australian Guidelines for Water Quality Monitoring and Reporting (2000) recommends that 5% of samples are replicated through inter-laboratory samples. Typically, one duplicate sample should be taken as a minimum of one per sampling event.

6.2 Reporting Requirements

Reporting of groundwater monitoring is a requirement of EPL206, Condition 60:

The licensee must ensure that each Monitoring Report:

> *60.1 includes monitoring results for gas, leachate, surface water and **groundwater** including interpretations of monitoring results by qualified persons.*
>
> *60.2 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring;'*
>
> *60.3 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where data is available); and*
>
> *60.4 includes an assessment of environmental impact from the activity*

Table 1 of the NT EPA *Guideline for Reporting on Environmental Monitoring* provides clear requirements for licensees. Reporting by ASTC for the requirements of EPL206 will meet these requirements.

6.3 Management Plan

Table 14 below presents the procedures for groundwater monitoring and management.

Table 15 Procedures for groundwater monitoring and management

Item	Comment / Action
Key Information	Annual monitoring for suite of field and laboratory analytes and groundwater level
	Screen against relevant criteria to assess potential for off-site impact
General Groundwater Management procedures	Confirm ongoing condition and maintenance of monitoring bores
	Undertake annual monitoring
	Undertake assessment against relevant standards
	Prepare summary report
Field Monitoring	Annual field monitoring events
Routine Monitoring Methodology	Groundwater level and quality monitoring at boreholes
	Borehole purging and sampling to follow standard practices, for example, low flow sampling, and documented in AS/NZS 5667.
	Chain of custody documentation to be utilised through to laboratory analysis.
	Data to be collated, processed, reduced and analysed using comparison to relevant risk assessment criteria.
Frequency	Annual monitoring.
Duration	Monitoring to be undertaken over the life time of this plan (2020-2025) It is anticipated that monitoring will continue until the license is surrendered.
Responsibility	Alice Springs Town Council
Location	As noted on Figure 3
Conformance Criteria	Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
	Australian Drinking Water Guidelines (ADWG) 6, 2011

Item	Comment / Action
	ANZECC 2000, Water Quality Triggers (low risk) for heavy metals and metalloids in livestock drinking water
Reporting – Internal	Annual report
Reporting – External	Annual report to be submitted to NRETAS
Non-Conformance Procedures	Undertake additional monitoring and analysis to confirm exceedances
	Check adequacy of procedures and QA/QC
	Implement corrective actions and modify procedures
Management Review	Document in Annual Operations Report and Environmental Monitoring Report including review and comment

7 Leachate Management Plan

Leachate production in the landfill is limited due to climatic conditions, the relative low moisture content of the waste, and the use of low permeability soil as temporary cover.

Section 4.10 of this RWMFEMP describes on-site cover practices. This provides protection during landfill operation to prevent environmental nuisance, whilst adding protection at the surface from infiltration of precipitation into the waste material. The majority of rainfall that falls on the landfill evaporates before it has the opportunity to infiltrate or run-off.

The interaction of surface water runoff and deposited waste is limited by the collection of runoff in temporary on site storages. These storages are documented in **Section 9** of this RWMFEMP. Where leachate is generated, the discharge is collected, along with clean water that may be leachate affected, or intercepted to the leachate area as shown in **Figure 3**.

7.1 Monitoring Plan

7.1.1 Leachate Monitoring Wells

There are currently 2 leachate monitoring bores at the RWMF. Monitoring is undertaken on an annual basis. Details of the leachate boreholes are shown in Table 16 below. Locations are presented in **Figure 3.**

Table 16 Leachate Monitoring Locations

Bore	Purpose
MW37	Leachate monitoring well
MW38	Leachate monitoring well

7.1.2 Monitoring parameters

All leachate samples obtained during field investigation should be subjected to the following laboratory analytical testing:

Table 17 Parameters for monitoring

Group	Parameters
Field parameters	Temp, redox, EC, DO, pH, Turbidity Standing Water Level
Analytical Suite 1	
Chemical Characteristics	pH, TDS, redox, COD, TOC, TSS
Nutrients	Nitrogen, Nitrite, Nitrate, TKN, BOD, Phosphorous
Major Anions	Chloride, Sulphate, Bicarbonate, Carbonate
Major Cations	Calcium, Magnesium, Sodium, Potassium
Metals (field filtered where appropriate)	Arsenic, boron, cadmium, chromium (Cr,Cr_3+,CrVI), cobalt, copper, nickel, lead, mercury, selenium, manganese, silver, titanium, vanadium, zinc, iron (ferrous and ferric)
Organic compounds	n/a
Other	Fluoride

Laboratory analysis should be undertaken at a National Association of Testing Authorities (NATA) accredited laboratory. Target laboratory detection levels should, as a minimum, be as set out in AS/NZS 5667.1:1998. Sampling protocols, including quality assurance and control are as per **Section 6.1.3**, **6.1.4**, and **6.1.5**.

7.2 Reporting

Reporting requirements for leachate monitoring are consistent with **Section 6.2**. Results are to be included in the annual monitoring report consistent with Condition 20 of EPL206. Where samples cannot be obtained due to the absence of leachate within the monitoring well, this should be noted in field data collection records and in the annual report.

7.3 Management Plan

Table 18 Procedures for groundwater monitoring and management

Item	Comment / Action
Key Information	Annual monitoring for suite of field and laboratory analytes
	Screen against relevant criteria and comparison with reference perimeter bores
General Groundwater Management procedures	Confirm ongoing condition and maintenance of monitoring bores
	Undertake annual monitoring
	Undertake assessment against relevant standards
	Prepare summary report
Field Monitoring	Annual field monitoring events
Routine Monitoring Methodology	Water quality sampling in leachate borehole
	Borehole purging and sampling to follow standard practices, for example, low flow sampling, and documented in AS/NZS 5667.
	Chain of custody documentation to be utilised through to laboratory analysis.

Item	Comment / Action
	Data to be collated, processed, reduced and analysed using comparison to relevant risk assessment criteria.
Frequency	Annual monitoring.
Duration	Monitoring to be undertaken over the lifetime of this plan 2021-2026. It is anticipated that monitoring will continue until the license is surrendered.
Responsibility	Alice Springs Town Council
Location	As noted on Figure 3
Conformance Criteria	Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
	Australian Drinking Water Guidelines (ADWG) 6, 2011
	ANZECC 2000, Water Quality Triggers (low risk) for heavy metals and metalloids in livestock drinking water
Reporting – Internal	Annual report
Reporting – External	Annual report to be submitted to NRETAS
Non-Conformance Procedures	Undertake additional monitoring and analysis to confirm exceedances
	Check adequacy of procedures and QA/QC
	Implement corrective actions and modify procedures
Management Review	Document in Annual Operations Report and Environmental Monitoring Report including review and comment

8 Landfill Gas Management Plan

Landfill gas is produced as the organic fraction of waste disposed of in landfill decomposes under anaerobic conditions. Landfill gas generally comprises methane and carbon dioxide, but can also include carbon monoxide, hydrogen sulphide and hydrocarbons.

Risks associated with landfill gas can include:

- Risk of explosion from combustion of methane in enclosed spaces
- Asphyxiation or other health impacts from exposure to gases in enclosed spaces
- Odour causing nuisance
- Release of greenhouses gases
- Damage or restricted growth of nearby vegetation.

The landfill gas management plan is developed with reference to:

- NT EPA (2013) *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory*.
- NT EPA (2016) Gui*deline for Reporting on Environmental Monitoring*
- Environment Protection Licence EPL206

Specific conditions in the EPL relating to landfill gas are:

31 – The licensee must ensure a landfill gas collection system is installed, operated and maintained on the premises.

60.1 – The licensee must ensure that each Monitoring Report includes monitoring results for gas…..including interpretations of monitoring results by qualified persons.

8.1 Gas Monitoring Plan

Landfill gas monitoring is critical to mitigating or managing the risks associated with landfill gas.

8.1.1 Gas Monitoring Wells

Nineteen individual monitoring points for landfill gas are installed within the existing landfill and surrounds. This includes a series of monitoring bores, including 4 nested well arrangements, that is, singular location with variable depths monitored. Details regarding the monitoring wells incorporated within this plan are presented in Table 19.

The network is designed to monitor both the main body of the landfill, as well as around the site boundary away from the landfill. This is to demonstrate whether 1) the landfill is producing gas, and 2) potential migration pathways for the gas towards sensitive receptors. It is noted that the nearest potential sensitive receptor for ground gas is the Office and Rediscovery Centre, and Office associated with the weighbridge within the Regional Waste Management Facility.

Table 19 Gas Monitoring Wells and Purpose

Bore	Eastings	Northings	Purpose
MW9	383409.379	7374945.901	Landfill gas monitoring, within body of landfill
MW10U	383193.1461	7374913.938	Landfill gas monitoring, within body of landfill
MW10L	383193.1461	7374913.938	Landfill gas monitoring, within body of landfill
MW12U	382992.5328	7374937.655	Landfill gas monitoring, within body of landfill
MW12M	382992.5328	7374937.655	Landfill gas monitoring, within body of landfill
MW12L	382992.5328	7374937.655	Landfill gas monitoring, within body of landfill
MW17	383566.421	7374970.838	Landfill gas monitoring, within body of landfill
MW23U	383054.595	7375060.885	Landfill gas monitoring, within body of landfill
MW23L	383054.595	7375060.885	Landfill gas monitoring, within body of landfill
MW24	383128.973	7375029.733	Landfill gas monitoring, within body of landfill
MW25U	383361.592	7375122.852	Landfill gas monitoring, within body of landfill
MW25L	383361.592	7375122.852	Landfill gas monitoring, within body of landfill
MW26	383637.531	7375085.081	Landfill gas monitoring, monitoring bore outside landfill
MW27	382466.1	7374655.839	Landfill gas monitoring, monitoring bore outside landfill
MW28	382680.924	7375090.16	Landfill gas monitoring, monitoring bore outside landfill
MW29	382798.508	7375221.734	Landfill gas monitoring, monitoring bore outside landfill
MW30	383144.102	7375393.931	Landfill gas monitoring, monitoring bore outside landfill
MW31	383316.16	7375306.515	Landfill gas monitoring, monitoring bore outside landfill
MW32	383388.9898	7375159.631	Landfill gas monitoring, monitoring bore outside landfill

8.1.2 Landfill gas accumulation monitoring

Enclosed facilities in close proximity to the landfill may, under certain circumstances, demonstrate the accumulation of landfill gas. This could present a risk to human health.

Accumulation monitoring should be undertaken periodically, as per the broader gas monitoring round, to assess the potential for build-up of landfill gases in enclosed spaces. Concentrations of methane, carbon dioxide and oxygen should be measured in the following locations:

- Weighbridge toilet
- Office toilet
- Rediscovery centre

Consideration of gas migration should be included in future building or construction plans at the RWMF.

8.1.3 Monitoring parameters

Landfill gas will be measured manually in the field by appropriately qualified technicians. Monitoring should be undertaken using an extractive landfill gas analyser. The monitoring suite will be:

Table 20 Parameters for gas monitoring

Group	Parameters
Field parameters	Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2), Atmospheric pressure, Hydrocarbons, using a PID

8.2 Reporting

Reporting requirements for leachate monitoring are consistent with **Section 6.2**. Results are to be included in the annual monitoring report consistent with Condition 20 of EPL206.

8.3 Management Plan

Table 21 Procedures for groundwater monitoring and management

Item	Comment / Action
Key Information	Annual monitoring for suite of field and laboratory analytes
	Screen against relevant criteria and comparison with reference perimeter bores
General Gas Management procedures	Confirm ongoing condition and maintenance of gas monitoring bores
	Undertake annual monitoring
	Undertake assessment against relevant standards
	Undertake comparison of results between wells within waste and those on perimeter
	Prepare summary report
Field Monitoring	Annual field monitoring events
	Field gas measurements using handheld gas monitor

Item	Comment / Action
Routine Monitoring Methodology	Gas monitoring following EPA Victoria, 2018. *Landfill gas fugitive emissions monitoring guidance, Publication 1684*.
	Data to be collated, processed, reduced and analysed using comparison to relevant risk assessment criteria.
Frequency	Annual monitoring.
Duration	Monitoring to be undertaken over the lifetime of this plan (2020-2025) It is anticipated that monitoring will continue until the license is surrendered as detailed in the Closure Plan.
Responsibility	Alice Springs Town Council
Location	As noted on Figure 3
Conformance Criteria	Methane should be less than 1% by volume in perimeter wells
	Carbon dioxide should be less than 1.5% by volume in perimeter wells
Reporting – Internal	Annual report
Reporting – External	Annual report to be submitted to NT EPA
Non-Conformance Procedures	Undertake additional monitoring and analysis to confirm data collected, additional frequency of monitoring
	Check adequacy of procedures and QA/QC
	Undertake gas risk assessment, utilising CIRIA665 Assessing Risks Posed by Ground Gas, 2007, to determine magnitude of risk and associated mitigation/management
	Implement corrective actions and modify procedures
Management Review	Document in Annual Operations Report and Environmental Monitoring Report including review and comment
	Consider impact of changes to monitoring requirements as landfill landform changes.
	Consider need to replace monitoring wells if lost or become out of service
	Consider need to modify landfill gas management measure, passive system, for the final landfill design in updated closure planning

8.4 Landfill gas remediation plan

Landfill gas monitoring indicates that gas is being generated within the main body of the active landfill. The perimeter monitoring wells do not indicate the migration of gas outside of the confines of the site.

At present there is no formal landfill gas management system in place at the RWMF. This is reflective of the current gas conditions and supported by ongoing monitoring and management actions to achieve the objectives of the EPL. As the landfill is to be progressively closed it is proposed to install a passive landfill gas monitoring system. Noting the plan to continue filling Stages 1-4 of the existing landfill, and the proposed final landform, the final design of landfill gas management measures should be reviewed prior to construction.

9 Soil Erosion and Stormwater Management Plan

9.1 Surface Water Management

Surface water runoff onsite will be managed to separate clean water from potentially contaminated surface water (leachate). Cut-off swales and drains will be used to control runoff from both external and onsite catchments. It is assumed that external catchments will remain unchanged throughout operational works. The current facility water management plan is shown on Figure 4.

9.1.1 Offsite Catchment Runoff

Rain falling on the catchments upstream of the landfill will flow onto the site as surface water runoff. In order to prevent inundation of the landfill operational area, drainage swales and bunding shall be maintained to divert this water around the facility. This offsite catchment runoff will be discharged into the natural surface water network. This drainage infrastructure is to be sized for the 1% AEP event.

The catchment to the northeast of the site will remain unchanged and undisturbed, and clean water runoff from this area will continue to be allowed to flow eastward toward the Little Sisters Town Camp.

Runoff from catchments to the north and west of the site will be diverted around the facility, ensuring that it is separated from all potentially contaminated surface water. Where possible, offsite runoff is diverted around the site to prevent interactions with site contaminated water. Scour and erosion risks are to be considered in the design of this infrastructure.

9.1.2 Onsite Catchment Runoff

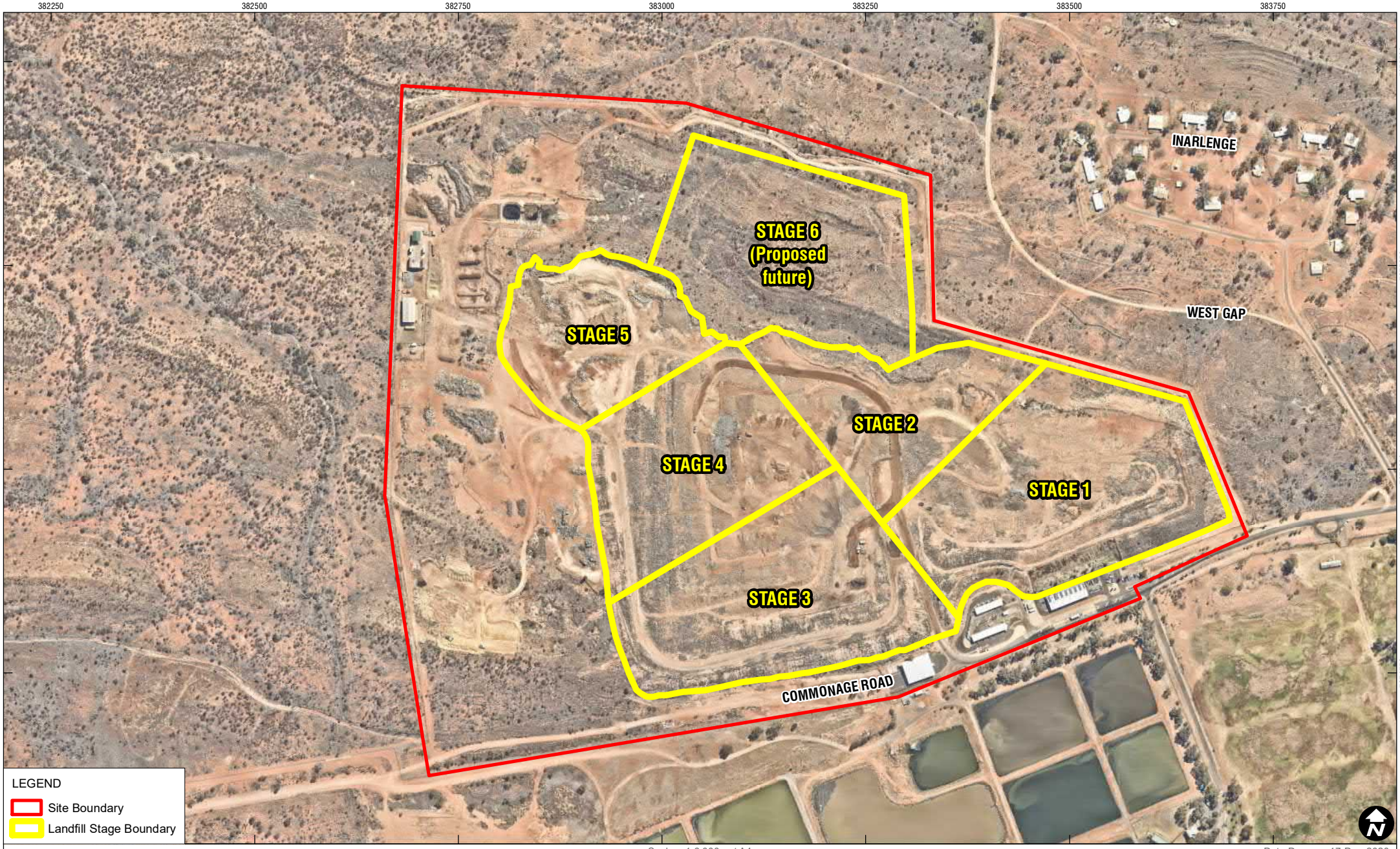
Runoff from rain falling on the site will be managed to separate clean from potentially contaminated surface water through the use of swales, bunding and basins from dirty water. This extends to future major construction on site such as new roads and infrastructure which will need to take account of site drainage. Potentially contaminated surface water is considered to be leachate and any runoff potentially exposed to waste.

All runoff from the facility will be collected by basins. Clean water will be routed to detention basins to allow for treatment of sediment. Potentially contaminated water will be directed to separate basins for detention and treatment by evaporation. Surface water runoff from within a working cell will be treated as leachate and contained to the appropriate water management infrastructure. All basins are to be managed to prevent uncontrolled releases from site.

Clean water will be managed to achieve the following:

- Minimise surface water entering active disposal areas;
- Prevent ponding of water in operation areas, other than basins;
- Maintain access to all areas of site and allow for access via roads in most weather conditions;
- Prevent uncontrolled releases offsite and manage surface water within the facility;
- Minimise leachate generation by preventing the exposure of clean water to contaminants; and
- Prevent uncontrolled exposure of waste by preventing soil erosion and the loss of soils cover.

As part of operational works for the facility, maintenance of surface water controls is required to be carried out.



Scale: 1:6,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 17-Dec-2020
Project Number: 620.30166

Data Source: Aerial imagery supplied by Nearmap (August, 2019)

SLR

LANDFILL STAGING PLAN

FIGURE 5

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9.2 Sediment Contamination

Surface water on site can be contaminated by sediment. The source of this is the crushing and screening plant, interim cover soils, and soils disturbed by vehicle movement.

The following actions will be taken to ensure management and control of mud and slurry:

- Maintain site drainage;
- Ensure effective runoff from access roads through shaping;
- Check access roads for mud, and clear and regrade as required;
- Prevent access to wet and soft surfaces; and
- Undertake desilting of drains and basins if sedimentation build up is excessive.

As the facility progresses, additional surface water elements will be implemented as required. Future elements will include:

- Swales and drainage structure around the perimeter of the completed cell capping to direct clean surface water runoff to the appropriate infrastructure; and
- Erosion control procedures.

9.3 Surface Water Monitoring

Weekly inspections of the site surface water drainage will be undertaken. Investigation of any erosion and/or silting that has occurred to identify the cause. Any damage found will be repaired and the infrastructure reinstated. Soil cover and bunds will be inspected for erosion, cracks and holes throughout the operational life of the facility. Should any cracks or hole be found, missing cover materials will be immediately replaced, ensuring separation of site surface water with the environment.

Monitoring is to be undertaken for the following reasons:

- Ensure no adverse impacts on surface water quality or excessive siltation of water courses;
- Ensure integrity of all cover and bunded areas is maintained;
- Ensure general compliance with:
  - Environment Protection Licence conditions
  - *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013); and
- General Environmental Duty (*WMPC Act 1998*).

9.3.1 Monitoring locations

Surface water monitoring considers both water quality through field and laboratory analysis, and condition inspection of surface water infrastructure. The monitoring locations provided in **Table 22** will be sampled on an annual basis, where water is present, as shown on **Figure 3**. Where site operations and the filling plan change over time, the site operator should review the monitoring network as necessary.

Table 22 Surface Water Monitoring Locations

Location	Purpose
SW1	Surface water detention basin
SW2	Surface water detention basin
SW3	Surface water detention basin
SW4	Surface water detention basin
SW5	Surface water detention basin

In addition, condition monitoring should be undertaken after rainfall in the following operational areas:

- Bunds
- Batters
- Drainage channels
- Stockpiles
- Exposed surfaces including roads, disposal areas and vegetative buffers

9.3.2 Monitoring parameters

Where surface water is encountered during monitoring, the water quality monitoring suite will be undertaken as per **Table 23.**

Table 23 Parameters for water quality monitoring

Group	Parameters
Field parameters	Field observations: Colour, Odour, Depth of Water Field Water Quality: Temp, redox, EC, DO, pH, Turbidity
Analytical testing	
Chemical Characteristics	pH, TDS, redox, COD, TOC, TSS
Nutrients	Nitrogen, Nitrite, Nitrate, TKN, BOD, Phosphorous
Major Anions	Chloride, Sulphate, Bicarbonate, Carbonate
Major Cations	Calcium, Magnesium, Sodium, Potassium
Metals (field filtered where appropriate)	Arsenic, boron, cadmium, chromium (Cr,Cr_3+,CrVI), cobalt, copper, nickel, lead, mercury, selenium, manganese, silver, titanium, vanadium, zinc, iron (ferrous and ferric)
Organic compounds	PAH, PCB
Other	Fluoride
Organic compounds	TRH, VOCs, SVOCs,

The operational infrastructure monitoring requirements are provided in Table 24.

Table 24 Parameters for water infrastructure condition

Group	Parameters
Condition Monitoring	Disposal areas: - Evidence of erosion - Disturbance to bunds or drains - Check effective conveyance of surface water runoff Surface water channels: - Check for blockages, siltation, excessive scour or sediment flow Surface water basins - Check inlet and outlet for blockages/obstructions - Check build-up of sediment

9.3.3 Frequency and duration

Site history indicates that water storage within on-site basins is rare. Sampling of significant storages should be undertaken following a rainfall event where possible. During annual monitoring events, the status of water within storages, if any, should be recorded.

Condition monitoring should be undertaken following rainfall events by site operators.

9.3.4 Field protocols

Sampling of surface water is to be consistent with AS/NZS 5667:1:1998, AS/NZS 5667.11:1998. Field technicians are to be appropriately trained in the use of sampling equipment and water quality meters.

All containers used for water sampling will be supplied by the nominated laboratories and prepared as described under Australian Standard AS/NZ 5667:1998 and AS 2031:2001.

9.4 Reporting

Reporting requirements for surface water monitoring are consistent with **Section 6.2**. Results are to be included within the annual monitoring report consistent with Condition 20 of EPL206.

Condition monitoring of surface water infrastructure will be recorded by site operatives and documented within day-to-day site operations for rectification.

9.5 Management Plan – Surface Water Quality

Table 25 outlines the surface water monitoring schedule for the site. To ensure the adequacy of the surface water monitoring program, it is to be reviewed annually.

Table 25 Procedures for surface water quality management

Item	Comment / Actions
Key Information	Annual monitoring for a suite of field and laboratory analysis
General monitoring procedures	Confirm ongoing condition and maintenance of surface water monitoring locations
	Undertake annual monitoring

Item	Comment / Actions
	Undertake assessment against relevant standards and historic data
	Prepare summary report
Field monitoring	AS 5667.1:1998 *Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*; and
	AS 5667.6:1998 *Water Quality – Sampling – Guidance on sampling of rivers and streams*.
Responsibility	Licensee or qualified consultant
Frequency	Annually, following significant rainfall events, end of wet season
Duration	Throughout operation of the facility, subject to annual review
Acceptance Criteria	Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
	Australian Drinking Water Guidelines (ADWG) 6, 2011
	ANZECC 2000, Water Quality Triggers (low risk) for heavy metals and metalloids in livestock drinking water
Reporting – Internal	Sampling and analysis – Annually
Reporting – External	Annual report to be submitted to NT EPA
Nonconformance Procedures	Undertake additional monitoring and analysis to confirm exceedances
	Check adequacy of procedures and QA/QC
	Implement corrective actions and modify procedures
Management Review	Document in Annual Operations Report and Environmental Monitoring Report including review and comment

9.6 Management Plan - Surface Water Infrastructure and Erosion Maintenance

9.6.1 Management Plan

Table 26 Procedures for surface water infrastructure management

Item	Comment / Actions
Key Information	Infrastructure – Visual inspection following rainfall events
General monitoring procedures	Confirm ongoing condition and maintenance of surface water monitoring locations
	Undertake visual monitoring
	Undertake assessment against relevant standards and historic data
	Prepare summary note for RWMF Manager
Field monitoring	Visual assessment of disposal areas: • Evidence of erosion • Disturbance to bunds or drains Check effective conveyance of surface water runoff
	Visual assessment of surface water channels: Check for blockages, siltation, excessive scour or sediment flow

Item	Comment / Actions
	Visual assessment of surface water basins • Check inlet and outlet for blockages/obstructions Check build-up of sediment
Responsibility	Infrastructure - Senior Operator
Frequency	Infrastructure - Monthly visual inspections during operations and after significant rainfall events
Duration	Throughout operation of the facility, subject to annual review
Acceptance Criteria	Sound condition, serviceable and accessible;
	No adverse impact on surface water;
	No adverse impact on cut-off drains; and
	All on-site stormwater within disturbed areas diverted through sedimentation ponds.
Reporting – Internal	Interim quarterly or on an as-needs basis
Reporting – External	Internal reporting kept available on file
Nonconformance Procedures	Repair as necessary;
	Investigate/implement options to prevent future occurrences;
	Rehabilitate eroded channels, batters and revegetate
	Clean out and re-line drainage channels;
	Direct surface water to grassed buffer areas where possible;
	Install temporary bunding whilst rehabilitating damaged areas; and
	Detail actions taken in Annual Report as appropriate.
Management Review	Licensee to review procedures and implement recommendations on an annual basis

9.6.2 Management Actions

Inspections of all surface water drainage infrastructure, including swales, drains, basins and erosion protection, are to be undertaken monthly and after significant rainfall events. Should any occurrences of scouring be found, reparation is to be undertaken by the reapplication of eroded materials and the implementation of measures to reduce the potential of reoccurrence. Table 26 outlines the maintenance, repair and remediation measures required for the site for the duration of operations.

Table 27 Surface Water and Erosion Maintenance Schedule

Item	Performance Indicators	Potential Maintenance, Repairs and Remediation Measures
Access Roads	Erosion of surface materials	Replace lost materials
		Regrade as needed
Surface Water Drainage System	Erosion and ponding of water	Remove silt or excessive vegetation and dispose
		Remove accumulated silt from perimeter drains as required
		Repair and/or replace damaged components
		Regrade or reroute as needed

Item	Performance Indicators	Potential Maintenance, Repairs and Remediation Measures
		Re-establish surface water drainage system
Interim Cover/Cap	Erosion, settlement, cracks or holes	Reconstruct missing cover replacing all materials to the same standard as designed, constructed and certified.
		Additional cover if desiccation and cracking is observed, installed to the same standard as designed, constructed and certified
	Ponding of water	Drain or pump off water
		Fill depressions
		Regrade slopes
		Revegetate
Revegetation and Landscaping	Loss of grass cover	Investigate cause and remedy appropriate
		Re-topsoil and reseed
	Loss of plantings	Investigate cause and remedy as appropriate
		Replace plantings
	Excessive pest plant growth	Spray or remove pest plants if practical to do so
		If removed, dispose of in designated disposal areas, for example, landfill

10 Filling and Compaction Plan

The filling and compaction plan is informed by the current landfill staging plan, the proposed Closure and Capping Plans for the existing landfill stages, and the RWMF Masterplan (EcOz Environmental Consultants, 2020). The existing landfill stages, identified in these documents is shown on Figure 5.

10.1 Landfill capacity

The properties of the existing landfill including footprint, batter gradient, filling rates and estimated compaction used in the filling and compaction plan are shown in **Table 28**. These assumptions have been utilised in calculating filling rates across future stage. They are supplemented by volumetric modelling for the landform to determine the expected void considering the aforementioned waste stream, daily cover and compaction assumptions.

Table 28 Landfill properties

Aspect	Parameter
Landfill Footprint (Ha)	15.06 Ha
Landfill Batter Gradient	1 metre vertical to 5 metres horizontal (20%)
Crest Gradient	Minimum of 1 metre vertical to 20 metres horizontal (5%)
Average annual waste filling rate (tonnes per annum)	44,700
Estimated daily cover allowance (%)	15
Estimated compaction of waste (t/m^3)	0.85
Estimated airspace utilisation per annum (m^3)	60,476

10.1.1 Stages 1-4 – Existing Landfill

The existing landfill is represented by landfill Stages 1-4. The Masterplan identifies the potential to reach a highest point of 588 m AHD which is used as the basis for the design of the final landform. It is noted that there are no restrictions on the height of the landfill, other than that the final landform is designed to achieve a capped gradient no steeper than 20 %, or 1 in 5.

10.1.2 Stage 5 extension

The Masterplan identifies the expansion of a new landfill cell to be constructed on the boundary of the Stage 4 Cell. It is assumed that the base connection will be at approximately 570 m AHD. Stage 5 will be split into two sub-stages.

Stage 5A is proposed to be built up to a level of 590 m AHD, providing an estimated 112,000 m^3 or nearly two years' worth of airspace.

Stage 5B is predicted to provide an additional 413,800 m^3 of available airspace, adding approximately seven years' additional capacity to the cell.

The combined addition of Stage 5 would add a further nine years additional capacity to the landfill facility.

Scale: 1:6,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 17-Dec-2020
Project Number: 620.30166

Data Source: Aerial imagery supplied by Nearmap (August, 2019)

SLR

SURFACE WATER MANAGEMENT PLAN

FIGURE 4

H:\Projects-SLR\660-SrvWOL\620-BNE\620.30166.00000 Alice Springs Regional Waste Management\06 SLR Data\01 CADGIS\GIS\SLR62030166_G5_WaterManagement_001.mxd

10.1.3 Addition extension plans

The Masterplan identifies that there are no forecast closure dates for the landfill. On this basis it is expected that the landfill will continue to operate and accept waste up until it reaches capacity. Assuming Stage 5 is approved, the landfill will have approximately 15 years of remaining capacity. The Masterplan identifies unused parcels of land within the site, notably within the north of the existing Stage 2 and Stage 4, and the proposed Stage 5A that the landfill could be expanded into.

The licensee will, in accordance with EPL206, at least 3 months prior to the commencement of construction of a new landfill cell, or extension of an existing landfill cell, submit to the NT EPA an application for an environment protection approval under section 31(1)(a) of the WMPC Act unless the proposed new cell or extension has previously been approved by the NT EPA.

The licensee will, where new cells or extensions are proposed, update the RWMFEMP, Capping Plan and Landfill Closure and Post Closure Plan to reflect the change in site operations.

10.2 Filling Plan – period 2021-2026

The filling plan, based on estimated filling and compaction rates, and assessed remaining void space provides an estimate of remaining landfill capacity (**Table 29**). This may be supplemented by future potential expansion plans such as 5a or 5b. It is predicted that there is sufficient capacity within the existing landfill Stages 1-4 to support waste disposal requirements beyond the next 5-year period.

Table 29 Void Capacity and Estimated Life

Landfill Stage	Remaining Airspace (m^3)	Estimated Remaining Landfill Life
Stage 1-4 (existing)	360,275	5.9 years
Stage 5a	112,000	1.9 years
Stage 5b	413,800	6.8 years

Note:

1. Filling rates assume final landform has 1m vertical to 5m horizontal batter (20%) and crest gradient is 1m vertical to 20m horizontal (5%)
2. Estimates for stage 5a and 5b taken from Masterplan. Subsequent expansion not yet defined.

11 Fire Management Plan

To ensure compliance with EPL206 Conditions and general safety, with regard to effective fire prevention and control, the Operator will adhere to procedures set out in **Table 30**.

11.1 Reasons for control

Accidental fire outbreaks and risks associate with the RWMF have the potential to cause extreme environmental and operational health and safety risks.

The key drivers for there to be a need to control fire outbreaks include limiting the emission of dangerous fumes from the combustion of a range of waste material contained within the facility to the atmosphere and surrounding environment. Waste disposal and associated activities are a major bush fire hazard, with easily compostable material secured in a single location.

The facility will ensure compliance with the following environmental conditions and recommendations to avoid or reduce the likelihood of fire damage to infrastructure, environment or to human health:

- EEPL206 conditions;
- *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013);
- General Environmental Duty (*WMPB Act 1998*); and
- General Guidelines for the Outdoors Storage of Used Tyers (South Australian Fire Service).

Table 30 Procedures for Fire Fighting and Prevention

Item	Comment / Action
Conformance Criteria	Ensure adequate firefighting plan and equipment for all of site including the green waste processing area
	Staff to respond to spot fire outbreaks only at any part of the facility
	NT Fire and Rescue Service to be called to contain significant fires at the landfill, hazardous waste facility or green waste processing area. Site supervisor to determine need to contact NT Fire and Rescue Services.
	NT Fire and Rescue Service to undertake annual site inspection of full site and document fire prevention report findings
	Ensure Emergency Response Plan procedures adhered to and updated as necessary
	Fire Wardens and Management personnel must be adequately trained and understand the waste facilities procedures for fire/explosion events.
Prevention Methods	Removal of potential ignition sources, such as batteries from the pit area.
	No deliberate burning on site
	Wastes to be covered in a non-compostable material
	If a fire is to start every effort will be made by the facility to safely extinguish the fire before it gets established
Water Supply and Equipment Provisions	Ensure mobile water tanker with suitable capacity is available at all times
	Fit portable fire extinguisher to each machine working at tipping face
	Ensure all machines used on site are fitted with spark arresters
	Ensure firefighting equipment available at green waste processing area
	Ensure all firefighting equipment kept in good working order
Fire Breaks and Vegetation Clearance	Maintain fire breaks/access tracks to provide trafficable surface
	Clear vegetation off fire breaks
	Keep all vegetation slashed and mown, except shrubs and trees used for landscaping
Reporting	ASTC is required to maintain a register of all fires on site and report to the NT EPA hotline. Details on the register can be found in Appendix B.

11.2 Evacuation Plan or Procedure

The Operator will develop their own site Emergency Evacuation Plan and procedures for responding to emergency situations such as explosion, fire, or other threats in accordance with *Workplace Health and Safety Act*, and the Workplace Health and Safety Regulations. An Occupational Health and Safety Management System (OHSMS) will be prepared for the facility detailing the plans, actions, and procedures to facilitate legal obligations under the Act and associated Regulation. The OHSMS includes the Emergency Evacuation Plan which at a minimum should include:

- Potential site-specific hazards that may cause and emergency;
- Define procedures to deal with the identified potential emergencies considering site specific issues such as staffing, type, size and occupancy of site, buildings, and infrastructure;
- Develop an evacuation plan identifying egress pathways and assembly areas;
- Define roles and responsibilities and training in emergency response procedures; and
- Undertake trial evacuations.

12 Pollution Incident and Emergency Response Management Plan

This RWMFEMP describes measures for operating and managing the site that minimise the risk to human health and the environment. This section sets out the pollution incident and emergency response management plan.

12.1 Emergency Response Training

The Operator must ensure that all relevant personnel and subcontractors have received training in the implementation of the emergency response plan and appropriate use of emergency spill kits. The Operator shall develop and maintain a training register which demonstrates training has been undertaken and shall provide the documentation on request to Council or an NT Department of Environment, Parks and Water Security Authorised Officer.

12.2 Unauthorised Deposition of Hazardous Substances

If a hazardous substance is detected outside the hazardous waste storage facility or at the tip-face, immediate steps will be taken to isolate the substance, and to cordon off the area. Bunding and clean cover material will be applied as necessary. Steps will be taken to remove the hazardous substance from the site or store if appropriate in the hazardous waste facility, and arrangements will be made for its safe transport and disposal at appropriate facilities.

12.3 Hazardous Liquid Storage Leakage

If a hazardous liquid such as a fuel leakage is detected, or a spill occurs at the site immediate measures will be implemented to ensure leakage is contained to the bunded area in which it is situated. The Operator will implement the RWMF procedure for chemical spill incidents to ensure staff, customer, and contractor safety.

If the leakage or spill is not contained to bunded area the Operator shall adopt spill management practices including spill equipment and containment devices in accordance with, but not limited to the following:

- National Code of Practice for the Storage and Handling of Workplace Dangerous Goods [NOHSC:2047(2001)]
- NOHSC2007 National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC:2007(1994)]

12.4 Flooding

The facility is to provide flooding and stormwater management in accordance with the Stormwater Management Plan in **Section 8,** to provide adequate management of surface water around the facility.

Contaminated water from operational area runoff will be directed via the drainage system to a surface water retention area.

12.5 Groundwater Contamination

In the event of groundwater contamination which exceeds the relevant groundwater monitoring criteria the NT EPA will be informed. It may be necessary to also contact the NT Department of Environment, Parks and Water Security, as directed by the NT EPA.

12.6 Landfill Gas

Appropriate emergency response procedure will need to be implemented if the existing landfill gas management plan in is considered obsolete due to extreme conditions. Such as dangerous or unacceptable levels of methane, carbon dioxide or other landfill gases.

12.7 Earthquake

Should an earthquake occur at the earliest time possible a full site inspection will be undertaken to determine any apparent damage, and possible impact to the facility. The site is monitored for impacts on quality, surface water quality and air quality a detailed investigation to impacts on these monitored parameters will be undertaken. Should any damage or impact become clear, relevant actions as outlined in this section will be implemented.

12.8 Explosion

If an explosion occurs on site at the earliest possible opportunity a full site inspection will be undertaken to determine if any infrastructural damage or personal injuries have occurred. In the event of personal injury, the sites WHS emergency procedures should be applied immediately refer to **Section 11.2**. If any structural damage or impact to site become apparent the actions outlined in **Table 31** should be enacted.

12.9 Fire

The licensee will adhere to the fire management procedures set out in the Fire Management Plan (**Section 11**) to ensure effective fire prevention and control.

12.10 Summary

A summary of the Emergency Response Plan is documented in **Table 31**.

Table 31 Emergency Response Actions

Incident	Comments/Actions	Time Frame	Responsibility
Unauthorised deposition of hazardous substances	Contain waste	Immediately	Operator
	Notify Council		
	Remove to approved disposal point		
Hazardous Liquid Storage Leakage	Contain liquid	Immediately	Operator
	Notify Council		
Flooding	Direct contaminated stormwater to surface water detention area	Immediately	Operator
	Notify Council	Within 24 hours of incident	
Groundwater contamination	Notify Department of Environment and Natural Resources	Within 24 hours of detection	Operator
	Assess extent and design remediation strategy, submit to Department for approval	As soon as possible	Operator
Landfill gas identified	Evacuate personnel	Immediately	Operator
	Notify Council		
	Notify Department of Environment and Natural Resources	Immediately	Licensee
	Investigate occurrence Implement emergency extracting/venting	Within 24 hours of detection	
Earthquake	Assess impacts on site and operations.	As soon as damage detected	Operator
	Notify Council	Immediately	
	Conduct repair work	As soon as possible	Licensee
Explosion	Assess impacts on site and operations. If fire results from explosion refer to Fire Management Plan	As soon as explosion / damage / fire detected	Operator
	Notify Council	Immediately	
	Conduct repair work	As soon as possible	Licensee
Fire	Call Alice Springs Fire and Rescue	Immediately	Operator
	Notify Council	Immediately	

13 Air Quality and Noise Management

13.1 Dust Management

The main sources of dust are from the C&D crushing and screening plant, landfilling areas covered with interim cover soils, works at the operating face and vehicles driving on interim cover and access roads.

To ensure effective dust, the Licensee will adhere to procedures set out in **Table 32**.

13.1.1 Reasons for Control

Dust associated with the RWMF has potential to cause environmental nuisance, both on and off site into the Alice Springs community. Therefore, the facility will ensure compliance with the following environmental conditions and recommendations:

- EPL2016 conditions;
- *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013);
- General Environmental Duty (*WMPC 1998*); and
- National Environment Protection Council (NEPC) National Environment Protection Measure (NEPM) for Ambient Air Quality.

Table 32 Procedures for Dust Control

Item	Comment / Action
Key Information	Field measures – continuous visual surveillance for dust emissions
	Routine Monitoring – PM_{10} averaged over 1 hour
General Dust Control Procedures	Construct and Maintain designated all weather access roads
	Ensure dust suppressant, water cart, is operational at all times
	Check need for dust suppression on access roads, based on weather and usage
	Use water tanker as required
	Inspect bare surfaces and stockpiles daily for dusty conditions
	Traffic speeds kept below 15 km/hour to minimise dust generation
Crushing Equipment Dust Control Procedures	Where possible avoid locating crushing plant in the path of prevailing wind towards Little Sisters Camp
	Avoid establishing crushing plant near any site boundary
	Avoid using the crushing equipment when wind direction is towards the Little Sisters Camp
	No use of crushing plant when wind exceeds 20 km/hour in direction of Little Sisters Camp
	Avoid using the crushing equipment when wind exceeds 30 km/hour in any direction
	Water trucks fitted with hoses with spray nozzles shall be used during crushing and relocation of fines stockpiles
	All fines stockpiles to be wetted or removed during moderate or higher wind conditions
Field Monitoring	Weekly visual inspections and complete checklist

Item	Comment / Action
Routine Monitoring Methodology	Dust monitoring in accordance with AS 3580 using specialised continuous dust monitoring equipment
	Airborne dust levels to be monitored for PM10 and averaged over 24 hours
	Time intervals for all data to be reported
	Meteorological information recorded for each monitoring period recorded – wind speed and direction, temperature, rainfall
	Data to be analysed weekly following data recovery and actions taken immediately as required
Frequency	D01 and D02 located alternately using a single monitoring device
	D03 continuously monitored
	Data collected from all units weekly
Duration	Throughout operations and post closure subject to annual review
Responsibility	Licensee
Location	As noted on **Figure 3**
Conformance Criteria	No off-site impacts
	No adverse on-site impacts, including human health and environmental nuisance
	24-hour average PM_{10} not to exceed 50 ug/m^3 on more than five days per year, as per the National Environment Protection Councils National Environment Protection Measure for Ambient Air Quality
Reporting – Internal	Annual report
Reporting – External	Annual report to be submitted to NRETAS
Non-Conformance Procedures	Investigate cause of unacceptable dust levels
	Check adequacy of procedures
	Implement corrective actions and modify procedures
Management Review	Document in Annual Operations Report and Environmental Monitoring Report including review and comment

13.2 Odour Management

The chief source of odour emanating from the operating cell occurs when putrescible waste is being tipped and compacted. Experience at many depots indicates that these odours are rarely detected at 500 m from the operating cell.

Observations of odour will be made at locations along the site boundary that border occupied properties. Measures will be undertaken to identify the source and the cause of such odour, and to rectify the situation immediately.

Staff monitoring odour should be aware of and note wind direction and determine whether any odours present are emanating from the wastewater lagoons on the adjacent property.

To ensure effective odour control, the Operator will adhere to procedures set out in Table 33 below and when necessary conduct monitoring at the locations identified in **Figure 3**.

13.2.1 Reasons for Control

Odour affiliated with the Facility has potential to cause environmental nuisance, both on and off site. The facility will ensure compliance with the following environmental conditions and recommendations to mitigate against this risk:

- EPL206 conditions;
- *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2003); and
- General Environmental Duty (*WMPC Act 1998*).

Table 33 Procedures for Odour Control

Item	Comment / Action
Conformance Criteria	No unacceptable site generated odours extending off-site
Odour Control Procedures	Ensure application of daily cover to all wastes at the end of each day, or more frequently as required
Recording and Reporting	Weekly inspection
Non-Conformance Procedures	Investigate cause of odour
	Check adequacy of procedures
	Implement corrective actions and modify procedures
Management Review	Document above in Annual Operations Report and Environmental Monitoring Report

13.3 Noise Management

To ensure effective noise control, the Operator will adhere to procedures set out in **Table 34**.

In accordance with the NT Workplace Health and Safety Regulations - Part 6 S.56, an employer must ensure that a worker is not exposed at a workplace to noise exceeding the national standard for exposure to occupational noise as specified in National Occupational Health and Safety Commission - NOHSC: 1007.

13.3.1 Reasons for Control

Noise affiliated with the RWMF has the potential to produce occupational workplace noise risks and off-site nuisance due to the use of machinery. The facility will ensure compliance with the following environmental conditions and recommendations to mitigate against noise risk:

- EPL206conditions;
- *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013);
- General Environmental Duty (*WMPC Act 1998*); and
- Northern Territory *Work Health and Safety (National Uniform Legislation) Act,*2011 and *Work Health and Safety (National Uniform Legislation) Regulations,* 2011.

Table 34 Procedures for Noise Control

Item	Comment / Action
Monitoring	Noise monitoring is undertaken at 4 locations periodically. Monitoring locations are: N1 – Little Sisters Settlement N2 – Within tip-shop N3 – South corner of RWMF N4 – Northern Corner of RWMF
Conformance Criteria	Maximum permitted noise levels as permitted by National Occupational Health and Safety Commission – NOHSC: 1007.
	The national standard for exposure to noise in the occupational environment is an eight-hour equivalent continuous A-weighted sound pressure level, LAeq, 8h of 85 dB(A). For peak noise, the national standard is a C-weighted peak sound pressure level, LC, peak, of 140 dB(C).
Noise Control Procedures	Ensure all staff operating plant or machinery or in the vicinity of operational areas of the site are equipped with, and using personal protective equipment (PPE)
	Ensure all facility equipment is fitted with noise suppressants, including mobile plant for large scale or intensive works
	Ensure that machinery is only operated between approved working hours
	Ensure all facility equipment is adequately maintained
	Ensure correct operation of all facility equipment
	Monitor all incoming vehicles for noise and if necessary, refuse access to vehicles producing excessive noise.
Recording and Reporting	Regular perimeter monitoring and Weekly inspections (visual) to ensure PPE being utilised. Complete checklist.

Item	Comment / Action
Non-Conformance Procedures	Investigate cause of reported elevated noise
	Check adequacy of site operational procedures
	Implement corrective actions and modify procedures
Management Review	Document above in Annual Operations Report and Environmental Monitoring Report

14 Visual Amenity and Litter Control

14.1 Vegetation and Visual Impact Management

This section applies to established vegetation on the periphery to landfilling activities, vegetated buffers and screening and vegetation established as part of capping and rehabilitation works. These areas shall be continually monitored for adequate condition, growth and survival.

Generally, as the site currently exists, the extent of historical landfilling is completely devoid of vegetation due to its landfilling history. The post-closure use of the site is to return to a rehabilitated natural state as capping is completed. Therefore, no significant plantings other than small shallow rooting shrubs and grasses are anticipated over the capped areas.

14.1.1 Implementation

It is recommended that where additional revegetation to that currently existing is undertaken, direct seeding or tube stock planting be carried out for all revegetation of trees, shrubs and native grasses primarily for ease of maintenance and higher success rates. Direct seeding is known to have a high success rate in the region of the facility and shall be the preferred revegetation option. Plastic collars and stakes may be necessary to ensure that rabbit populations do not destroy the young vegetation.

The plants will require watering at the time of planting, and if the following summer is particularly harsh will require additional watering. It is recommended that planting occur in the autumn months or early in the spring months to ensure establishment prior to summer. After the summer season these plants could be left unattended other than occasional monitoring.

14.1.2 Vegetation Monitoring

Monitoring of vegetation shall be undertaken on an annual basis as detailed in **Table 35**. The success of vegetation measures and pest plant control shall be monitored quarterly and coinciding with the end of each summer period to inspect adequate growth and survival. This will enable replanting if required or supplemental planting during cooler, wetter months.

Once vegetation has been re-established a summary report of all monitoring will be prepared annually. The report will include:

- field data and photographs collected during the monitoring period;
- details of any noticeable impacts; and
- a summary of monitoring results.

Table 35 Vegetation and Screening Monitoring Schedule

Item	Comment / Action
Key Information	Condition of vegetation and emergency of pest vegetation
Locations	Walkover of vegetated areas and mounds
Methodology	Visual inspection
Responsibility	Licensee
Frequency	Annually at the end of summer or 6 weeks after major rainfall
Duration	Throughout operation of the site and post closure subject to review
Acceptance Criteria	Established, fair condition, growth and coverage
Reporting – Internal	Annual results to Licensee
Non-Conformance Procedures	Revegetated where necessary
Management Review	Licensee to review and implement recommendations from Annual Operations and Environmental Monitoring Report

14.2 Litter Control Plan

The EPL requires the RWMF to have a litter control plan. The most common form of litter associated with disposal of domestic waste is plastic bags, together with paper products. The movement of the litter away from the operating cell is proportional to wind speed. The elevated topography of the facility relative to the surrounds can also produce winds which influence litter movement.

To ensure effective litter control, the Operator will adhere to procedures set out in **Table 36**.

14.2.1 Reasons for Control

Windblown litter can cause environmental and aesthetic nuisance the RWMF and potentially offsite communities. Therefore, the facility will ensure compliance with the following conditions and guidelines:

- EPL206 conditions;
- *Guidelines for the Sitting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013); and
- General Environmental Duty (*WMPC Act 1998*).

Table 36 Procedures for Litter Control

Item	Comment / Action
Conformance Criteria	No litter to escape site boundaries
	Litter within facility not to be visible from offsite properties or transport corridors
	Litter to be collected and disposed of as often as necessary to maintain a tidy appearance
General Strategies	Provide litter control measures around current cell, for example, litter fence
	Minimise area of working face

Item	Comment / Action
	Apply daily cover, soil, plastic sheeting or fabricated metal lids, or more frequently as required
	Ensure prompt compaction of waste
	Ensure all vehicles entering facility have loads covered if transporting waste which can produce litter
	Regular visual checks and weekly litter pick ups
	Good housekeeping and tidiness
	Inspection of boundaries and beyond the landfill area for littler each week
Litter Pick Up Procedures	Check litter control fence, site boundary fences, all landscaped areas daily or as required, for example, following wind events
	Pick up litter if required, put into bags, leaving bags at litter locations
	At the end of each day, collect all litter bags and empty in operating cell
	Check external properties including roadways adjacent to site boundaries following each day's operation to ensure these are free of litter
Special Procedures for Windy Days, greater than 25 km/h forecast	Implement all litter pick up procedures as documented above
	Apply layer of daily cover to waste as soon as practical after it is deposited
Recording and Reporting	Weekly inspection and complete checklist by Operator for Licensee
Non-Conformance Procedures	Investigate cause of uncontrolled litter
	Check adequacy of procedures
	Implement corrective actions and modify procedures
Management Reviews	Document above in Annual Operations Report and Environmental Monitoring Report

15 Weed and Pest Control Management

Weed and pest control will be implemented on-site as required by the Operator or as instructed by the Licensee. As a component of the weekly inspections on site, the occurrence of birds, vermin, dogs, cats or weeds will be observed and recorded followed by the appropriate action to be taken.

The site-specific management procedures to be implemented for weeds and pests are highlighted below in **Table 37**.

15.1 Reasons for Control

Weed invasions and pest outbreaks can cause serious environmental harm to the RWMF and potentially offsite communities. Offsite impacts have the potential to negatively impact the greater Alice Springs community. Therefore, key reasons for control include:

- Prevention of adverse impacts to the Facility from birds, vermin, pests and weeds.
- Ensure general compliance with:
  - EPL206 conditions;
  - *Weeds Management Act 2001;* and

- *Guidelines for the Sitting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (NT EPA 2013).

Table 37 Procedures for Weed and Pest Management

Item	Comment / Action
Conformance Criteria	No disposal of declared weeds in the green waste stockpile
	Annual inspection by DEPWS and subsequent chemical control of specific problem weed or invasive species, as necessary
Control Procedures	Ensure application of daily cover to all wastes at the end of each day, or more frequently if required
	If bird numbers become excessive undertaken steps to remedy the situation as appropriate that is, by applying more clean cover material to minimise the occurrence of birds, or by developing an active bird control program acceptable to DEPWS;
	If rats or similar vermin, are observed an improved control program shall be implemented and monitored, in particular, to protect those areas to be direct seeded. This may include destroying rabbit warrens and baiting strategies;
	If potentially airborne weeds are observed on stockpiled materials, or water borne seeds are detected on lower lying areas of the site, they shall be immediately sprayed. Other areas shall be sprayed in accordance with the annual weed spraying program as part of the landscaping plan.
	ASTC does not accept declared weeds in the green waste stockpile. If declared weeds are discovered in the green waste stockpile they shall be removed immediately by the landfill operator and transferred to the tip face where they can be buried in-situ.
	Where declared weeds are illegally disposed of at the landfill, or are found growing at the landfill they should be treated and destroyed in accordance with the requirements of the Weeds Branch of DEPWS
	Personnel maintaining the landfill should able to identify the various types of declared weeds which may exist in the region so that they can monitor for their presence at the facility and undertake appropriate treatment and destruction action.
Recording and Reporting	Weekly Inspection, site operatives Annual weed inspection (DEPWS)
Non-Conformance Procedures	Investigate cause of occurrence Check adequacy of procedures Implement corrective actions and modify procedures
Management Review	Document above in Annual Operations Report and Environmental Monitoring Report

16 Site Closure Management Plan

Complementary plans have been developed to support the progressive capping and closure of parts of the landfill facility within the Alice Springs Regional Waste Management Facility. These plans have been developed in accordance with the requirements of the EPL and NT EPA *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (2013).

These plans are documented in detail in:

- SLR, 2020 (in draft), *Alice Springs Landfill – Capping Plan*
- SLR, 2020 (in draft), *Alice Springs Landfill – Closure Plan*

The following sub sections provide a summary of the proposed plan for the purpose of the RWMFEMP.

16.1 Approach to site closure

16.1.1 Objectives and Strategy

The objectives of the RWMF closure and rehabilitation are to ensure that:

- measures are implemented to monitor, detect and intervene in respect of any impact on the surrounding environment and to minimise any degradation of the management infrastructure;
- the final landform remains stable and is suitable for the post-closure land use; and
- the landfill has no adverse or continuing impact on the surrounding environment.

The strategy for the RWMF partial closure and rehabilitation comprises the initial closure and rehabilitation works, followed by post-closure management and monitoring. Components of these stages are summarised in **Table 38**.

Table 38 Closure and Rehabilitation Strategy

Closure and Rehabilitation Stage	Components
Landfill Closure and Rehabilitation Works	Continued monitoring of leachate and quality of surface and groundwater;
	Continued dust, litter, odour, noise and pest/weed control;
	Continued operation and maintenance of surface water and erosion controls;
	Continued implementation of recording and reporting procedures, including Customer Relationship Management System;
	Waste emplacement to the NT EPA approved final landform contours and cover with intermediate cover layer;
	Staged installation of final capping over the existing landfilled areas; and
	Revegetation of final capping layer to stabilise the existing landfilled areas and enhance visual amenity.
Post-Closure	Monitoring of leachate and quality of surface and groundwater;
	Dust, litter and noise control;
	Operation and maintenance of surface water and erosion controls; and
	Prepare and implement remediation action plans, where required.

16.1.2 Remaining landfill capacity

This RWMFEMP covers the period from 2021 to 2026. It is predicted that the existing landfill has over 5 years' capacity, and ongoing recovery efforts by ASTC are likely to extend the landfill life significantly. Additional stages are also available to expand into areas of the existing facility footprint.

16.1.3 Staged closure plan

A staged closure plan has been developed to describe the nature and closure activities associated with the progressive closure of the current active and historical sections of the landfill, Stages 1-4. Once filling within Stages 1-4 is complete, or at a time identified by ASTC as appropriate, progressive closure of the existing landfill will commence over the period between the closure plan commencing and filling completing.

Three sub-stages have been identified for progressive closure. Closure will progress from the eastern edge of the site in a westerly direction. The estimated closure schedule is shown below:

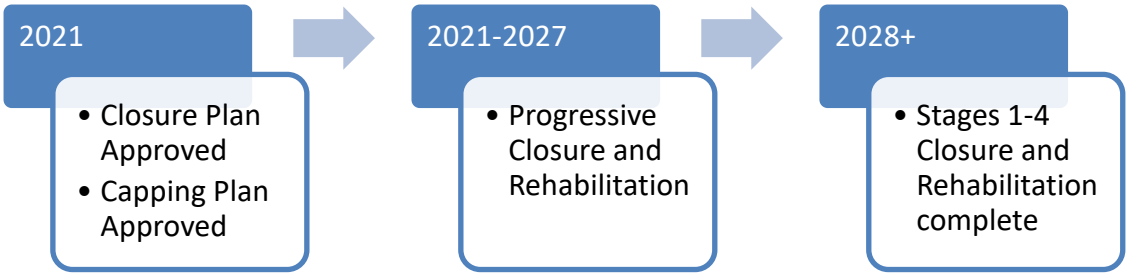

Figure 6 Closure Schedule, Landfill Stages 1-4

Given ASTC intend to operate the facility well beyond 2028, the closure plan should be reviewed and updated in agreement with the NT EPA if site operations and proposed filling plans change.

16.2 Capping Plan (Landfill Stages 1-4)

The capping and rehabilitation design plan proposes to install a final permanent cap with the addition of interim capping along the eastern flank of the existing landfill to allow for the proposed Stage 3 expansion.

16.2.1 Control measures

The following design controls are incorporated into the design of the final cover system:

- Maximum side-slope gradient of 1 m vertical to 5 m horizontal, 20% gradient
- Construction Quality Assurance review and hold points during construction to ensure integrity of the lining system and compliance with the specification
- Inclusion of surface water management measures including diversion drainage channels to minimise infiltration of water, and leachate production, and to minimise scour erosion.
- A landfill gas ventilation system proposed to minimise impact or damage to the lining system.

16.2.2 Landfill capping plan

The *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory (NT EPA, 2013)* sets the minimum standards to be achieved applicable to general solid waste and restricted solid waste landfills. The expected outcome of the capping and closure activities are:

- Reduce rainwater infiltration into the waste, minimising the generation of leachate;
- Stabilise the surface of the completed part of the landfill;
- Reduce suspended sediment and contaminated runoff;
- Minimise the escape of untreated landfill gas;
- Minimise odour emissions, dust, litter, the presence of scavengers and vermin, and the risk of fire; and
- Prepare the site for its future use; this includes protecting people, fauna and flora on or near the site from exposure to pollutants still contained in, or escaping from, the landfill.

The planned final capping system comprises:

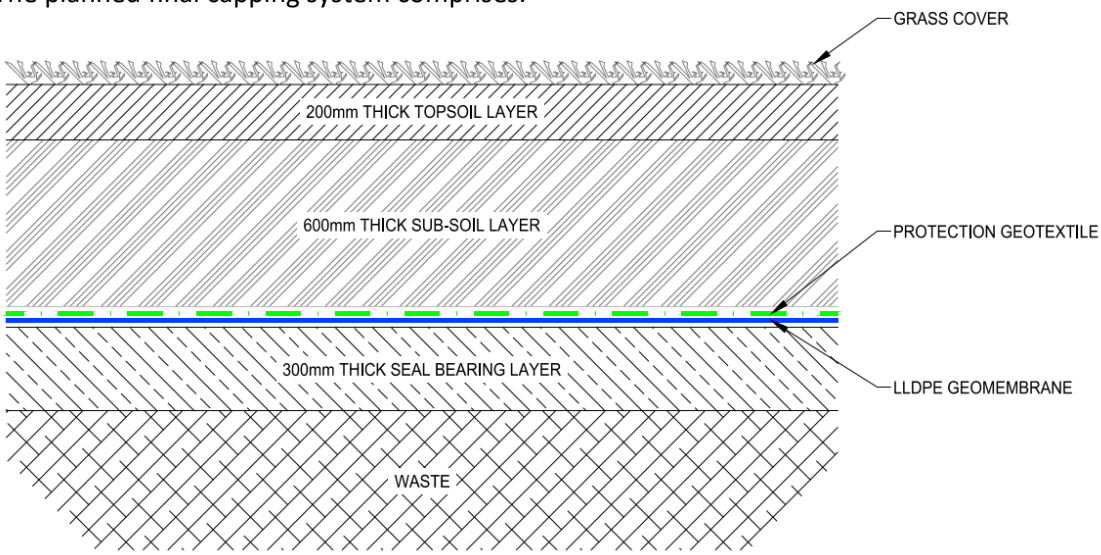

Figure 7 Schematic landfill cap design

The proposed landfill cover system will utilise a linear low-density polyethylene (LLDPE) geomembrane to provide a low permeability barrier preventing infiltration of precipitation into the waste deposit, and thus minimising the likelihood of continued leachate or landfill gas production.

16.2.3 Stormwater Management

Appropriate surface water management controls are required to ensure that clean stormwater runoff is intercepted and diverted away from the landfill. Erosion and sediment control measures will be installed. Any rainfall that comes into contact with waste within the landfill is considered to be leachate and falls within the remit of the leachate management system. Dirty water is that which comes into contact with the site operational areas but does not come into contact with the waste.

Surface water management controls are designed in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volume 2B (DECC, 2008), also referred to as the 'Blue Book'.

All dirty water will be managed appropriately to avoid uncontrolled discharge and offsite pollution. It is proposed during capping to manage runoff at the site by:

- All clean water runoff will be diverted to clean water diversion drains away from the stormwater system
- Progressive revegetation of batters during earthworks to limit erosion. All batters to be hydromulched as soon as practicable.
- Toe drains to be installed at edge of landfill batters to convey runoff and sediment to the sediment basin located to the north-west of the landfill.

The proposed surface water and erosion control methods will include horizontal benches, perimeter toe drains and rock chutes.

16.2.4 Landfill gas management

It is proposed, based on the generally low landfill gas generation rates and absence of evidence indicating the landfill gas to install a passive landfill gas management system within the final landform design. The subsurface landfill gas system will capture and ventilate landfill gas generated within the waste mass and comprises the following elements:

- A geocomposite high-density polyethylene (HDPE) panel drain (170mm wide by 40mm thick) with a layer of filter geotextile thermally bonded to the panel drain
- The panel drain is surrounded by a clean drainage aggregate layer of at least 400mm wide by at least 300mm deep with a hydraulic conductivity of greater than 1 x 10^{-4} m/s.
- A separation geotextile will be placed around the gravel drainage aggregate to prevent intrusion of fines. The passive gas depressurisation layer will vent to the biofiltration system.

As ASTC approaches completion of filling within the existing cells, and moves towards closure of the landfill, consideration should be made of the ongoing monitoring record to ensure that changes to the filling regime do not change the existing gas or leachate generation dynamics.

16.2.5 Final capping construction

Construction of the final capping shall be undertaken by an appropriately qualified, competent and experienced contractor under the supervision of an independent Construction Quality Assurance (CQA) Engineer/Consultant.

The final capping will be constructed in stages and in accordance with the NT EPA-approved capping design drawings, technical specification and CQA Plan. The capping components shall be undertaken typically starting along the side-slopes and gradually working towards the crown. Placement towards the centre of the domed landfill is considered best practice to minimise instability of placing and spreading soils down slope. Post-rehabilitation swales and other erosion control measures will be established progressively during construction.

Access roads shall be designed and constructed within the final rehabilitated landform to provide adequate access for environmental monitoring, maintenance and firefighting. Following seeding and planting across the installed final cap, a series of stormwater swales will be installed on the final landform in accordance with International Erosion Control Association (IECA) 2008 Best Practice Guidelines for Erosion and Sediment Control.

16.2.6 Construction Quality Assurance Plan

Prior to commencement of final cover system construction, a CQA Plan will be submitted to the NT EPA for approval. The CQA Plan shall include construction methodology, inspection and verification of materials, treatment and placement of materials, detailed design drawings and specifications. On completion of work the CQA report will be submitted to the NT EPA for approval.

16.3 Post-closure monitoring and maintenance plan

16.3.1 Maintenance Plan

ASTC will take all required measures to maintain the integrity of the final landforms at the RWMF, including, but not limited to:

- Monitoring the condition and efficacy of surface water drains, and undertaking repairs where necessary;
- Filling of any cracks that may occur in the final capping layer;
- Filling of depressions created by settlement of the landfilled waste, to avoid ponding of surface water;
- Replacement of vegetation, where necessary, to maintain the required vegetation cover density;
- Repairing erosion scours.

16.3.2 Post Closure Monitoring

16.3.2.1 Objectives

The objectives of monitoring at and around landfill sites are to:

- Determine baseline environmental conditions at and around the landfill site;
- Determine processes occurring within landfills through monitoring of leachate production, leachate composition and landfill gas composition;
- Determine effects on the environment due to the landfill through monitoring of groundwater, surface water and landfill gas;
- Check compliance with regulatory requirements; and
- Identify the need for, and the extent of, remedial or mitigation measures to reduce effects on the environment.

Monitoring of groundwater, surface water and landfill gas needs to be continued during the aftercare period of the landfill, until the strength of any discharges has reduced to a level at which they are unlikely to have any adverse effects on the environment.

16.4 Completion of obligations

ASTC may submit a Statement of Completion to NT EPA, seeking acceptance for the fulfilment of all obligations and demonstrating that the landfill is stable and non-polluting.

The landfill may be considered stable and non-polluting following submission of the certified Statement of Completion that shows:

- The Landfill Closure and Post Closure Plan (LCPCP) has been fully implemented;
- Remediation and/or rehabilitation work is complete;
- Further environmental management of the RWMF is no longer required;
- Gas concentrations in all perimeter gas wells have fallen to less than 1% methane (*v*/*v*) and less than 1.5% carbon dioxide for a period of 24 continuous months;
- Analysis of any leachate indicates low levels of contamination posing no hazard to the environment, and surface water and groundwater monitoring indicates that analytes encountered meet the relevant marine and freshwater quality objectives and fall below relevant trigger values;
- The landfill final capping has been assessed over some years and found to be in good condition and stable, with acceptable stormwater drainage and with no evidence of erosion, cracking, dead vegetation, ponding, differential settlement or slope instability;
- The level of suspended solids in rainwater running off the final capping should be less than 50 mg/L;
- The methane concentration at the surface of the final capping should not exceed 500 ppm at any point;
- The closed Alice Springs Landfill no longer poses an adverse amenity risk. It does not generate offensive or excessive odour, dust, noise, litter and debris, present a fire risk, or attract scavengers and vermin; and
- All other requirements of the LCP and Surrender Notice have been completed and/or satisfied.

Upon approval of the certified Statement of Completion by the NT EPA, ASTC can cease post-closure maintenance and monitoring of the RWMF.

APPENDIX A

NTEPA – Environment Protection License 206

ntepa Northern Territory Environment Protection Authority

ENVIRONMENT PROTECTION LICENCE

(Pursuant to section 34 of the *Waste Management and Pollution Control Act*)

Licensee	Alice Springs Town Council
Licence Number	**EPL206**
Registered Business Address	Alice Springs Town Council 93 Todd Street Alice Springs NT 0871
ABN	45 863 481 471
Premises Address	Lot 07902 Town of Alice Springs Plan(s) S 88/059 (80 Commonage Rd, Ilparpa)
Anniversary Date:	04 November
Commencement Date:	04/11/2016
Expiry Date:	03/11/2021
Scheduled Activity	Operating **premises** for the disposal of **waste** by burial that service, or are designed to service, the **waste** disposal requirements of more than 1000 persons. Collecting, transporting, storing, re-cycling, treating or disposing of a **listed waste** (as per Table 1) on a commercial or fee for service basis, other than in or for the purpose of a sewage treatment plant.
Description	Alice Springs Regional Waste Treatment Facility accepts household, industrial and specific listed wastes from the greater Alice Springs area. These wastes are disposed of by burial on site or collected and stored for recycling and treatment.

Table 1 - Listed Wastes Authorised to be Handled

Listed Waste	Collection	Transport	Storage	Treatment	Recycling	Disposal
Acidic solutions or acids in solid form	✓	✗	✓	✗	✗	✗
Asbestos	✓	✗	✓	✗	✗	✓
Basic solutions or bases in solid form	✓	✗	✓	✗	✗	✗
Containers that are contaminated with residues of a listed waste	✓	✗	✓	✗	✗	✗
Grease trap waste	✓	✗	✓	✓	✗	✓
Lead, lead compounds	✓	✗	✓	✗	✓	✗
Tyres	✓	✗	✓	✗	✓	✓
Waste mixtures, or waste emulsions, of oil and water or hydrocarbon and water	✓	✗	✓	✓	✗	✓
Soils contaminated with a listed waste	✓	✗	✓	✗	✗	✗
Surface active agents (surfactants) that contain principally organic constituents and that may contain metals and inorganic materials	✓	✗	✓	✗	✗	✗

✓ Activity authorised by this licence

✗ Activity not authorised by this licence

ENVIRONMENT PROTECTION LICENCE 206

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ATTACHMENTS

ENVIRONMENT PROTECTION LICENCE 206

INFORMATION ABOUT THIS LICENCE

- This licence does not in any way relieve the licence holder from its obligations to comply with the *Waste Management and Pollution Control Act* (WMPC Act), including the general environmental duty in section 12 of the WMPC Act and the duty to notify of incidents causing or threating to cause pollution under section 14 of the WMPC Act.

Duration of a licence (section 40, 43 and 45 of the WMPC Act)

- A licence will remain in force until its expiry date or until it is surrendered by the licensee or is suspended or cancelled in accordance with the WMPC Act.
- The licensee must notify the Northern Territory Environment Protection Authority (NT EPA) within 14 days after ceasing to conduct the activity.
- The licensee may, with the approval of the NT EPA, surrender the licence to the NT EPA.

Amendment or Revocation of a licence (section 37 of the WMPC Act)

- The licensee may apply to amend or revoke a condition of this licence.
- A fee applies and the application must be made using the designated form via NT EPA Online.
- The NT EPA may also amend or revoke a condition of this licence as set out in section 38 of the WMPC Act.

Transfer of a licence (section 46 of the WMPC Act)

- The licensee can apply to transfer their licence to another person.

Renewal of a licence (section 40 of the WMPC Act and section 3 of the Regulations)

- The licensee may apply for the renewal of their licence not earlier than 90 days, and not later than 30 days, before their licence expires.
- A fee applies and the application must be made via NT EPA Online.

Public Register

- A copy of environment protection licences and any plans for environmental management, reports, submissions or documents required as a condition of an environment protection licence, will be placed on a register in accordance with section 9 of the WMPC Act.
- A copy of the Annual Return will be placed on the register.
- The NT EPA makes this register freely available from the NT EPA website.

Environment Protection Objectives (Part 4 of the WMPC Act), and Water Quality Standards (section 73 of the *Water Act*)

- An Environment Protection Objective (EPO) is a statutory instrument to establish principles on which:
  a. environmental quality is to be maintained, enhanced, managed or protected;
  b. pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; and
  c. effective waste management is to be implemented or evaluated.
- In accordance with section 18 of the WMPC Act a beneficial use, quality standard, criteria or objective declared under section 73 of the *Water Act* and in force is an environment protection objective for the purposes of the WMPC Act.

- The following EPOs and Beneficial Use Declarations (BUDs) are relevant to this licence: Declaration of Beneficial Uses and Water Quality Objectives, Alice Springs Water Control District, Northern Territory Government Gazette No. G27, 4 July 2007.

Environmental Interests

- This section highlights sensitivity of the surrounding land use and environment associated with the location of the approved activity.
- Sites of Conservation Significance: SOCS number 55: Greater McDonnell Ranges.

Cultural Interests

- It is the licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any Authority Certificates required as a result of conducting the licenced activity are obtained and complied with.

RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

- Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
- Any reference to any standard (Australian or international) in this licence means the relevant parts of the current version of that standard.
- A reference to any guideline or code of practice (or to the relevant parts of any guideline or code of practice) in this licence means the current version of the guideline or code of practice.
- Under section 39 of the WMPC Act, any contravention of or failure to comply with this licence by the licensee may be an offence.
- In determining whether the licensee has committed an offence, the licensee may be liable for the conduct of its directors, employees or agents.
- The licensee should ensure that each of its directors, employees, contractors or agents are aware of, and comply with, this licence.
- In this licence, unless the contrary intention appears, words that are defined in the WMPC Act are intended to have the meaning given to them in that Act.

LICENCE CONDITIONS

GENERAL

1 The licensee must ensure the contact details recorded in NT EPA Online for this licence are correct at all times.

2 The licensee must at all times have a 24 hour emergency contact.

3 The licensee must pay the annual fee calculated in accordance with the method prescribed in the Regulations within 50 business days of the anniversary of the commencement date of this licence, for each year or part of a year that this licence is in force.

4 The licensee must cause clear and legible signage, in English, to be displayed in a prominent location at each public entrance to the premises that includes the following details:

4.1 environment protection licence number issued under the WMPC Act; and

4.2 24 hour emergency contact details.

5 The licensee must cause a copy of this licence to be available for inspection by any person, in hard copy form, at the premises.

6 The licensee must provide to the NT EPA, within 10 business days of a request, a copy of any document, monitoring data or other information in relation to the activity, in the format requested by the NT EPA.

7 All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by uploading the document via NT EPA Online (or by emailing waste@nt.gov.au).

8 The licensee must maintain and implement documents listed in Table 2.

Table 2. Documents Relevant to Licensed Activity

Document title
Landfill Environment Management Plan (LEMP)

9 Within 10 business days of any amendment being made to a document listed in Table 2 the licensee must provide the amended document to the NT EPA, along with:

9.1 a tabulated summary of the amendment(s) with document references;

9.2 reasons for the amendment(s); and

9.3 an assessment of environmental risk associated with the amendment(s).

10 The NT EPA may require the licensee to revise or amend and resubmit any amended document. Where the NT EPA requires a document to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

11 The licensee must maintain a Complaint Log for all complaints received by the licensee in relation to the activity.

12 The licensee must ensure that the Complaint Log includes, for each complaint received by the licensee, the following information:

12.1 the person to whom the complaint was made;

12.2 the person responsible for managing the complaint;

12.3 the date and time the complaint was reported;

12.4 the date and time of the event(s) that led to the complaint;

12.5 the contact details of the complainant if known, or where no details are provided a note to that effect;

12.6 the nature of the complaint;

12.7 the nature of event(s) giving rise to the complaint;

12.8 prevailing weather conditions at the time (where relevant to the complaint)

12.9 the action taken in relation to the complaint, including any follow-up contact with the complainant; and

12.10 if no action was taken, why no action was taken.

13 The licensee must implement, maintain and follow an Emergency Response Plan that addresses procedures for responding to emergencies associated with the activity that may cause environmental harm.

EARLY SURRENDER OF LICENCE

14 Any reports, records or other information required or able to be provided by the licensee under this licence must be submitted to the NT EPA prior to the licensee surrendering the licence. If the date on which a report, record or other information is required falls after the date the licensee requests to surrender this licensee, the licensee must provide the report, record or information as far as possible using data available to the licensee up to and including the date the request to surrender the licence is made.

OPERATIONAL

15 The licensee must not collect, transport, store, recycle, treat or dispose of listed waste other than the listed waste specified in Table 1.

16 The licensee must ensure any plant and equipment used by the licensee in conducting the activity:

16.1 is reasonably fit for the purpose and use to which it is put;

16.2 is maintained;

16.3 is operated by a person trained to use the plant and equipment; and

16.4 is operated by, or operated by a person accompanied by, a person trained to handle, store or dispose of listed waste in connection with the activity.

17 The licensee must ensure that wastewater generated from washing plant and equipment associated with the activity does not cause pollution.

18 The licensee must ensure that liquid wastes authorised to be disposed of must only be disposed of to the Stage 1 and Stage 2 ponds on the site for the purposes of evaporation from these ponds.

19 The Stage 1 and Stage 2 Ponds must be lined so as to ensure no leakage from these ponds to groundwater.

20 The Stage 1 and 2 Ponds must be constructed, operated and maintained in a state so as to prevent the occurrence of any spills from these ponds to the surrounding land.

21 The licensee must segregate waste received at the premises in clearly designated areas for recycling, re-use or disposal.

22 The licensee must segregate waste generated at the premises in clearly designated areas for recycling, re-use or disposal.

23 The licensee must ensure that only the following wastes are disposed of by burial at the premises:

23.1 putrescible waste;

23.2 solid inert waste; and

23.3 listed waste as specified for disposal in Table 1.

24 The licensee must ensure that litter:

24.1 is contained within the boundary of the premises;

24.2 is not deposited or allowed to accumulate in stormwater drain(s), water or leachate dam(s); and

24.3 does not accumulate along the boundary of the premises.

25 The licensee must not cause or permit waste to be burned.

26 The licensee must maintain a log of fires occurring at the premises including the following information:

26.1 the time and date of when the fire was reported;

26.2 the circumstance which ignited the fire;

26.3 the time and date of when the fire ceased and whether it burnt out or was extinguished;

26.4 the location of the fire on the premises (e.g. timber stockpile, putrescible waste);

26.5 prevailing weather conditions;

26.6 observations made in regard to smoke direction and dispersion;

26.7 the amount of waste combusted by the fire; and

26.8 action taken to extinguish the fire.

27 The licensee must notify the NT EPA of any fires at the premises by contacting the Pollution Hotline on telephone number 1800 064 567 as soon as practicable after (and in any case, within 24 hours after) first becoming aware of the fire. The licensee must provide the status of the fire and this licence number when contacting the Pollution Hotline.

28 The licensee must cover waste in accordance with the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.

29 The licensee must ensure that all leachate is managed in accordance with the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.

30 The licensee must ensure that neither leachate nor water pond on the surface of the landfill.

31 The licensee must ensure a landfill gas collection system is installed, operated and maintained on the

premises.

32 The licensee must implement, maintain and follow a Rehabilitation Plan.

33 Where a landfill cell is no longer in use, the licensee must ensure that the landfill cell is closed and capped so as to achieve the landfill cap design objectives in the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.

34 The licensee must, at least three months prior to the commencement of construction of a new landfill cell, or extension of an existing landfill cell, submit to the NT EPA an application for an environment protection approval under section 31(1)(a) of the WMPC Act unless the new landfill cell or the extension of an existing landfill cell has previously been approved by the NT EPA in accordance with the WMPC Act.

35 The licensee must:

35.1 prepare a Landfill Closure and Post Closure Plan in accordance with the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory;

35.2 ensure the Plan is reviewed by a qualified person and they prepare a written report of their review, prior to submission of the Plan to the NT EPA; and

35.3 submit the Plan to the NT EPA, with a copy of the qualified person's review, at least 12 months prior to the forecast closure of the landfill.

36 The NT EPA may require the licensee to revise or amend and resubmit any Landfill Closure and Post Closure Plan. Where the NT EPA requires a Plan to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

37 The licensee must ensure that all materials that are likely to cause environmental harm are handled and stored in areas with a containment system in accordance with the relevant Australian Standard. Where no relevant Australian Standard exists, the containment system must be sized to contain 110% of the volume of the largest container within the area.

38 The licensee must only handle asbestos containing material which is packed and contained in accordance with Section 4.8 of the NT Worksafe and Safe Work Australia How to Safely Remove Asbestos Code of Practice.

39 The licensee must dispose of asbestos containing material by burying it:

39.1 in the case of asbestos fibre and dust wastes, at a minimum depth of 3 metres; and

39.2 in the case of stabilised asbestos wastes in a bonded matrix, at a minimum depth of 1 metre.

40 The licensee must maintain a record of all asbestos containing material buried at the premises including the quantity of the material buried and the location of the buried material on the premises in three dimensions.

DISCHARGES AND EMISSIONS

41 The licensee must ensure there is no migration or overflow of a contaminant or waste, which causes or may cause environmental harm, beyond the boundary of the land on which the premises are located. (For the avoidance of doubt, this condition is not intended to authorise the discharge of a contaminant or waste to any land or water which discharge has not been specifically authorised by another condition of this licence.)

42 The licensee must not allow a contaminant or waste, which causes or may cause environmental harm, to enter water.

43 The licensee must ensure that stormwater does not come into contact with a contaminant or waste, which causes or may cause environmental harm.

MONITORING

44 The licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667, ANZECC/ARMCANZ)

45 The licensee must ensure that all monitoring samples are analysed at a laboratory with current NATA accreditation or equivalent, for the parameters to be measured.

46 The licensee must implement, maintain and follow the Alice Springs Landfill Environment Monitoring Plan ("the Monitoring Plan") from the commencement date of this licence.

47 The licensee must ensure that any proposed revisions to the Monitoring Plan (other than typographical changes or revisions to formatting or referencing) are:

47.1 reviewed by a suitably qualified professional, who must produce a written report about their review;

47.2 submitted to the NT EPA with justification for revisions; and

47.3 submitted to the NT EPA, in both hard copy and electronic form (with a complete copy of the qualified professional's written review), 20 business days prior to the proposed implementation date.

48 The NT EPA may require the licensee to revise or amend and resubmit the Monitoring Plan. Where the NT EPA requires the Monitoring Plan to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

For the purposes of this condition, the word "land" does not include water [or air] on or above land.

49 The licensee must for all land based monitoring points specified in the Monitoring Plan:

49.1 install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and

49.2 maintain safe access and egress, as is reasonably practicable.

50 The licensee must ensure any samples collected in accordance with the Monitoring Plan or in connection with the activity or this licence, are obtained by, or under the supervision of a qualified sampler.

51 The licensee must ensure that, for each sample collected in accordance with the Monitoring Plan or the activity the following information must be recorded and retained:

51.1 the date on which the sample was collected;

51.2 the time at which the sample was collected;

51.3 the location at which the sample was collected;

51.4 the name of the person who collected the sample;

51.5 the chain of custody forms relating to the sample;

51.6 the field measurements (if any) and analytical results (if any) relating to the sample; and

51.7 laboratory quality assurance and quality control documentation.

RECORDING AND REPORTING

52 The licensee must maintain records of the nature, quantities and source of waste, other than listed waste, received at the premises in each successive 12 month period following the commencement date of this licence.

53 The licensee must keep and maintain records relating to the activity undertaken and the listed waste handled by the licensee in each successive 12 month period following the commencement of this licence, which include:

53.1 the date of collection;

53.2 the source of the listed waste;

53.3 the name of the transport company, if not the licensee;

53.4 the vehicle registration;

53.5 a description of the listed waste;

53.6 the quantity of the listed waste;

53.7 the final destination of the listed waste; and

53.8 whether the listed waste was stored, recycled, treated or disposed of.

54 The licensee must retain records relating to waste, including listed waste, as required by the conditions of this licence, for a period of 2 years after the end of the 12 month period to which the record relates.

55 The licensee must keep records of all non-compliances with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence.

56 The licensee must notify the NT EPA of any non-compliance with this licence by completing the Non-Compliance Notification via NT EPA Online (or by emailing waste@nt.gov.au), as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.

57 The licensee must include in the notification of non-compliance the following information:

57.1 when the non-compliance was detected and by whom;

57.2 the date and time of the non-compliance;

57.3 the actual and potential causes and contributing factors to the non-compliance;

57.4 the risk of environmental harm arising from the non-compliance;

57.5 the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;

57.6 corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; and

57.7 if no action was taken, why no action was taken.

57.8 a date when an incident investigation report will be submitted to the NT EPA.

58 The licensee must submit a completed Annual Return via NT EPA Online within 10 business days after each anniversary date of this licence, which report relates to the preceding 12 month period.

59 The licensee must complete and provide to the NT EPA a Monitoring Report, as prescribed by this licence, within 10 business days after each anniversary date of this licence.

60 The licensee must ensure that each Monitoring Report:

60.1 includes monitoring results for gas, leachate, surface water and groundwater including interpretations of monitoring results by qualified persons.

60.2 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring';

60.3 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available); and

60.4 includes an assessment of environmental impact from the activity.

61 The NT EPA may require the licensee to revise or amend and resubmit any Monitoring Report. Where the NT EPA requires the Monitoring Report to be resubmitted, the licensee must submit it to the NT EPA by the date specified by the NT EPA.

END OF LICENCE CONDITIONS

This licence is not valid unless signed below:

Leonie Cooper
Director Environment Authorisations
Delegate of the Northern Territory
Environment Protection Authority
Dated: 04/08/2017

END NOTES

This licence is a renewal and supersedes EPL11-06 which was issued on 21 August 2015.

EPL11-06 was an amendment and superseded EPL11-05 which was issued on 8 July 2014.

EPL11-05 was an amendment and superseded EPL11-04 which was issued on 6 December 2013.

EPL11-04 was a renewal and superseded EPL11-03 which was issued on 31 August 2010.

EPL11-03 was a renewal and superseded EPL11-02 which was issued on 30 November 2009.

EPL11-02 was an amendment that superseded EPL11 which was issued on 27 August 2003.

The end notes are to assist with historical records.

DEFINITIONS

All terms in the Licence which are defined in the *Waste Management and Pollution Control Act* have the meaning given in that Act unless otherwise or further defined in this section.

DEFINITION	In this licence, unless a contrary intention appears:
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the activity.
Activity	the Scheduled activity as described on the covering page of this licence.
Air	includes any layer of the atmosphere.
Annual fee	yearly fee payable in respect of the activity as specified in the WMPC Act and the Regulations.
Annual Return	an NT EPA prescribed format for demonstrating and reporting compliance with the conditions of this licence and providing information on waste volumes for the preceding 12 month period.
ANZECC/ARMCANZ	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000: National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting.
Asbestos containing material	any material that contains asbestos.
Business days	a day not Saturday, Sunday or a public holiday, in the Northern Territory.
Community feedback number	a telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the licensee, enquiries or complaints about the activity, and to which the licensee must respond.
Complaint Log	a register of complaints to be maintained by the Licensee that records the details of each complaint received in relation to the activity.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the activity before, during and after the activity which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the activity.
Contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the licensee who can be contacted about the licence and activity.
Contaminant	a solid, liquid or gas or any combination of such substances and includes: (a) noise, odour, heat and electromagnetic radiation; (b) a prescribed substance or prescribed class of substances; and (c) a substance having a prescribed property or prescribed class of properties.
Discharges	allow a liquid, gas or other substance to flow out from where it has been confined.
Disposal schedule	a plan for disposing of asbestos containing material such that asbestos containing material is not stored in perpetuity.

Emergency Response Plan	a written plan documenting the licensee's procedures for responding to emergencies caused by, resulting from or associated with the activity and that may cause environmental harm.
Environmental audit	has the meaning given in section 47 of the WMPC Act.
Environmental harm	(a) any harm to or adverse effect on the environment; or (b) any potential harm (including the risk of harm and future harm) to or potential adverse effect on the environment, of any degree or duration and includes environmental nuisance.
Environmental nuisance	means: (a) an adverse effect on the amenity of an area that: (i) is caused by noise, smoke, dust, fumes or odour; and (ii) unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in the area; or (b) an unsightly or offensive condition caused by contaminants or waste.
Incident	includes: (a) an accident, emergency or malfunction; and (b) a deliberate action, whether or not that action was taken by the person conducting the activity in the course of which the incident occurred.
Land	includes water and air on, above or under land.
Landfill cell	a purpose built area for the disposal of waste within a landfill.
Landfill Closure and Post Closure Plan	a written plan which specifies the landfill closure and post-closure activities as set out in the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.
Leachate	any liquid produced by the action of water percolating through waste, and that contains contaminants.
Listed waste	a waste included under Schedule 2 of the Regulations.
Litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
Maintain	kept in a manner that it does not present or cause a risk of environmental harm or a hazard to persons or property or, for the purposes of documents including plans, a process of reviewing and amending documentation to ensure it is relevant.
Material environmental harm	environmental harm that: (a) is not trivial or negligible in nature; (b) consists of an environmental nuisance of a high impact or on a wide scale; (c) results, or is likely to result, in not more than $50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or (d) results in actual or potential loss or damage to the value of not more than $50,000 or the prescribed amount (whichever is greater).
NATA	National Association of Testing Authorities, Australia.
Non-compliance	failure or refusal to comply, whether by act or omission, with obligations or requirements and includes any exceedance of a licence limit.
Non-compliance	

notification	an NT EPA prescribed format for notifying the NT EPA of a non-compliance.
NT EPA Online	online system for Environment Protection Licence (EPL), Environment Protection Approval (EPA) and Waste Discharge Licence (WDL) lodgement and maintenance.
NT EPA Online Vehicle Register	the vehicle register found at NT EPA Online.
Plant and equipment	all material items used in association with the activity, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.
Point source discharge	means any discernible, confined or discrete conveyance from which contaminants or waste are or may be discharged.
Pollute	(a) emit, discharge, deposit, or disturb, directly or indirectly, a contaminant or waste; or (b) cause, permit, or fail to prevent, directly or indirectly, the emission, discharge, deposition, disturbance or escape of a contaminant or waste.
Pollution	(a) a contaminant or waste that is emitted, discharged, deposited or disturbed or that escapes; or (b) a contaminant or waste, effect or phenomenon, that is present in the environment as a consequence of an emission, discharge, deposition, escape or disturbance or a contaminant or waste.
Premises	the premises identified in this licence which includes equipment, plant and structures, whether stationary or portable, and the land on which premises are situated.
Public entrance	access to the premises that is utilised by the public.
Putrescible waste	the component of the waste stream liable to become putrid. For example, organic matter that has the potential to decompose with the formation of malodorous substances, usually refers to vegetative, food and animal products.
Qualified person	a person registered under Section 68 of the WMPC Act.
Qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Regulations	*Waste Management and Pollution Control (Administration) Regulations*.
Rehabilitation Plan	a written plan to ensure that the objectives of rehabilitation are achieved as set out in the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.
Serious environmental harm	environmental harm that is more serious than material environmental harm and includes environmental harm that: (a) is irreversible or otherwise of a high impact or on a wide scale; (b) damages an aspect of the environment that is of a high conservation value, high cultural value or high community value or is of special significance; (c) results or is likely to result in more than $50,000 or the prescribed amount (whichever is greater) being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment; or (d) results in actual or potential loss or damage to the value of more than $50,000 or the prescribed amount (whichever is greater).
Solid inert waste	solid waste that has no active chemical or biological properties. These wastes do

	not undergo environmentally significant physical, chemical or biological transformation.
Stormwater	water flowing over ground surfaces, in natural streams and drains as a direct result of rainfall over a catchment and consists primarily of rainfall runoff.
Trigger values	assigned value for each indicator used to assess the risk to an environmental value, a value that initiates some type of pre-defined management action.
Waste	(a) a solid, a liquid or a gas; or (b) a mixture of such substances, that is or are left over, surplus or an unwanted by-product from any activity (whether or not the substance is of value) and includes a prescribed substance or class of substances.
Waste transport certificate	the NT EPA waste tracking documentation used to track listed waste being transported interstate as required in accordance with the National Environment Protection (Movement of Controlled Waste Between States and Territories) Measure.
Wastewater	water that contains a contaminant or waste.
Water	includes: (a) surface water, ground water and tidal waters; (b) coastal waters of the Territory, within the meaning of the Coastal Waters (Northern Territory Powers) Act 1980 of the Commonwealth; and (c) water containing an impurity.
WMPC Act	the Northern Territory *Waste Management and Pollution Control Act*.

APPENDIX B

RWMF Reporting Proformas, Guidelines and Operational Guides

WEEKLY INSPECTION REPORT

Alice Springs Landfill

Reporting Day & Date: .....

		Good Condition	Needs Repair	Comments
Access & Signage	**Condition**			
Gatehouse/ weighbridge	**OH&S Inspection**			
	Area tidy/orderly			
Landfill Facility and disposal area	**OH&S Inspection**			
	Area tidy/orderly			
	Adequate waste cover used			
Surface water and erosion	**Access roads/ Soil surfaces**			
Dust and mud/slurry control	**Roads**			
	Bare surfaces/ Stockpiles			
	Water tanker on standby			
Litter Control	**Landfill/surrounds**			
	Fences/roads/offsite			
Noise Control	**Noise suppressants used**			
	Staff PPE used			
	Equipment maintained			
Pest Management	**Signs of vermin/pests**			
Fire Prevention	**Fire fighting equipment**			
	Adequate signage			
	Water cart - working order			
Hazardous Waste	**Facility Condition/Safety**			
Greenwaste Area	**Condition/Safety**			
Used Tyre Storage	**Condition/Safety**			
Tip Shop	**Condition/Safety**			

Additional comments _____

Signed _____

REGIONAL WASTE MANAGEMENT FACILITY

PROCEDURES FOR CHEMICAL SPILL

- INFORM MANAGEMENT OF THE LOCATION & IF KNOWN WHAT HAS SPILT & THE APPROXIMATE AMOUNT.
- NOTICE WIND DIRECTION & STAY UP FROM IT
- DEPENDING ON THE SEVERITY OF THE SITUATION YOU THEN:
- EVACUATE STAFF, CUSTOMERS, CONTRACTORS & VISITORS AS PER FIRE PROCEDURES.
- IF SPILL IS NOT DANGEROUS CORDON OFF AREA & KEEP PEOPLE OUT FIND THE NEAREST SPILL KIT.
- WEAR A RESPIRATOR OR MASK.
- TRY TO CONTAIN THE SPREAD WITH BOOM PAD, IF THE CHEMICAL CONTAINER CAN SAFELY BE MOVED TO A BUND DO SO.
- APPLY KITTY LITTER OR PADS TO MOP UP, LEAVE FOR A FEW HOURS BEFORE DOING CLEAN UP.
- ASCERTAIN HOW THE SPILL HAPPENED & REPORT TO YOUR TEAM LEADER/SUPERVISOR.

REGIONAL WASTE MANAGEMENT FACILITY

PROCEEDURES FOR BOMB THREAT

- IF YOU ARE AT A PHONE THAT HAS A BOMB THREAT CHECKLIST FOLLOW THOSE INSTRUCTIONS.

- IF NOT, KEEP CALM DON'T HANG UP, LISTEN INTENTLY TO WHAT THE PERSON IS SAYING.

- ASK FOR LOCATION OF BOMB, WHEN IT IS DUE TO EXPLODE IS THERE ANYTHING HAZARDOUS TO BE RELEASED.

- WHILE ASKING QUESTIONS ASCERTAIN WHAT GENDER/AGE/ ACCENT/ARE THEY CALM OR EXCITED/ABUSIVE, ARE THERE BACKGROUND NOISES, OTHER VOICES?

- TAKE DOWN NUMBER FROM PHONE IF THERE IS ONE.

- TIME; TRY TO REMEMBER EXACTLY WHAT THE PERSON SAID & WRITE DOWN.

- CALL ENING:

- INFORM MANAGEMENT IMMEDIATELY.
- WHO WILL NOTIFY THE POLICE.
- EVACUATE ALL AREAS IMMEDIATELY TO .

REGIONAL WASTE MANAGEMENT

PROCEDURE FOR STAFF/CUSTOMER ASSAULT

EACH INCIDENT IS DIFFERENT & SHOULD BE SUMMED UP IN A CLEAR CONCISE MANNER. **DO NOT** PUT YOURSELF & OTHERS IN MORE DANGER THAN IS ALREADY PRESENT. TRY NOT TO LET A SITUATION ESCALATE.

- ASSESS SITUATION MAKE SURE ALL STAFF & CUSTOMERS ARE KEPT SAFE. REMOVE THEM FROM IMMEDIATE AREA.
- CALL 000 IMMEDIATELY - GIVE A GOOD DESCRIPTION OF ASSAILANT. TAKE NOTICE OF THEIR EXIT FROM SITE IF IN A VEHICLE TAKE REGISTRATION NUMBER RELAY THIS TO POLICE.
- NOTIFY MANAGEMENT VIA CHANNEL 4 RADIO WHO WILL THEN NOTIFY RANGERS.
- CALL UP FIRST AID OFFICER & HSR.
- WHEN SAFE TO DO SO & THERE IS NO FURTHER THREAT OF DANGER ASSIST THE PERSON & TRY TO CALM THEM.
- ASSESS ANY INJURIES; APPLY FIRST AID UNTIL AMBULANCE ARRIVES (IF NEEDED).
- DEBRIEF WITH ALL WITNESSES & PERSONS INVOLVED. LOOK FOR SOLUTIONS SO THAT SIMILAR SITUATION DOES NOT OCCUR.
- FILL OUT AN INCIDENT REPORT WITHIN 24 HOURS WITH HSR OR MANAGEMENT.

REGIONAL WASTE MANAGEMENT FACILITY

PROCEDURES FOR FIRE/EXPLOSION.

- UPON SEEING FIRE TAKE NOTE OF THE LOCATION. ASSESS THE SEVERITY, WIND DIRECTION, IF ANY STAFF, CONTRACTORS OR VISITORS ARE INJURED THEN IMMEDIATELY ALERT THE FIRE WARDENS & MANAGEMENT OVER CHANNEL 4 RADIO. WARDENS FOLLOW THEIR PROCEDURES.

- FIRE WARDENS ALERT OTHER STAFF WITH "CODE YELLOW" OVER RADIO, ALONG WITH THE LOCATION OF FIRE & SEVERITY.

- IF YOU ARE AT TRANSFER STATION, TIPSHOP, HAZARDOUS WASTE COMPOUND, DOWN THE STOCK ROAD OR ANY OTHER AREA BESIDES UP THE HILL THE MUSTER POINT IS THROUGH THE MAIN GATES & TO YOUR RIGHT ON THE EASTERN SIDE OF POWERWATER ROAD.

- IF YOU ARE UP THE HILL THE MUSTER POINT IS IN FRONT OF THE GLASS CRUSHER.

- WARDEN'S TO ASSESS THE FIRE & NOTIFY THE WEIGHBRIDGE OPERATOR WHO WILL ANNOUNCE TO ALL CONTRACTOR'S & VISITORS VIA CHANNEL 6 RADIO THAT THERE IS A FIRE & WHICH MUSTER POINT THEY MUST PROCEED TO.

- WARDENS WILL ALSO ADVISE IF THE WEIGHBRIDGE OPERATOR NEEDS TO CALL 000 FOR FIRE BRIGADE OR AMBULANCE.

- IF YOU ARE IN THE TIPSHOP OR TRANSFER STATION PLEASE MAKE SURE ALL CUSTOMERS ARE EVACUATED IN A CALM MANNER. KEEP IN MIND SOME CUSTOMERS MAYBE DISABLED, IN A WHEELCHAIR, DEAF OR HARD OF HEARING, VISION IMPARED TAKE EXTRA CARE WHEN ASSISTING THEM TO EVACUATE

- WALK OR DRIVE TO THE MUSTER POINT – DO NOT RUSH OR SPEED.

- FIRST AID OFFICER MUST TAKE THE GREEN FIRST AID BACKPACK, LOCATED UNDER THE BENCH (WHERE THE END OF DAY COMPUTER IS) IN THE MAIN OFFICE BEFORE PROCEEDING TO THE MUSTER POINT & APPLY FIRST AID TO ANY PERSON THAT NEEDS ATTENTION. IF INJURIES NEED PROFESSIONAL MEDICAL ASSISTANCE RING FOR AMBULANCE IMMEDIATELY.

FIRE LOG & REPORTING

REFERENCE NUMBER:	
TIME FIRE REPORTED:	
DATE FIRE REPORTED:	
CIRCUMSTANCES WHICH IGNITED THE FIRE:	
TIME & DATE WHEN FIRE CEASED & WHETHER IT BURNT OUT OR WAS EXTINGUISHED:	
LOCATION OF THE FIRE ON THE PREMISES:	
PREVAILING WEATHER CONDITIONS:	
OBSERVATIONS MADE IN REGARD TO SMOKE DIRECTION AND DISPERSION:	
AMOUNT OF WASTE COMBUSTED BY THE FIRE	
ACTION TAKEN TO EXTINGUISH THE FIRE	
HAS NT EPA HOTLINE BEEN NOTIFIED 1800 064 567? PROVIDE DETAILS OF STATUS OF FIRE & LICENSE NUMBER	

ASBESTOS REGISTER

ALICE SPRINGS LANDFILL

Date	Time	Asbestos Disposer	Origin of Load	Contact Number	Vehicle Rego	Quantity (tonnes)	Abestos disposal location	Notes

COMPLAINT REGISTER

Alice Springs Landfill

		COMPLAINT # :
TAKEN BY:	DATE:	TIME:

COMPLAINT FROM:

ADDRESS:

CONTACT PHONE #:

PREVALILING WEATHER CONDITIONS AT TIME OF EVENT:

NATURE OF COMPLAINT:

NATURE OF EVENTS GIVING RISE TO THE COMPLAINT:

ACTION TAKEN (NOTE IF NO ACTION TAKEN):

FOLLOW UP ACTIONS:

SUMMARY:

ATTACHMENTS:

NON-CONFORMANCE AND CORRECTIVE / PREVENTATIVE ACTION REPORT FORM

Alice Springs Landfill

Section 1 - Details of Non-Conformity

Non-Conformance Report Identification Number: _____ Date: _____

Non-Conformance Report By: _____

Function/Area/Type:

Landfill ☐ Tipshop ☐

Public Drop Off ☐ Weighbridge/Gatehouse ☐

Environmental Management ☐ Other ☐

Description: _____

_____

Nature of Non-Conformity:

Impact of Non-Conformity:

Endorsed By NCR Recipient: _____ Date: _____

Section 2 - Auditee Proposed Corrective / Preventative Action Plan

Root Cause of Non-Conformity (How & why did this happen):

Correction Action (fix now) and completion dates:

Preventative Action (to prevent reoccurence) and completion dates:

Approved By NCR Recipient: _____ Approved By Quality Manager: _____

Date: _____ Date: _____

Section 3 - NCR Close Out

Non-Conformity is Resolved: NCR Recipient: _____ Date: _____

Quality Manager: _____ Date: _____

Root Cause of Non-Conformity has been addressed

Quality Manager: _____ Date: _____

QUARTERLY INSPECTION REPORT

Alice Springs Landfill

Reporting Day & Date: .....

	Issues Addressed	Needs Addressing	Comments
Review weekly reporting			
	Good Condition	**Needs Repair**	
OH&S across site			
Gatehouse/Weighbridge Condition			
Gatehouse Data Collection			
Landfill Access Roads Condition/Safety			
Waste Drop Off Area Condition/Safety			
Site Directional/Safety Signage			
Surface Water Drainage Condition			
Surface Water Pond Area Condition			
Dust & Mud/Slurry Control			
Litter/Noise/ Pest Control			
Fire Prevention Measures & Equipment			
Used Tyre Storage Condition/Safety			
Greenwaste Processing Area Cond./Safety			
Asbestos Disposal Area Condition/Safety			
Hazardous Waste Facility Condition/Safety			
Vegetation & Screening Condition			

Other

Additional comments

Signed

WASTE SLUDGE PONDS

- ✓ Contractors arrive at RWMF and scan a QR Code before proceeding onto the weighbridge.

- ✓ Once finished at weighbridge contractors will travel to the liquid pond area to dispose of their waste, at the same time the weighbridge operator will call up on channel 6 notifying staff of their arrival.

- ✓ On arrival to ponds the contractor will reverse into the unloading bay and dispose of their liquid waste into POND # 1.

- ✓ Once finished contractors will move forward, hose down the unloading bay and then proceed back to the weighbridge.

- ✓ When POND # 1 is full, the liquid will trickle over the spillway into POND # 2. This water is left to evaporate.

- ✓ When POND # 2 fills to 90% capacity staff will request a specialist contractor is engaged to pump out and remove sludge for treatment at a suitably licensed external facility.

APPENDIX C

Tip Shop – Operations and Management Guidelines

TIP SHOP – OPERATIONS AND MANAGEMENT GUIDELINES

- Entry of unauthorised persons or waste into the Tip Shop facility shall be prevented.
- Measures to prevent unauthorised entry and/or waste disposal shall include, but are not limited to signs located at entrances and other locations in a sufficient number and size to be seen from any approach to the Tip Shop facility, and should include fencing as appropriate.
- The operator of the Tip shop shall not cause or allow the Tip Shop to be operated in violation of health or workplace legislation including but not limited to, the Public Heath Act and the Workplace Health and Safety Act.
- The Tip Shop shall be used only to accept salvageable and reusable items and accumulate or store them for sale to the public after they have gone over the weighbridge.
- Salvageable and reusable items may be accepted from materials diverted from landfill via the public drop-off facility or dropped off at the Tip Shop by members of the public.
- Dangerous or hazardous materials shall not be accepted, processed or stored at the Tip Shop. These materials shall be confined to the Hazardous Waste Compound at all times
- Salvageable and reusable items shall be accepted, accumulated, or stored in a manner that protects the items marketability.
- The Tip Shop shall be operated in a safe, sanitary, and litter-free manner that protects human health and the environment.
- Litter shall be prevented from exiting the Tip Shop.
- All Tip Shop equipment shall be kept clean and maintained in good working order.
- Dust, odours, noise, and other nuisances resulting from the operation of the Tip Shop shall be minimised to the greatest extent practicable.
- Contact between salvaged items and disease vectors or other nuisance organisms shall be prevented.
- Accumulation of surface water in areas where salvaged items are accepted, accumulated, or stored shall be prevented.
- Minor alteration, improvement or maintenance of salvage items may be undertaken to improve the value, safety or amenity of the salvage item by the Tip Shop operator within approved, suitable purpose built facilities that are separated from direct public exposure.
- If material that will not be sold or recycled at the Tip Shop facility is discovered, the material shall be accumulated or stored separately from material being recycled, and disposed of at the tipface over the weighbridge
- A load shall not be accepted at the Tip Shop if more than 20% of the load, by weight, consists of material that is not recycled at the Tip Shop. The persons dropping off the load shall be required to remove and appropriately dispose of the non-recyclable part of the material (at their cost) before returning the recyclable part.
- The telephone numbers of emergency response personnel, including but not limited to Alice Springs Fire and Rescue and the Police. Additionally contact numbers for the Tip Shop Manager and Council shall be clearly posted at the Tip Shop.
- An Emergency Evacuation Plan shall be clearly posted at the Tip Shop and exits clearly identified in accordance with
- All employees and other persons working at the Tip Shop shall be thoroughly familiar with the Tip Shop operating procedures, including but not limited to recycling procedures and emergency response procedures, relative to their responsibilities at the Tip Shop.
- Legal advice should be periodically updated to ensure Tip Shop operators are aware of any new regulations and guidelines affecting the resale of items
- A register accounting for all salvageable or recyclable items that are recycled at the Tip Shop, and all material that is accepted but not recycled, shall be maintained at the facility. The name, address, and the material shall be listed clearly at the top of each page of the record.
- The following information shall be recorded in the record at the end of each operating day:
  - The total amount, by weight, of material accepted at the material recycling facility during the day;
  - The total amount, by weight, of salvageable or recyclable items being recycled that are removed either purchased or sent to landfill from the material recycling facility during the day;
  - The date; and
  - The printed name and signature of the person recording the information.

APPENDIX D

ASTC – Mulch Standards

ALICE SPRINGS TOWN COUNCIL - MULCH STANDARDS

BACKGROUND:

The word processed organic as specified in the waste management contract had lead to the confusion for mulch standards in the NT. After discussions between the Operator and the Alice Springs Town Council (ASTC) both parties agree on the standards for processing mulch as described in this document. This document adheres to the standards of AS 4454- 2003 (Australian Standards compost, soil conditioners and mulches).

DEFINITIONS:

Chipped green waste can be defined as organic product (untreated), which is chipped by a mulcher.

Mulch can be defined as a pasteurised organic product without any contamination or foreign material (e.g palm fronds, soil/mud, glass, metal and any type of plastic or polymers etc.) Mulch has at least 70% by mass off its particles with a maximum size of greater than 16 mm (See section 2; AS 4454- 2003).

Pasteurised product can be defined as process whereby an organic (untreated product) are treated to significantly reduce the number of plant and animal pathogen or propagule (See section 2; AS 4454-2003).

STANDARDS FOR ORGANIC MATERIAL FROM LANDFILL – MULCH

- Notification of starting of the mulching process and estimated finish date of the process for each pile;
- Access for ASTC staff to evaluate the temperature and moisture content in the mulching piles;
- The Operator to conduct regular monitoring (3 times per week) and data collection of the mulching
- mulch piles over the duration of the process (6 - 8 weeks) which will be forwarded to ASTC;
- The mulching piles are to be watered and turned regularly when the temperature reaches 55° C;
- Upon completion of the mulching process, an independent analysis report to Council on the quality of the mulch.

Requirements of the delivered A - Grade quality mulch:

- No litter present within the mulch;
- No large particle present;
- No palm fronds.

STANDARDS FOR ORGANIC MATERIAL FROM LANDFILL – CHIPPED GREENWASTE

- Notification of starting of the mulching process and estimated finish date of the process for each pile;
- Access for ASTC staff to evaluate the temperature and moisture content in the mulching piles;
- The Operator to conduct regular monitoring (3 times per week) and data collection of the mulching
- mulch piles over the duration of the process (6 . 8 weeks) which will be forwarded to ASTC;
- The mulching piles are to be watered and turned regularly when the temperature reaches 55° C;
- Upon completion of the mulching process, an independent analysis report to Council on the quality of the mulch.

- Note - This standard has been amended from the original standard for inclusion in the revised and updated LEMP.

Title: Mulch Production Work Instruction

Responsibility: Mulching Production Coordinator

Process:

1. Grinding/Batching

a) Grind the green organics whilst they are as fresh as possible to retain moisture;
b) Form ground/blended material into a windrow(s) of 5 m width and 3.0 - 3.5 m high;
c) Assign a batch number and sign to the windrow to keep track of its processing throughout the stages.

2. Mulching

a) Turning of the windrow should occur for approx 10 weeks (min 6) where at least 3 turns occur and windrow temperature is 55°C for at least 3 consecutive days in between the 3 turns;
b) Record no. of turns for each batch with an aim for weekly-fortnightly turns depending upon temperature;
c) Apply water to the windrow just prior to turning. Consider making a valley in the top of the windrow when irrigating to reduce water losses to runoff. Consider in summer months putting shade cloth over the windrows to reduce evaporation losses. Also irrigate over night so as to reduce evaporation losses.

3. Curing (Maturation)/Finished Product Storage

a) Let stockpiles sit and cure for a minimum of two weeks or until the temperature drops to around 40°C;
b) Keep the curing stockpile cross section dimension to 1 m high and 4 m wide and at the length which the site space allows;
c) Consider placing a tarp over the stockpile to retain moisture throughout curing stage (do not let it dry out otherwise risk of material becoming water repellent) but limit the water so as to stop the material pH from rising as discussed in the section above.

APPENDIX E

Landfill Closure Plan

APPENDIX F

Landfill Capping Plan (Stages 1-4)

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