



# Environmental Management Plan

## Katherine Waste Management Facility

### Katherine Town Council



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## Amendments

| Revision no. | Comments                                                               |
|--------------|------------------------------------------------------------------------|
| 2            | Updated with minor client clarifications and water monitoring schedule |
| 3            | Amended to address NT EPA comments                                     |

# ACRONYMS

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|               |                                                       |
|---------------|-------------------------------------------------------|
| <b>AS</b>     | Australian Standards                                  |
| <b>EMP</b>    | Environmental Management Plan                         |
| <b>EPL</b>    | Environmental Protection Licence                      |
| <b>GHG</b>    | Greenhouse gas                                        |
| <b>GPS</b>    | Global Positioning System                             |
| <b>KTC</b>    | Katherine Town Council                                |
| <b>KWMF</b>   | Katherine Waste Management Facility                   |
| <b>MSDS</b>   | Material Safety Data Sheet                            |
| <b>NT EPA</b> | Northern Territory Environmental Protection Authority |
| <b>PFAS</b>   | Per- and poly-fluoroalkyl substances                  |
| <b>RAAF</b>   | Royal Australian Air Force                            |

# 1 INTRODUCTION

This Environmental Management Plan (EMP) has been prepared for Katherine Town Council (KTC). KTC is responsible for the Katherine Waste Management Facility (KWMF) and its associated environmental protection licence (EPL). The original EMP was written in 2001, and underwent regular updates. This update is to ensure that the EMP is in line with the changes to the EPL.

## 1.1 Background

The KWMF is a municipal waste resource recovery and disposal site operated by the KTC. The KWMF services both domestic and commercial customers in the Katherine area.

The KWMF is located approximately 7 km south of Katherine town centre within NT Portion 5043, on Novis Quarry Road (Figure 1-1). The KWMF is bound to the north by the train line, to the east by the Victoria Highway and to the south and west by Novis Quarry Road.

The KWMF was established as a landfill site in 1980 with a private contractor managing the site between 1984 and 2002. KTC has managed the site since 1 July 2002 (GHD, 2018).

The KWMF was first licenced by the NT EPA on 6 March 2013.

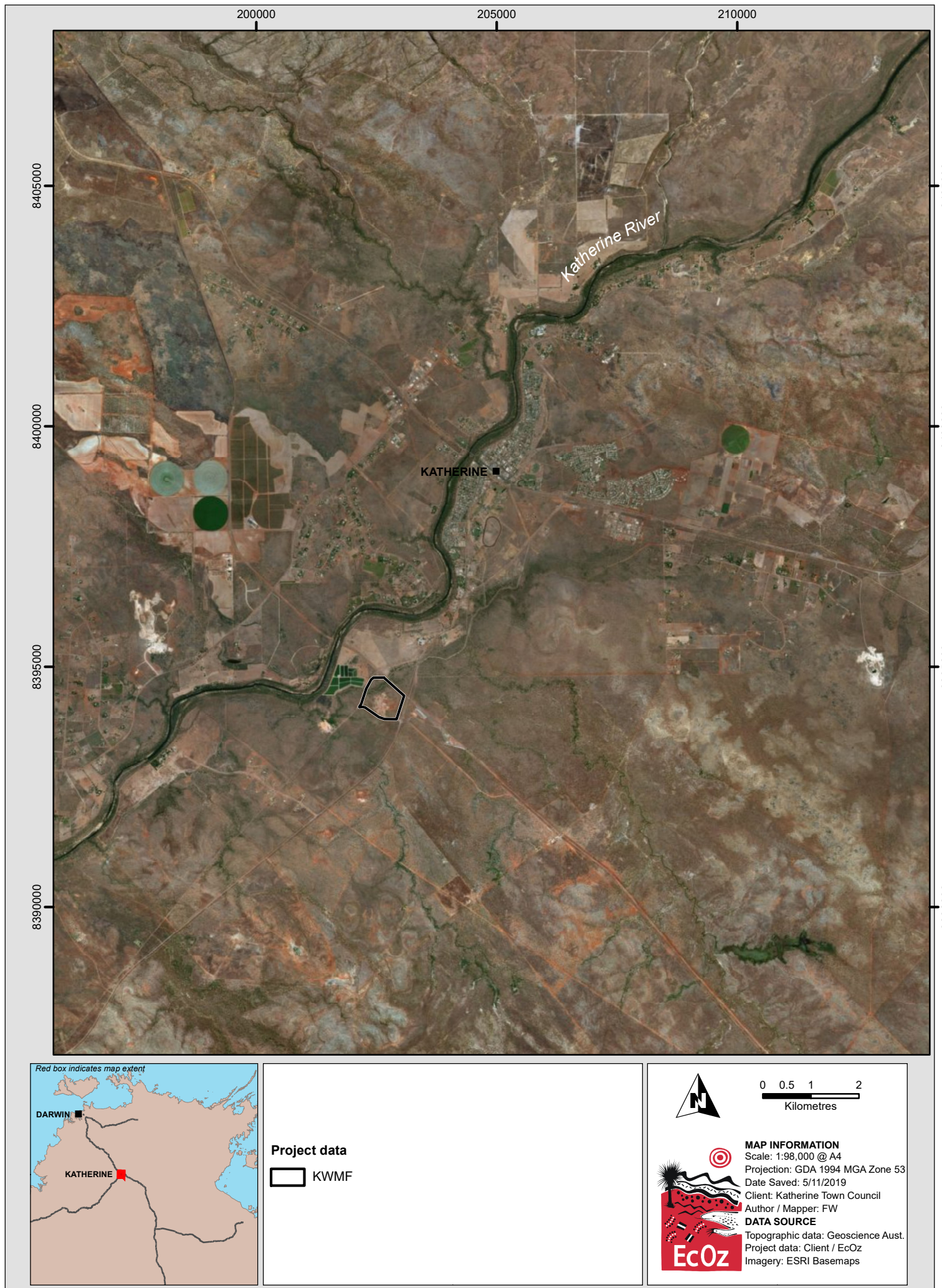
## 1.2 Responsibilities

The responsibilities for implementing and monitoring site activities against this EMP are as provided in Table 1-1.

**Table 1-1. Responsibilities and contact details**

| Responsibility                                           | Personnel                                                                                                        | Contact details                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Develop EMP                                              | <ul style="list-style-type: none"> <li>Katherine Town Council</li> <li>EcOz Environmental Consultants</li> </ul> | Brett Kimpton<br>Manager of Environment and Municipal<br>Katherine Town Council<br>Ph: 08 8972 5500<br>E: <a href="mailto:brett.kimpton@ktc.nt.gov.au">brett.kimpton@ktc.nt.gov.au</a><br><br>KWMF Site Office<br>Katherine Town Council<br>Ph: 08 8971 2014<br><br>EcOz Environmental Consultants<br>Ph: 08 8981 1100<br>E: <a href="mailto:eco@eco.com.au">eco@eco.com.au</a> |
| Develop and maintain environmental management procedures | <ul style="list-style-type: none"> <li>Katherine Town Council</li> <li>EcOz Environmental Consultants</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                 |
| Implement management measures                            | <ul style="list-style-type: none"> <li>Katherine Town Council</li> </ul>                                         |                                                                                                                                                                                                                                                                                                                                                                                 |
| Assure EMP compliance and reporting                      | <ul style="list-style-type: none"> <li>Katherine Town Council</li> </ul>                                         |                                                                                                                                                                                                                                                                                                                                                                                 |





Path: Z:\01 EcOz\_Documents\04 EcOz Vantage GIS\IEZ19181 - KTC EPL Update and EMP\01 Project Files\Figure 2-1 Map showing site layout and infrastructure.mxd

Figure 1-1. Location of KWMF

## 1.3 Objectives of the EMP

The objective of this EMP is to avoid, reduce and mitigate the environmental impacts of the activities undertaken at the KWMF. It details the environmental management measures, controls and monitoring that will be implemented by the KTC and provides a framework for environmental management to be implemented by all staff and contractors undertaking the works.

This EMP has been developed to comply with the relevant environmental legislation; and to adhere to conditions of any applicable licence approval and permit.

## 1.4 Approvals, licences and permits

As an operational landfill, the KWMF requires an EPL under Schedule 2 of the *Waste Management and Pollution Control Act (WMPC Act)*. The EPL regulates the operations of the landfill, transfer station, resource recovery centre, leachate ponds and landfill gas. The EPL outlines a number of conditions the KWMF must meet in order to be compliant and is administered by the Northern Territory Environmental Protection Authority (NT EPA).

This EMP also serves the purpose of declaring the listed waste that the KWMF transfer station will accept, as required under Part 2, Schedule 2 of the *WMPC Act*, requiring the activity of collecting, transporting, storing, recycling, treating or disposing of listed waste and operating facilities associated with the activities to be licenced.

Any future proposed works associated with the landfill or management of listed wastes also require an Environmental Protection Approval under Schedule 2 of the *WMPC Act*. Any works not covered by the current EPL shall not be undertaken without a current approval from the NT EPA. Upon completion of the works under an Approval, the operational activities must be included in the current EPL for the KWMF.

## 1.5 Statutory requirements

The key Commonwealth and Northern Territory legislation applicable to the operation of KWMF is outlined in Table 1-2

**Table 1-2. Applicable legislation**

| Environmental aspect                    | Applicable legislation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air quality                             | <ul style="list-style-type: none"> <li>• <i>Ozone Protection Act 1989 (Cwlth)</i></li> <li>• <i>Waste Management and Pollution Control Act (NT) (WMPC Act)</i></li> <li>• <i>National Environment Protection Council. 2003 National Environment Protection (Ambient Air Quality) Measure (NEPM)</i></li> <li>• <i>National Environment Protection Council. 2011 National Environment Protection (Air Toxics) Measure (NEPM)</i></li> <li>• <i>National Environment Protection Council. 1998 National Environment Protection (National Pollutant Inventory) Measure (NEPM)</i></li> </ul> |
| Bushfire                                | <ul style="list-style-type: none"> <li>• <i>Bushfires Act (NT)</i></li> <li>• <i>Fire and Emergency Act (NT)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Dangerous Goods                         | <ul style="list-style-type: none"> <li>• <i>Dangerous Goods Act (NT)</i></li> <li>• <i>Road Transport (Dangerous Goods) Act 1995 (NT)</i></li> <li>• <i>Dangerous Goods (Storage and Handling) Regulations 2000 (NT)</i></li> <li>• <i>Road Transport Reform (Dangerous Goods) Act 1995 (Cwlth)</i></li> </ul>                                                                                                                                                                                                                                                                           |
| Flora & Fauna (including weeds & pests) | <ul style="list-style-type: none"> <li>• <i>Animal Welfare Act (NT)</i></li> <li>• <i>Bushfires Act (NT)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



| Environmental aspect          | Applicable legislation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | <ul style="list-style-type: none"> <li>• <i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i></li> <li>• <i>Fisheries Act (NT)</i></li> <li>• <i>National Environmental Protection Council (Northern Territory) Act (NT)</i></li> <li>• <i>Plant Health Act (NT)</i></li> <li>• <i>Public and Environmental Health Act (NT)</i></li> <li>• <i>Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations (NT)</i></li> <li>• <i>Soil Conservation and Land Utilisation Act (NT)</i></li> <li>• <i>Territory Parks and Wildlife Conservation Act (NT)</i></li> <li>• <i>Weeds Management Act (NT)</i></li> </ul>                                                           |
| Heritage                      | <ul style="list-style-type: none"> <li>• <i>Australian Heritage Commission Act 1975 (Cwlth)</i></li> <li>• <i>Heritage Act (NT)</i></li> <li>• <i>National Heritage Trust of Australia Act 1997 (Cwlth)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Noise                         | <ul style="list-style-type: none"> <li>• <i>Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)</i></li> <li>• <i>Waste Management and Pollution Control Act (NT)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Waste & Hazardous Waste       | <ul style="list-style-type: none"> <li>• <i>Environmental Offences and Penalties Act (NT)</i></li> <li>• <i>Work Health and Safety (National Uniform Legislation) Act (NT)</i></li> <li>• <i>Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Cwlth)</i></li> <li>• <i>Litter Act (NT)</i></li> <li>• <i>National Environment Protection Council. 2011. National Environment Protection (Used Packaging Materials) Measure as varied 16 September 2011</i></li> <li>• <i>Public and Environmental Health Act (NT)</i></li> <li>• <i>Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations (NT)</i></li> <li>• <i>Waste Management and Pollution Control Act (NT)</i></li> </ul> |
| Water (surface & groundwater) | <ul style="list-style-type: none"> <li>• <i>Water Act (NT)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 2 WASTE MANAGEMENT FACILITY OVERVIEW

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KTC manage operations at KWMF, and have contractors that manage kerbside collection.

The KWMF accepts and disposes of general waste from domestic and commercial users and is currently licenced to accept asbestos and tyres (listed wastes) for disposal.

The KWMF also accepts the following materials for landfill or subsequent resource recovery and disposal by contractors at external facilities:

- Chemical drums (only empty and triple washed containers accepted for DrumMuster)
- Tyres (whole or shredded)
- Metal
- Green waste
- Batteries
- Waste oil
- Empty gas bottles
- Animal carcasses
- E-waste

**A map detailing the site layout and infrastructure is included in**

**Figure 2-1.**

### 2.1 Operational hours

Hours of operation for the KWMF are:

- 07:30 – 17:30 Monday – Fridays
- 08:00 – 16:00 Weekends and public holidays (excluding Good Friday and Christmas Day when the facility is closed)

### 2.2 Domestic users

Domestic users are not allowed to access the landfill cells and only have access to the green waste area, for disposal of garden waste, and the transfer station.

The transfer station is comprised of 6 x skip bins for domestic waste disposal, each signed for different waste types such as mixed general waste, steel or household appliances. Material disposed of in the skip bins is weighed through the weighbridge prior to disposal on the active tip face as required.

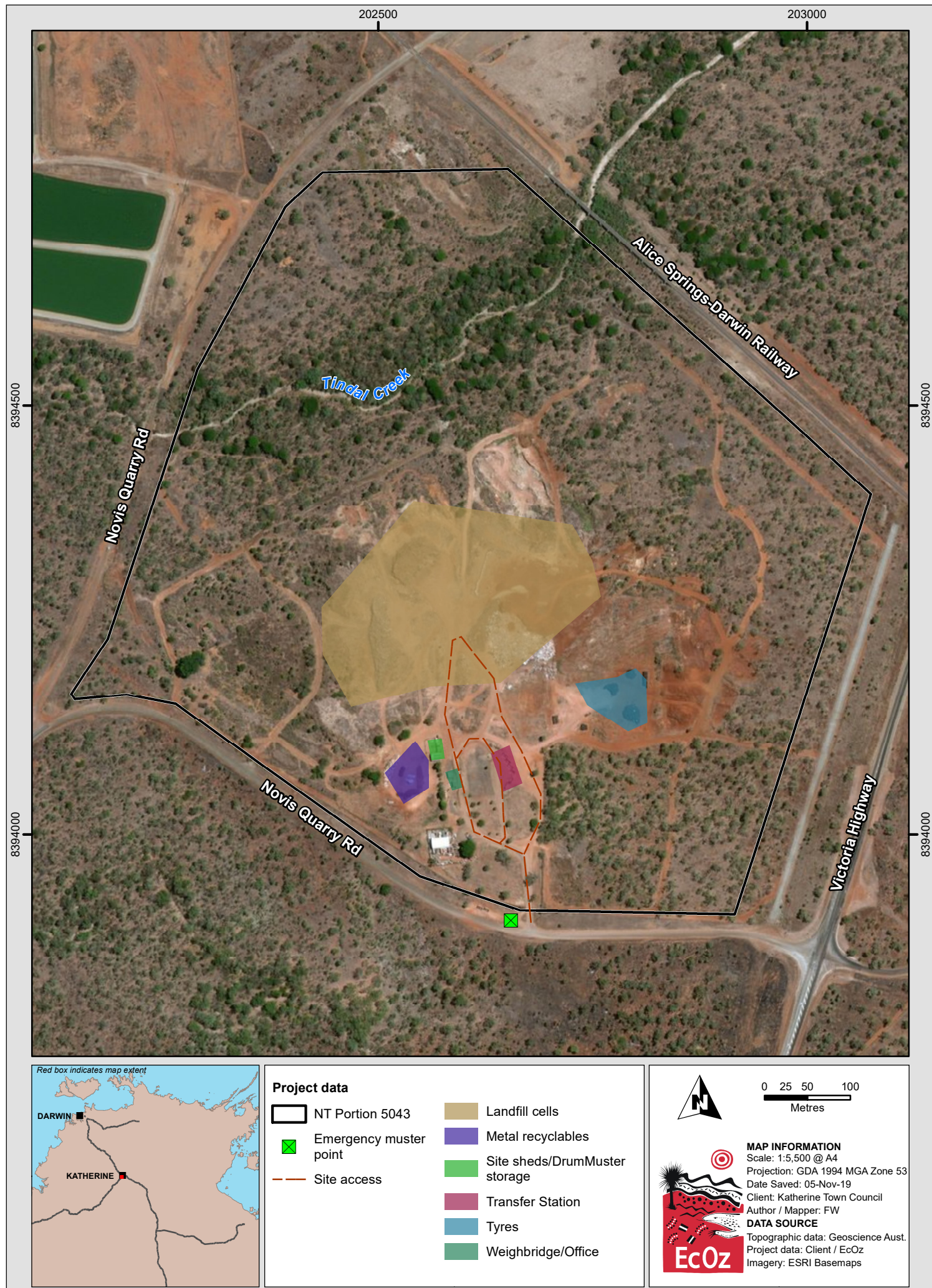
Additional skip bins are placed outside the front gate outside of operational hours if required.

Green waste is received at a designated area within the landfill and site signage directs the users where to go.

### 2.3 Commercial users

All commercial users must pass through the weighbridge to determine waste disposal category and complete payment. Small commercial vehicles may be directed to the transfer station at the discretion of the weighbridge operator otherwise commercial users must deposit their waste material at the appropriate landfill cell as directed.





Path: Z:\01 EcOz\_Documents\04 EcOz Vantage GIS\IEZ19181 - KTC EPL Update and EMP\01 Project Files\Figure 2-1 Map showing site layout and infrastructure.mxd

**Figure 2-1. Map of site layout and infrastructure**



## 2.4 Current landfill operation

The KWMF follows the area method of landfilling whereby waste is disposed of at an active tip face and is then compacted in a mound above ground (as opposed to trench filling below ground), as depicted in Figure 2-2. All landfilling activities occur over the existing landfill that has been in operation since the 1980's.

Each day the waste is covered with daily cover which is generally spoil material extracted from site or clean fill material accepted at the facility. Daily cover is applied at a minimum thickness of 150mm most of which can be retrieved on the following day prior to new waste disposal.

As the active tip area moves progressively along the existing landform (building up the height), the waste disposal areas are covered with a 300mm intermediate layer of cover material to minimise rainfall infiltration. Final capping layers and rehabilitation are discussed further in Section 10.

As landfill operations have been occurring on the site since the 1980's, it is not expected that there is an existing engineered liner beneath the landfill.

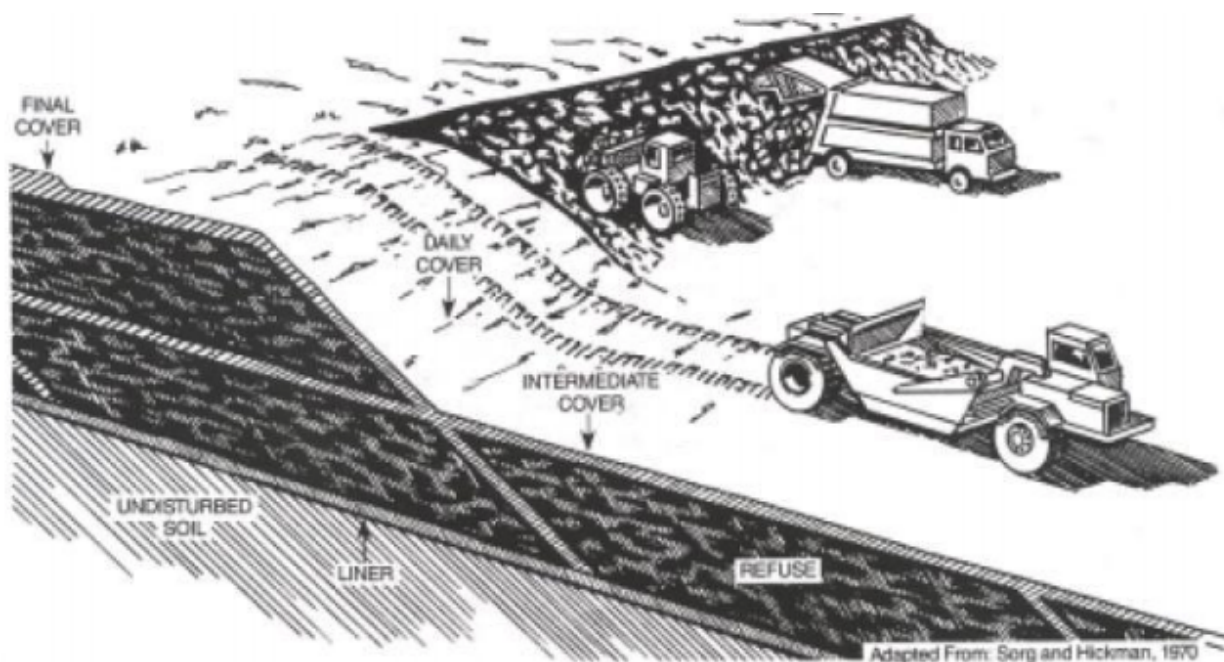


Figure 2-2. Area method of landfilling (NT EPA, 2013)

## 2.5 Future landfill operation

In accordance with the *WMPC Act* any lateral expansion of the landfill beyond the current footprint will require an Environment Protection Approval. The approval will factor in design considerations detailed in the *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory 2013* and construction is required to undergo a rigorous quality assurance process. At this time, there is no intention to expand the current landfill site and the site has been earmarked for closure and rehabilitation.

KTC is required to complete siting, approvals, design and construction of a new landfill at an alternative site prior to closure of the existing KWMF.



## 2.6 Site infrastructure and equipment

The KWMF has the following infrastructure on site:

- Weighbridge with traffic control and CCTV
- Office & utilities room
- Equipped groundwater bore
- Boundary fencing and lockable front gate
- Raised chemical shed
- Access roads
- Equipment storage shed
- 2 x shipping containers for fuel (to supply site equipment) and equipment storage
  - Less than 1,000L of oil and lubricants stored at any one time (maximum container size 200L)
- 1 x 3000L self-bunded diesel tank (to supply site equipment)
- DrumMuster compound
- 13,600L water storage tank with fire fighting equipment

The KWMF has the following equipment on site:

- Traxcavator
- Water truck
- Hook truck
- Loader
- Dozer
- Fire appliance

## **3 ENVIRONMENTAL MANAGEMENT SYSTEM**

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### **3.1 KTC responsibilities**

KTC is responsible for ensuring that the KWMF is operating under the conditions in the EPL, and that this EMP is being implemented effectively, to ensure no environmental harm is being done.

### **3.2 Employee and contractor responsibilities and obligations**

Employees at KWMF are responsible for the management of the KWMF, and must adhere to all conditions in the EPL and the requirements of this EMP. All other subcontractors working on the KWMF site on behalf of KTC must also adhere to the requirements of their contract and this EMP in regards to environmental management.

### **3.3 Operational procedures**

Management and operations undertaken at KWMF are undertaken by daily emails, phone calls or meetings between KTC and KWMF staff. The KWMF currently has four staff on site; two weigh bridge operators and two machinery operators. All operations at KWMF will be undertaken in accordance with this EMP and the EPL.

### **3.4 Inductions and communication**

All project personnel, subcontractors and consultants will be required to undertake a site induction, which will include details on the EPL and this EMP.

KTC will hold regular meetings to discuss any concerns regarding the KWMF. The KWMF Site Manager is to report any incidents to the KTC as soon as possible, within 24 hours of the incident occurring.

### **3.5 Complaints register**

KTC will keep a complaints register that details the reason/type of complaint and mitigation measures put in place if required. This will be maintained through InfoXpert.

### **3.6 Inspections, audits and reporting**

#### **3.6.1 Inspections and audits**

Environmental inspections will be undertaken by KTC at the frequency outlined in Table 3-1. Inspections will cover all environmental aspects as outlined in this EMP. Visual inspections of the site are undertaken daily as an operational requirement and are not documented. A formal site inspection is completed on a monthly basis and a copy of the inspection checklist is attached in Appendix A. These inspection checklists will be filed and managed using InfoXpert.

**Table 3-1. Environmental inspection type and frequency**

| Inspection type                                                                | Inspection Frequency                                |
|--------------------------------------------------------------------------------|-----------------------------------------------------|
| General site management: site access, dust, odour, noise, waste disposal areas | Daily visual inspection                             |
| Water quality management                                                       | Monthly (November-April)<br>Quarterly (May-October) |
| Site Inspection Checklist                                                      | Monthly                                             |

KTC will arrange for a site audit to be undertaken on an annual basis, to evaluate the extent to which compliance has been achieved with the EPL.

### 3.6.2 Non-conformance and corrective actions

Where an inspection or audit identifies non-conformances, corrective or preventative actions that need to be addressed, these will be recorded in an action register and issued to the responsible person for rectification. The action register will detail the non-conformances, identified actions, responsible persons and due date for completion.

Non-compliance with the EPL will be managed as per Section 3.6.3, and detailed in the action register.

### 3.6.3 Incidents

All environmental incidents, near-misses or EPL non-compliances must be reported to KTC as soon as practicable. Reports can be made verbally but must be followed up with a written report. Incident reports must contain the following information:

- Date, time and circumstance under which the incident became known
- Known or estimated dates and times at which the incident commenced and ended
- Details of the person initially reporting the incident
- Actual and potential causes and contributing factors to the incident
- Risk of environmental harm arising from the incident
- Actions that have or will be undertaken to mitigate any environmental harm
- Corrective actions that have or will be undertaken to prevent the incident happening again
- If no action was taken, why no action was taken

KTC will investigate each incident with the assistance of KWMF staff, in order to discover the cause(s) of the incident and implement improvements and training in order to prevent a repeat incident.

A record of all environmental incidents, near-misses and EPL non-compliances will be maintained in an environmental incident register and reported to the NT EPA if required.

### 3.6.4 Reporting

KTC will ensure all EPL non-compliances are reported to the NT EPA, as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.



KTC will prepare and submit an Annual Return to the NT EPA, outlining compliance with the EPL conditions in the preceding 12 month period. The Annual Return will be submitted within 10 business days after the EPL commencement date anniversary each year.

KTC will prepare and submit an annual Monitoring Report to the NT EPA, outlining the results of monitoring over the preceding 12 month period. The Monitoring Report will be submitted within 10 business days after the EPL commencement date anniversary each year. In accordance with the EPL, the Monitoring Report will be prepared in the format provided in the *National Water Quality Management Strategy, Australian Guidelines for Water Quality Monitoring and Reporting*, Chapter 7, and include data analysis and interpretation as well as an assessment of environmental impact.

KWMF is also required to report diesel emissions from the operational equipment at the KWMF to the National Pollutant Inventory (NPI), on an annual basis.

### 3.7 Review of EMP

This EMP is a working document and will be updated when required. Triggers for review includes significant changes of site operations, or upon application for EPL renewal. The EMP Shall be reviewed and updated for adequacy at a minimum of every 5 years.

### 3.8 Documentation control

All environmental documentation, plans, procedures, registers, reports, data and records will be uploaded onto KTC document management system InfoXpert.

All records will be held for at least ten years and will be accessible to the regulatory authorities as required.

A summary of documents and records to be kept is provided in Table 3-2.

**Table 3-2. Document and records summary**

| Document/Record     | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                  | Frequency         |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Site induction      | A record of employee inductions undertaken must be kept. This can be through copies of induction paperwork being filed on InfoXpert or an induction register with names, dates and topics covered.                                                                                                                                                                                                                                       | All new employees |
| Site meetings       | Staff should have regular meetings to discuss any issues at KWMF, and an opportunity to provide feedback and concerns. Meeting minutes should be written up and kept on InfoXpert.                                                                                                                                                                                                                                                       | As required       |
| Complaints register | A complaints register will be kept on InfoXpert, documenting any complaints received in regards to KWMF. Details should include; date of complaint, name of complainant, address of complainant, area complaint is in relation to i.e. noise, dust, odour etc., details of complaint as described by complainant, any remediation actions undertaken, date of completion, notification to complainant on actions taken to resolve issue. | As required       |
| Waste records       | A record of wastes received and removed from the KWMF will be maintained as electronic files at the facility. Total volumes of waste, including listed waste, handled through the year will be reconciled for the EPL Annual return.                                                                                                                                                                                                     | Per load          |
| KWMF Inspection     | The KWMF Site Inspection Checklist (Appendix A) is a general                                                                                                                                                                                                                                                                                                                                                                             | As per inspection |

| Document/Record                 | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Frequency                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| checklist                       | site inspection checklist used as a tool to keep KWMF on track and in compliance with this EMP. The checklist has been derived from the various monitoring requirements outlined in this EMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | schedule (Section 3.6.1)     |
| Audit Report                    | An audit report to evaluate the extent to which compliance has been achieved with the EPL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Annually                     |
| Action register                 | Where an inspection or audit identifies non-conformances, corrective or preventative actions that need to be addressed, these will be recorded in an action register and issued to the responsible person for rectification. The action register will detail the non-conformances, identified actions, responsible persons and due date for completion.                                                                                                                                                                                                                                                                                                | As required                  |
| Environmental incident register | A record of all environmental incidents, near-misses and EPL non-compliances will be maintained in an environmental incident register and reported to the NT EPA as required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | As required                  |
| Incident report                 | All environmental incidents, near-misses or EPL non-compliances must be reported to KTC as soon as practicable. Reports can be made verbally but must be followed up with a written report. Section 3.6.3 details the information required to be recorded in the written report. All incident reports will be filed on InfoXpert.                                                                                                                                                                                                                                                                                                                      | As required                  |
| Annual Return                   | Under EPL conditions, KTC are required to prepare and submit an Annual Return to the NT EPA, outlining compliance with the EPL conditions in the preceding 12 month period. The Annual Return is to be submitted within 10 business days after the EPL commencement date anniversary each year. This report will be filed on InfoXpert.                                                                                                                                                                                                                                                                                                                | Annually                     |
| Annual Monitoring Report        | Under EPL conditions, KTC are required to prepare and submit an Annual Monitoring Report to the NT EPA, outlining the results of monitoring over the preceding 12 month period, to be submitted within 10 business days after the EPL commencement date anniversary each year. In accordance with the EPL, the Monitoring Report will be prepared in the format provided in the <i>National Water Quality Management Strategy, Australian Guidelines for Water Quality Monitoring and Reporting</i> , Chapter 7, and include a data analysis and interpretation as well an assessment of environmental impact. This report will be filed on InfoXpert. | Annually                     |
| NPI reporting                   | Estimate diesel emissions from the KWMF operational equipment, based on consumption and report to the NPI.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Annually (by September 30)   |
| EMP review                      | This EMP is required to be reviewed at least annually (by the anniversary date of the EPL) to ensure the content remains current and up to date with practices at KWMF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Annually                     |
| Water monitoring database       | When water monitoring is undertaken, field notes, field parameters and lab results will be recorded in a water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quarterly (as per monitoring |

| Document/Record | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                              | Frequency |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                 | monitoring database. Section 8.5 details what needs to be recorded with each sample taken. As data is entered, a review against the relevant trigger values is to be undertaken to determine any exceedances. Under EPL conditions, these exceedances are to be reported to the NT EPA. This database will be used when preparing the Annual Monitoring Report for the NT EPA. The water monitoring database and reports will be filed on InfoXpert. | schedule) |

## 4 CONCEPTUAL SITE MODEL

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A Conceptual Site Model (CSM) is required to assess the interconnections between the Contaminants of Potential Concern (COPC), exposure pathways and potential receptors (source > pathway > receptor model). A CSM describes the possible pathways by which exposure to potential contamination may occur. For exposure to occur, a complete pathway must exist between the source of contamination and the receptor (source > pathway > receptor), i.e. the person or ecosystem components potentially affected or harmed by the contamination.

A risk may only exist where a plausible source > pathway > receptor linkage is present, and where the quantity or concentration of a contaminant is sufficient to pose harm.

An exposure pathway will typically consist of the following elements:

- A source of contamination (i.e. a spill or leak, particulates)
- A release mechanism (i.e. migration in soil, leaching to water, emission to air)
- Retention in the transport medium (i.e. soil, groundwater, surface water or air)
- An exposure point (i.e. where a person(s) come into contact with contaminated soil, air, dust, groundwater, surface water)
- An exposure route (i.e. inhalation, ingestion, absorption)

### 4.1 Site setting

#### 4.1.1 Location

The KWMF is located approximately 7 km south of Katherine town centre within NT Portion 5043, on Novis Quarry Road (Figure 1-1). The KWMF is bound to the north by the train line, to the east by the Victoria Highway and to the south and west by Novis Quarry Road.

#### 4.1.2 Topography, surface water and drainage

Within the KWMF site, Tindal Creek runs through the northern part of the site. A tributary to Tindal Creek is located south of the site and joins Tindal Creek approximately 650 m west of the site, which then drains into the Katherine River approximately 2 km downstream from KWMF. Surface water runoff flows from KWMF in a north-westerly direction, towards Tindal Creek, which intermittently flows during the wet season.

Land unit mapping by Howe (2006) indicates that there are three land units across the site (3a, 3b and 7e), and two landforms. The landform is mostly plains with a small area of drainage system. Land unit 3b is described as very gentle undulating terrain; slopes less than 2%; scattered limestone pavement or rock outcrop. 3a is described as gentle slopes or undulating and dissected terrain; slopes to 2%; severe limestone and sandstone pavement and outcrop. 7e is described as major creeks and severely gullied tributaries; includes permanent and ephemeral waters, with poorly drained soils.

#### 4.1.3 Geology and hydrogeology

The site is located within the Daly River basin and forms part of the Jinduckin Formation. Kruse and Munson (2013) describes the geological formation as dolomitic-siliciclastic siltstone with sandstone-siltstone interbeds, dolostone, minor cryptalgal dolostone, ooid dolograine, dolomitic quartz sandstone, evaporite (principally anhydrite) common in siltstones and some sandstones, flat pebble breccias.



The site is within the Tindall Limestone aquifer which is located within the Daly basin geological region. The Tindall aquifer around the site is described as fractured and karstic limestone rocks with yields of up to 50 litres/second, and confined by the Jinduckin Formation, however shallow aquifers in the Jinduckin Formation may also be present (NR Maps).

Bore logs at the site show the local geology to be clayey siltstone and limestone, with bands of mudstone and sandy gravel, overlaying fractured limestone, with inclusions of sandstone and siltstone (KTC 2019).

Groundwater lies approximately 10 m below natural site ground levels and forms part of the unconfined Tindal Aquifer. At a regional scale hydraulic gradients fall towards the Katherine River and sections of the Katherine River near the KWMF are identified regionally as a discharge zone for the Tindal Aquifer.

Standing water levels recorded in May 2019 showed that on-site groundwater gradients fall towards central landfilled areas from both the northern and southern site boundaries, before discharging from the site in a northwest direction, towards Tindal Creek and Katherine River. (GHD 2019).

The groundwater within the Tindall Limestone aquifer (Katherine area) has been identified for the following beneficial uses (NR Maps):

- Environment
- Cultural
- Public water supply (Katherine town drinking water)
- Agriculture
- Aquaculture
- Industry
- Rural stock and domestic

#### **4.1.4 Land use**

The site is currently used for disposal and storage of wastes, and the KWMF has existed at this site since 1980.

The surrounding land is predominately zoned 'Agricultural' under the NT Planning Scheme and is a mix of vacant Crown Land and perpetual pastoral leases. To the north-west of KWMF, Power and Water have property zoned 'Utilities' for sewerage remediation ponds. Immediately to the west of the sewerage ponds is the Katherine River. To the north-east is the Darwin to Alice Springs railway line. Approximately 800 m to the south-west is Novis Quarry and approximately 300 m to the east is the Katherine Railway Station.

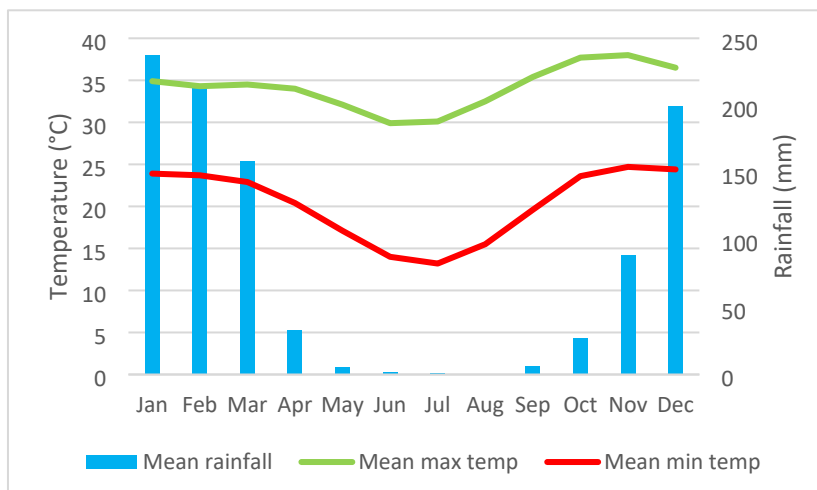
#### **4.1.5 Climate**

Katherine is classified as a tropical savannah climate with distinct wet and dry seasons. The Wet season typically occurs between December and April, and the Dry season between May and October. Climate data from the Bureau of Meteorology for Katherine Council station (station number 014902) (Figure 4-1) shows that the hottest months are October, November and December, with a mean maximum temperature of 38.0 °C in November, while the coolest months are June, July and August, with a mean minimum temperature of 13.2 °C in July. The average annual rainfall for Katherine is 970.2 mm. The driest months are June, July and August with a mean minimum rainfall of 0.5 mm in August, while the wettest months are December, January and February, with a mean maximum rainfall of 237.5 mm in January.

The KWMF is located within the flood plain of the Katherine River and will be subjected to flooding in a 1 in 100 year flood event, with the majority of the site being within the modelled floodway. Computed water level elevations would result in only the upper 2 to 3 m of the landfill remaining above these flood levels (GHD 2019).

Climate conditions can impact the level of risk associated with surface water runoff and amount of leachate. Long dry periods lower the risks of leachate and surface water runoff/pooling, whereas the risk increases with rainfall. Evaporation will also decrease during wet periods, and increase during hot dry conditions. Climate conditions experienced at KWMF in a particular year will therefore impact the management measures required.

**Figure 4-1. Katherine climate graph**



#### 4.1.6 Surface water and groundwater quality

The KWMF Water Quality Monitoring Report for 2023 – 2024 (EcOz 2024) indicates that, while the lack of rigorous adherence to the monitoring program and multiple QAQC outliers leave some data gaps, mainly due to dry sites or lack of staffing, there has been sufficient testing of surface water and groundwater and historical data to provide a clear indication that there is little to no leachate impacting the environment.

A study undertaken by GHD in 2018 also found that there was little indication of leachate impact to groundwater, despite the lack of a liner or leachate collection system. Of the sampling undertaken, there was no excessive shift in acidity or changes in groundwater chemistry on the inferred down-gradient site boundary. It was noted however, that the dolomitic and limestone dominated hydrogeological setting of the site potentially contributes significant buffering capacity to potential leachate acidity. The report recommended the installation of additional monitoring bores and increased monitoring to confirm this assessment (GHD, 2019). The updated monitoring regime is included in Section 8.

#### 4.1.7 Sensitive receptors

Nearby sensitive receptors include the Katherine River and its upper tributaries/drainage lines.

### 4.2 Potential contaminant sources, contaminants of concern, migration paths and potential receptors

#### 4.2.1 Potential sources of contamination

##### *Known on-site sources of potential contamination*

Known on-site sources of potential contamination include:

- Landfill leachate occurs in the landfill due to the decomposition/degradation of the waste

- Landfill gas occurs in the landfill due to the decomposition/degradation of the waste
- Stormwater that may come into contact with waste and become contaminated

#### ***Other possible on-site sources of potential contamination***

Other possible on-site sources of potential contamination include:

- Chemical and container storage areas have the potential for spills and/or leaks of stored chemicals
- Recycling areas have the potential for spills and/or leaks from the storage of oil, batteries and gas bottles
- Workshop/compound areas which contain stores of oil, grease, fuel and other chemicals used on operations at KWMF have the potential for spills and/or leaks.

### **4.2.2 Contaminants of potential concern**

Contaminants of potential concern (COPC) at the KWMF include:

- Nitrogen compounds (ammonia and nitrate)
- Metals
- Phenolic compounds
- Benzene, Toluene, Xylene and Napthalene (BTEXN)
- Total organic carbon (TOC)
- Volatile fatty acids (VFAs)
- Total recoverable hydrocarbon (TRH)
- Per- and polyfluoroalkyl substances (PFAS)
- Chloride
- Sodium
- Salinity
- Methane

### **4.2.3 Potential receptors**

Potential receptors for contamination resulting from activities at KWMF include (but are not limited to):

- Nearby groundwater users (Novis Quarry/Manbulloo Station have four bores at the quarry site, two of which are production bores and two of unknown use. There is also one investigation bore on the Victoria Highway approximately 515 m to the north-east.)
- Katherine River and Tindal Creek and their ecosystems, as well as users of Katherine River and its water
- Surrounding land/ecosystems
- Any staff or users of the KWMF
- Users of Katherine Rail Terminal

### **4.2.4 Potential exposure pathways**

The possible exposure pathways are identified as natural and/or manmade pathways for the preferential migration of contaminants in the liquid and/or gaseous state. Potential contaminant migration pathways for contaminants resulting from activities at KWMF include (but are not limited to):

- Leachate migration from the landfill to soil and groundwater
- Leachate impacted surface water runoff from the landfill
- Contaminated surface water runoff from chemical and container storage areas, recycling area, and workshop/compound areas
- Direct emission of landfill gas (methane) to atmosphere

Exposure to human receptors can occur through three routes; dermal contact, ingestion and inhalation. Ecosystem exposure occurs through leaching, migration, ingestion, dermal contact and inhalation. Potential exposure routes to potential receptors include (but are not limited to):

- Infiltration of leachate, leachate impacted or otherwise impacted water to the groundwater system
- Overland flow of leachate, leachate impacted or otherwise impacted water to the surface water system
- Direct or in-direct exposure to water users of both groundwater and surface water
- Direct exposure of leachate, leachate impacted or otherwise impacted water or soil leading to dermal contact, inhalation or accidental ingestion by on-site staff or users of the KWMMF
- Direct exposure to landfill gas through inhalation by on-site staff or users of KWMMF or surrounding environment users

These potential contamination sources and exposure pathways require management measures, and monitoring, to minimise risks to receptors. The risk assessment (Section 5) and environmental management plans (Section 6) assess these risks and put in place appropriate management measures and monitoring.



## 5 RISK ASSESSMENT

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The risk assessment process involves identification of environmental aspects and impacts, and is systematic and consistent with the following international best practice standard methodologies:

- AS/NZS ISO 31000:2009: Risk management - Principles and Guidelines (Standard).
- HB 203:2006: Environmental risk management - Principles and Process (Guide).
- HB 158:2010: Delivering assurance based on ISO 31000:2009 - Risk management - Principles and Guidelines (Guide).

Environmental aspects are defined as the elements of an organisations activities, products or services that can interact with the environment (e.g. use of machinery, storage of wastes). Environmental impacts are any change to the environment, whether adverse or beneficial, wholly or partially resulting from the organisations environmental aspects.

Identifying the environmental aspects and impacts relevant to the works undertaken at KWMF allows an assessment of the environmental risk to be completed, using a standard consequence and likelihood matrix. Management or mitigation measures can be assigned to each aspect, with a residual risk calculated based on the resulting potential impacts. Environmental management activities can then be prioritised according to risk. Risks have only been assessed for activities related to the operations undertaken at KWMF.

### 5.1 Risk rankings

The ranking for event consequence is shown in Table 5-1. The likelihood of an event occurring provides a measure of the known or anticipated frequency of occurrences (Table 5-2). Combining likelihood with consequence provides guidance on risk levels of each aspect and enables key risks to be identified and management strategies to be prioritised (Table 5-3). The risk assessment for the activities associated with KWMF is provided in Table 5-4.

**Table 5-1. Consequence ranking**

| Consequence |               |                                                                         |
|-------------|---------------|-------------------------------------------------------------------------|
| 1           | Insignificant | No/low measurable impact on the environment.                            |
| 2           | Minor         | Some minor, temporary environmental impact.                             |
| 3           | Moderate      | Contained temporary or permanent minor, localised environmental damage. |
| 4           | Major         | Severe environmental damage.                                            |
| 5           | Catastrophic  | Environmental disaster.                                                 |

**Table 5-2. Qualitative measures of likelihood**

| Probability/Likelihood |                |                                              | Likelihood criteria |
|------------------------|----------------|----------------------------------------------|---------------------|
| A                      | Rare           | May occur only in exceptional circumstances. | 0-1%                |
| B                      | Unlikely       | Could occur at some time.                    | 2-10%               |
| C                      | Moderate       | Might possibly occur at some time.           | 11-50%              |
| D                      | Likely         | Will probably occur in most circumstances.   | 51-90%              |
| E                      | Almost certain | Expected to occur in most circumstances.     | 91-100%             |

**Table 5-3. Risk rankings from combined consequences and likelihood**

| Consequence |   |    |    |    |    |    |
|-------------|---|----|----|----|----|----|
| Likelihood  |   | 1  | 2  | 3  | 4  | 5  |
|             | A | 1  | 3  | 6  | 10 | 15 |
|             | B | 2  | 5  | 9  | 14 | 19 |
|             | C | 4  | 8  | 13 | 18 | 22 |
|             | D | 7  | 12 | 17 | 21 | 24 |
|             | E | 11 | 16 | 20 | 23 | 25 |

Where;

**Red** = extreme risk intolerable  
**Orange** = high risk intolerable or tolerable  
**Yellow** = medium risk tolerable or acceptable  
**Green** = low risk acceptable

**Table 5-4. Risk assessment**

| Aspect                       | Impact                                                                                          | Risk Ranking | Mitigation/Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Residual Risk |
|------------------------------|-------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Air quality (dust and odour) | Emissions of air pollutants and odour                                                           | Medium (12)  | <ul style="list-style-type: none"> <li>Apply daily cover, temporary cover and capping as required to avoid odour</li> <li>Respond to any complaints regarding odour, and implement changes where / if required</li> <li>Use of water cart or other dust suppression where necessary</li> </ul>                                                                                                                                                                                                                                                                                                        | Low (5)       |
| Greenhouse gas emissions     | Excessive energy consumption and use of vehicles/machinery and associated GHG emissions         | Medium (12)  | <ul style="list-style-type: none"> <li>Regularly inspect and maintain vehicles and machinery to manufacturers standards</li> <li>Avoid excessive use of vehicles and machinery where possible</li> <li>Avoid excess use of energy where possible</li> </ul>                                                                                                                                                                                                                                                                                                                                           | Low (5)       |
|                              | GHG emissions from landfill                                                                     | Low (5)      | <ul style="list-style-type: none"> <li>There is potential for impacts to the life, health and well-being of onsite workers from the direct release of landfill gas from open tipping face/s and temporarily capped filled areas, although the risk is low, as landfill gas will rapidly disperse when released to atmosphere.</li> <li>Based on the findings of a report prepared by GHD (GHD 2019), an active gas extraction system and/or more advanced gas treatment technologies are unnecessary for KWMF.</li> </ul>                                                                             | Low (5)       |
| Water quality                | Contamination of surface or groundwater from leachate                                           | High (13)    | <ul style="list-style-type: none"> <li>Waste disposed of in landfill immediately (i.e. not stored elsewhere)</li> <li>Apply daily cover, temporary cover and capping as required</li> <li>Minimise exposed tip face area as much as reasonably practical</li> <li>Install and manage diversion drains/control measures as required to separate clean stormwater from operational areas</li> <li>Ensure regular inspections are undertaken of the landfill and active tip face to detect any potential contaminated runoff</li> <li>Water monitoring program in place to detect any impacts</li> </ul> | Medium (9)    |
|                              | Contamination of surface or groundwater from leaks or spills of stored fuels oils and chemicals | High (13)    | <ul style="list-style-type: none"> <li>Hazardous substances on-site to be stored appropriately within impervious, bunded areas</li> <li>Regular collection (for recycling) of the stored containers at site</li> <li>Regular maintenance and emptying of waste oil tank</li> <li>Bulk fuel and oil tanks to meet AS1940 requirements (i.e double bunded with capacity for 110% of the volume stored)</li> </ul>                                                                                                                                                                                       | Low (6)       |

| Aspect                                   | Impact                                                                                                   | Risk Ranking | Mitigation/Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Residual Risk |
|------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Stormwater, erosion and sediment control | Reduced water quality to surrounding waterways due to sediment laden run-off                             | High (13)    | <ul style="list-style-type: none"> <li>Installation and maintenance of erosion and sediment control measures where necessary</li> <li>Install and manage diversion drains/control measures as appropriate to separate clean stormwater from operational areas</li> <li>Rehabilitation of exposed areas as soon as practical</li> </ul>                                                                                                                                                                              | Low (6)       |
| Noise                                    | Excessive noise impacts on surrounding environment                                                       | Medium (12)  | <ul style="list-style-type: none"> <li>All operations to be undertaken within open hours only</li> <li>Minimise excessive noise activities where possible</li> <li>There are no residential buildings surrounding the KWMF</li> </ul>                                                                                                                                                                                                                                                                               | Low (5)       |
| Weeds and pests                          | Introduction or spread of weeds through vehicle movements or waste disposed of on site                   | High (13)    | <ul style="list-style-type: none"> <li>Regular weed monitoring and control</li> <li>Rehabilitation of exposed areas as soon as practical</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 | Low (6)       |
|                                          | Increased numbers of pests in the area due to waste                                                      | High (13)    | <ul style="list-style-type: none"> <li>Apply daily cover, temporary cover and capping as required to discourage birds and other animals from searching through and feeding on the waste</li> <li>Regularly clean-up of scattered rubbish</li> <li>Maintain site fencing to keep larger animals out of site</li> <li>Bird management techniques such as the use of whistles, car horns, flashing lights, anti-roost spikes etc. may be needed if birds become a nuisance or numbers continue to increase.</li> </ul> | Low (6)       |
| Flora and fauna                          | Unauthorised clearing                                                                                    | Medium (12)  | <ul style="list-style-type: none"> <li>Clearly mark out areas to be cleared with marking tape when clearing is being undertaken</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          | Low (5)       |
|                                          | Direct impact or death to fauna through vehicle collisions                                               | Medium (12)  | <ul style="list-style-type: none"> <li>Ensure that vehicles are complying with speed limits on site</li> <li>Ensure clear signage of speed limits on site</li> <li>Maintain site fencing to keep larger animals out of site</li> </ul>                                                                                                                                                                                                                                                                              | Low (5)       |
|                                          | Water quality impacts to surrounding flora and fauna                                                     | High (13)    | <ul style="list-style-type: none"> <li>Management of leachate, erosion and stormwater as per above.</li> <li>Water monitoring program in place to detect any potential impacts</li> </ul>                                                                                                                                                                                                                                                                                                                           | Low (6)       |
| Fire                                     | Hot works causing sparks and starting a fire – leading to damage of facility and surrounding environment | High (13)    | <ul style="list-style-type: none"> <li>No hot works undertaken during fire bans</li> <li>Fire breaks of at least 4 m must be maintained around site boundary line and around buildings</li> <li>Emergency response plan and procedures in place</li> <li>Appropriate firefighting equipment maintained on site</li> </ul>                                                                                                                                                                                           | Low (6)       |

| Aspect        | Impact                                                                                                                                                             | Risk Ranking | Mitigation/Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Residual Risk |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|               | Waste facility containing flammable and combustible material and the increased risk of starting a fire – leading to damage of facility and surrounding environment | High (13)    | <ul style="list-style-type: none"> <li>No hot works undertaken during fire bans</li> <li>Fire breaks of at least 4 m must be maintained around site boundary line and around buildings</li> <li>Emergency response plan and procedures in place</li> <li>Appropriate firefighting equipment kept maintained on site</li> <li>Appropriate storage of chemicals and hydrocarbons</li> <li>Apply daily cover, temporary cover and capping as required</li> <li>Maintain mulch/greenwaste stockpile heights to prevent spontaneous combustion</li> </ul> | Low (6)       |
| Heritage      | Uncovering and interfering with unknown sacred sites or heritage objects                                                                                           | High (13)    | <ul style="list-style-type: none"> <li>The KWMF site was established in 1980, over this time management practices relating to heritage and sacred sites has vastly improved. It is possible that sacred sites, heritage items or artefacts could be uncovered.</li> <li>Stop works if any sacred site, heritage item or artefact is uncovered and report to NT Heritage Branch for further advice before continuing works</li> </ul>                                                                                                                 | Low (6)       |
| Public safety | Public access to the site leading to injuries or casualties                                                                                                        | High (13)    | <ul style="list-style-type: none"> <li>Clear and appropriate signage</li> <li>Maintain a clean site, and ensure appropriate disposal of wastes</li> <li>Closing of waste disposal bays when waste skips are full or being emptied/replaced</li> <li>Clearly defined No Go areas for public</li> <li>Provide assistance and clear directions on correct waste disposal areas</li> </ul>                                                                                                                                                               | Low (6)       |
| Waste         | Cross contamination of wastes impacting on the ability to recycle wastes                                                                                           | High (13)    | <ul style="list-style-type: none"> <li>Provide assistance and clear directions on correct waste disposal areas</li> <li>Clearly labelled signs at transfer stations</li> <li>Salvage of recyclable materials incorrectly disposed of</li> </ul>                                                                                                                                                                                                                                                                                                      | Medium (9)    |
|               | Inappropriate management of asbestos leading to safety concerns                                                                                                    | High (13)    | <ul style="list-style-type: none"> <li>Designated and clearly signed asbestos disposal cell</li> <li>Appropriate temporary and permanent cover of asbestos cell</li> <li>Location of asbestos cells in accordance with EPL and marked via GPS</li> </ul>                                                                                                                                                                                                                                                                                             | Medium (9)    |
|               | Disposal of hazardous or contaminated material in incorrect areas                                                                                                  | High (13)    | <ul style="list-style-type: none"> <li>Disposal of animal carcasses by pre-approval from KTC waste management staff only</li> <li>Designated and clearly signed active waste disposal cell</li> <li>Appropriate temporary and permanent cover of contaminated wastes (animal carcasses)</li> <li>Designated and clearly signed storage areas for listed wastes at the transfer station</li> </ul>                                                                                                                                                    | Medium (9)    |



| Aspect | Impact                                                                   | Risk Ranking | Mitigation/Control                                                                                                                                                                                                                                                                                                                | Residual Risk |
|--------|--------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|        | Uncontrolled dumping of waste, litter or unacceptable disposal of wastes | High<br>(13) | <ul style="list-style-type: none"> <li>• Provide assistance and clear directions on correct waste disposal areas</li> <li>• Clearly labelled signs at transfer stations</li> <li>• Salvage of recyclable materials incorrectly disposed of</li> <li>• Regular clean-up of scattered and inappropriately disposed waste</li> </ul> | Medium<br>(9) |

## 6 ENVIRONMENTAL MANAGEMENT AND MITIGATION STRATEGIES

### 6.1 Environmental Management Plans overview

The following sections provide specific environmental management tables related to identified potentially significant environmental aspects (see Section 5). An environmental aspect is an element of the landfill operation activity that can interact with the environment.

Each environmental management table forms the basis of an environmental inspection and audit to verify compliance with the EMP. Each of the tables shown in the relevant sections below include the following components:

- Environmental objectives – describes the key environmental objectives or goals that the EMP aims to influence for this aspect.
- Mitigation measures – measures that will be implemented with the aim to eliminate, reduce, or control potential adverse environmental impacts and risks resulting from site activities.
- Performance criteria - measureable control indicator that is used to quantify, or evaluate, so as to determine if the performance standard is met.
- Monitoring and Reporting – actions to measure and report compliance against the objectives and performance standards.
- Corrective Action – measure to ensure a non-conformance or non-compliance is corrected.
- Responsibility – overall responsibility to ensure the mitigation measure is implemented and is an effective control. If the task is delegated, the person is still responsible for ensuring implementation.

### 6.2 Environmental management process

Specific environmental management tables have been developed in the below Sections from 6.3 to 6.8. Each plan relates to a landfill operation category and environmental impact and risk as shown in Table 6-1.

**Table 6-1. Landfill operation category and corresponding management table**

| Landfill Operation Category                     | Section Number | Table reference                                                                                                                                                             |
|-------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental and social licence and compliance | 6.3            | <ul style="list-style-type: none"> <li>• General environmental management (Table 6-2)</li> <li>• Communication, consultation and heritage management (Table 6-3)</li> </ul> |
| Waste acceptance and disposal                   | 6.4            | <ul style="list-style-type: none"> <li>• General and recyclable waste management (Table 6-4)</li> </ul>                                                                     |
| Storage and use of chemicals, oils and fuels    | 6.5            | <ul style="list-style-type: none"> <li>• Storage and use of chemicals, oils and fuels (Table 6-5)</li> </ul>                                                                |
| Water quality                                   | 6.6            | <ul style="list-style-type: none"> <li>• Stormwater, erosion and sediment control (Table 6-6)</li> <li>• Leachate overview (Table 6-7)</li> </ul>                           |

| Landfill Operation Category      | Section Number | Table reference                                                                                                                                            |
|----------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community and landowner nuisance | 6.7            | <ul style="list-style-type: none"> <li>Dust, odour and aesthetics (Table 6-8)</li> <li>Noise (Table 6-9)</li> <li>Litter (Table 6-10)</li> </ul>           |
| Environmental management         | 6.8            | <ul style="list-style-type: none"> <li>Flora and fauna (Table 6-11)</li> <li>Pests and weeds (Table 6-12)</li> <li>Fire prevention (Table 6-13)</li> </ul> |

## 6.3 Environmental and social licence and compliance

### 6.3.1 General environmental management

The following environmental compliance measures (Table 6-2) to be implemented at the KWMF are based on EPL conditions and outcomes of the environmental impact and risk assessment (Table 5-4).

**Table 6-2. General environmental management**

|                                             |                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | To minimise the risk and likelihood of causing harm to the environment                                                                                                                                                                                                                                                                                |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Ensure the implementation and compliance of this EMP</li> <li>Annual environmental audit of EPL conditions and EMP</li> <li>Ensure all personnel working at KWMF are given an induction detailing environmental risks and mitigation measures in this EMP, as well as emergency response procedures</li> </ul> |
| <b>Target / performance criteria</b>        | Impacts/risks to environment are reduced to acceptable levels                                                                                                                                                                                                                                                                                         |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Daily visual site inspection (general parameters)</li> <li>Monthly environmental inspection against EPL conditions and this EMP, as per site inspection checklist</li> </ul>                                                                                                                                   |
| <b>Corrective actions and contingencies</b> | Non-compliance of the EPL and this EMP must have suitable corrective actions with assigned responsibility and date for completion                                                                                                                                                                                                                     |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                     |

### 6.3.2 Communication, consultation and heritage management

Communication, consultation and heritage management (Table 6-3), includes aspects such as heritage, communication, consultation and engagement with the community adjacent to the landfill site, general public, Northern Territory Government and other stakeholders.

**Table 6-3. Communication, consultation and heritage management**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | <ul style="list-style-type: none"> <li>Minimise nuisance for landfill users and employees</li> <li>Minimise nuisance to surrounding land owners/users</li> <li>Minimise social impacts from landfill operations</li> <li>To protect and preserve sacred sites and heritage items</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Seek and maintain required approvals from NT EPA regarding landfill design upgrades, monitoring and reporting in accordance with the EPL conditions</li> <li>Develop and distribute newsletters or leaflets to inform users of KWMF of any updates or changes to the landfill operations or site. Have this information also on the KTC website.</li> <li>Place notices in the newspaper when any significant works or changes are being planned/undertaken</li> <li>In the event a sacred site or heritage artefact is uncovered the KTC must inform the Heritage Branch as soon as possible and follow further advice</li> <li>All complaints shall be logged in the complaints register and appropriate action undertaken</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>Minimal complaints from users of KWMF and surrounding land owners/users</li> <li>Minimal complaints from local community</li> <li>Appropriate management of sacred sites or heritage items discoveries</li> <li>Any complaints have been addressed and responded to</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Review of complaints register to ensure it is being used correctly</li> <li>Annual audit to ensure that monitoring and reporting are being undertaken as per the EPL conditions and EMP</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Further work around effective communication with the community regarding issues and or upgrades etc</li> <li>Training for KWMF staff regarding identifying and reporting process of sacred sites / heritage items</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 6.4 Waste acceptance & disposal

Table 6-4 details how environmental aspects related to general and recyclable waste are managed at KWMF. All listed waste management measures are detailed in Section 7.

**Table 6-4. General and recyclable waste management**

|                             |                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>  | <ul style="list-style-type: none"> <li>To accept only approved waste for disposal and/or recycling at KWMF</li> <li>To ensure no harm is done to the environment as a result of waste disposal at KWMF</li> <li>To prevent ground water and surface water contamination</li> <li>To prevent fires at KWMF</li> </ul> |
| <b>Mitigation / Control</b> | <ul style="list-style-type: none"> <li>Relevant staff are to be trained on the types of waste accepted and pre-approvals required – this will be done through inductions and toolbox talks/staff meetings</li> </ul>                                                                                                 |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>• Clear signage and communication to make landfill users aware of the types of waste accepted at KWMF</li> <li>• At the weighbridge – conduct visual inspections of waste loads and question driver regarding types of wastes within the load.</li> <li>• If not general waste, seek compliance documentation to verify type of wastes and prior approval if applicable.</li> <li>• Any waste not listed in the EPL can only be accepted after special approval from NT EPA</li> <li>• Only clean fill can be accepted for disposal. Soil being brought to KWMF from potentially contaminated sites will require validation sampling results to be assessed against the NSW EPA <i>Waste Classification Guidelines</i>.</li> <li>• Provide assistance and clear directions on correct waste disposal areas</li> <li>• Clearly labelled signs at transfer stations</li> <li>• Salvage of recyclable materials incorrectly disposed of</li> <li>• Regular clean-up of scattered and inappropriately disposed waste</li> <li>• Apply daily cover, temporary cover and capping as required</li> <li>• Only domestic users are permitted to use the transfer station unless directed by the weighbridge operator</li> <li>• Accepted wastes are only to be stored within approved areas and storage vessels</li> <li>• All liquid waste (toilets, ablutions etc.) will be disposed of directly into site septic tanks, which will be managed as required</li> <li>• All drivers will be instructed to remain on alert for evidence of hot loads (smoke/fire) and to alert KWMF staff</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>• No acceptance of unapproved wastes</li> <li>• No significant impacts or environmental harm</li> <li>• No breach of EPL conditions</li> <li>• All wastes disposed of in accordance with EPL and industry standards</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>• Visual monitoring of loads to ensure appropriate acceptance of wastes</li> <li>• Water quality monitoring as per schedule</li> <li>• Visual inspections of waste transfer stations and active tip face shall occur at least daily in the dry season and at least twice daily in the wet season</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>• Ongoing training for relevant staff re acceptance of waste procedures</li> <li>• Clearly marked signs stating waste types accepted and not accepted at the entry points to KWMF for all users to see</li> <li>• Further assistance and instructions from KWMF staff for users of KWMF to ensure appropriate disposal of wastes</li> <li>• If waste is found to be incorrectly disposed of, correct if possible.</li> <li>• If hazardous waste or unidentified waste is found, identify a licenced specialist for possible disposal and report non-compliance to the NT EPA</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 6.5 Storage and use of chemicals, oils and fuels

The storage and use of chemicals, oils and fuels is managed as per Table 6-5, which describes the mitigation measures to be implemented to reduce negative impacts and the risk of causing environmental harm from spills leading to the contamination of surface and groundwater. It also details the performance criteria and monitoring measures in place.

**Table 6-5. Storage and use of chemicals, oils and fuels**

|                            |                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b> | <ul style="list-style-type: none"> <li>• To prevent spills of hazardous substances</li> </ul> |
|----------------------------|-----------------------------------------------------------------------------------------------|



|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>To ensure correct use, handling and storage of hazardous chemicals</li> <li>To prevent contamination to surface water, ground water and surrounding environment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Any spills or leaks of hazardous materials will be treated in accordance with the emergency response plan – spill response procedure</li> <li>All chemicals, oils and fuels will be stored appropriately in locked areas that are bunded, impervious areas in accordance with their SDS</li> <li>SDS will be available in a folder where the chemicals, oils and fuels are stored</li> <li>Storage of oils and fuels must be in accordance with Australian Standards (AS1940 – The storage and handling of flammable and combustible liquids)</li> <li>Chemical use will be in accordance with the appropriate SDS</li> <li>Volumes of stored chemicals, oils and fuels will be kept to a minimum where possible</li> <li>Spill response kits to be stored and maintained in all storage areas</li> <li>Site staff to be trained in spill response as part of the induction process</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>No spills or leaks of hazardous substances</li> <li>No breach of EPL</li> <li>Reporting of spills/leaks to NT EPA</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Daily visual inspections of waste disposal areas to identify any hazards or spills</li> <li>Monthly site inspection to check correct use and storage of hazardous materials and for signs of any spills or leaks</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Review storage and handling of hazardous materials and provide training where required</li> <li>Raise concerns at toolbox talks / staff meetings</li> <li>Ensure staff are trained in spill response procedures</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 6.6 Water quality

### 6.6.1 Water management

Water within the KWMF is divided into three categories for the ease of management. These are:

- Clean water – storm water runoff that is outside of any operational or disturbed area at KWMF
- Dirty water – storm water runoff that is within any operational or disturbed area at KWMF
- Leachate – water that is collected in leachate trenches within the waste disposal cells, or storm water that has come into contact with exposed waste material

### 6.6.2 Storm water, erosion and sediment control

Table 6-6 describes the storm water management systems in place at KWMF, and details water quality performance and mitigation measures in place to reduce the risk of negative impacts to surface water, groundwater and the surrounding environment.

**Table 6-6. Storm water management, erosion and sediment control**

|                            |                                                                                                                                                                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b> | <ul style="list-style-type: none"> <li>To ensure no negative impacts on surface water, groundwater or the surrounding environment</li> <li>To direct clean water away from operational and disturbed areas</li> <li>To minimise erosion and sediment transportation within KWMF</li> </ul> |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>To ensure sediment laden run-off does not leave KWMF</li> <li>To minimise generation of leachate</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Install and maintain surface water diversion structures as required to ensure that clean and dirty water do not mix.</li> <li>Use appropriate cover and capping materials (temporary daily cover where required)</li> <li>Implement and maintain erosion and sediment control measures where necessary</li> <li>Prevent contamination of storm water from chemicals, oils and fuels stored and used on site by use of appropriate bunding and covers</li> <li>Ensure appropriate management of spills</li> <li>Ensure progressive rehabilitation of disturbed areas</li> <li>Monitor for signs of erosion and take corrective actions where required</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>No sedimentation of the surrounding environment</li> <li>No impacts to surface water or groundwater within KWMF</li> <li>Erosion and sediment control measures are implemented and maintained where necessary</li> <li>Disturbed areas are rehabilitated as soon as possible</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Ensure water quality monitoring is undertaken in accordance with the monitoring plan</li> <li>Inspection of waste disposal areas following heavy rainfall events</li> <li>Site inspections to include checks for signs of erosion and monitoring of erosion and sediment control measures as well as surface water diversion structures, as per the site inspection schedule</li> </ul>                                                                                                                                                                                                                                                                         |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Ensure staff are trained in spill response procedures</li> <li>Ensure weekly inspections occur</li> <li>Raise concerns at toolbox talks / staff meetings</li> <li>Report spills to NT EPA</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 6.6.3 Leachate

Leachate is liquid that passes through the waste facility and collects extracted solutes and suspended solids. Leachate has the potential to pollute the surrounding environment and is of particular concern during the wet season. During the dry season, where no water or leachate is present, sampling should not be required. Leachate is managed as per Table 6-7.

**Table 6-7. Leachate management**

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>           | <ul style="list-style-type: none"> <li>To prevent impacts to the surface water, groundwater and surrounding environment due to leachate</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Mitigation / Control</b>          | <ul style="list-style-type: none"> <li>Ensure appropriate disposal of wastes into landfill cells</li> <li>Use of appropriate cover and capping for landfill cells</li> <li>Minimise exposed tip face area to reduce rainfall infiltration</li> <li>Monitor all active waste areas following high rainfall events for signs of discoloured runoff / leachate</li> <li>Where leachate contamination of surface run-off is visible, construct diversions to direct leachate back into landfill</li> <li>Minimise the surface area and volumes of green waste kept on site</li> </ul> |
| <b>Target / performance criteria</b> | <ul style="list-style-type: none"> <li>No incidents or monitoring results in breach of the EPL</li> <li>No detectable leachate flowing from KWMF operations area</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>No impacts to the surface water or groundwater at KWMF</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Ensure water quality monitoring is undertaken in accordance with the monitoring plan</li> <li>Inspection of waste disposal areas following heavy rainfall events</li> <li>Conduct site inspections on water quality controls as per the site inspection schedule</li> <li>Photographs must be taken during the site inspection to provide evidence of site conditions in lieu of testing (dry season).</li> </ul> |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Implement changes to the leachate management system if required</li> <li>Raise concerns at toolbox talks / staff meetings</li> <li>Report non compliances of EPL to NT EPA</li> </ul>                                                                                                                                                                                                                             |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 6.7 Community and landowner nuisance

### 6.7.1 Dust, odour and aesthetics

The dust, odour and aesthetics management table (Table 6-8) describes the complaints management system in place at KWMF, and details mitigation measures in place to reduce the occurrence of dust, odour and aesthetic nuisances to the surrounding properties and KWMF users.

**Table 6-8. Dust, odour and aesthetics management**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | <ul style="list-style-type: none"> <li>To minimise dust and odour nuisance to KWMF users, employees and surrounding properties</li> <li>To minimise dust impacts to the surrounding environment</li> <li>To minimise negative aesthetic impacts to KWMF users, employees and surrounding properties</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Dust suppression through the use of a water cart/truck will be undertaken when necessary</li> <li>Speed limits on site will be enforced to reduce the amount of dust</li> <li>Progressive revegetation of disturbed areas will be undertaken to reduce generation of dust</li> <li>Transfer station skip bins will be emptied when full and at least at the close of each working day</li> <li>Skip bins used at the transfer station are to be cleaned at least monthly to prevent build-up of odours</li> <li>Wastes that cause odour are to be covered immediately</li> <li>Scattered rubbish will be cleaned up regularly</li> <li>Waste stations / storage areas are to be kept tidy</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>No complaints received from KWMF users, employees and surrounding land owners/users relating to dust, odour or aesthetics</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Daily site inspection to include visual checks of cleanliness and tidiness</li> <li>Visual monitoring for excessive dust generation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Training of staff regarding dust suppression, tidiness and cleanliness</li> <li>Training staff in complaints handling</li> <li>Raise concerns at toolbox talks / staff meetings</li> <li>All complaints received will be logged in a complaints register</li> <li>All complaints shall be responded to within 48 hours, with documentation added to the complaints register</li> </ul>                                                                                                                                                                                                                                                                                                               |

|                       |                   |
|-----------------------|-------------------|
| <b>Responsibility</b> | KWMF Site Manager |
|-----------------------|-------------------|

### 6.7.2 Noise

The noise management table (Table 6-9) describes the complaints management system in place at KWMF, and details mitigation measures in place to reduce the occurrence of noise nuisances to the surrounding properties and KWMF users.

**Table 6-9. Noise management**

|                                             |                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | <ul style="list-style-type: none"> <li>To minimise noise nuisance to KWMF users, employees and surrounding properties</li> <li>To minimise noise impacts to the surrounding environment</li> </ul>                                                                                                                                         |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Maintain all equipment and machinery to manufacturers standards</li> <li>Conduct all operations during standard work hours</li> </ul>                                                                                                                                                               |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>No complaints received from KWMF users, employees and surrounding land owners/users relating to noise</li> </ul>                                                                                                                                                                                    |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>If noise outside of what is considered normal operational noise is to occur, notification and details will be given to the public and surrounding land owners via newspapers and letter drops</li> <li>Noise monitoring will be undertaken in the event of a complaint</li> </ul>                   |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Train staff in complaints handling</li> <li>Raise concerns at toolbox talks / staff meetings</li> <li>All complaints received will be logged in a complaints register</li> <li>All complaints shall be responded to within 48 hours, with documentation added to the complaints register</li> </ul> |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                          |

### 6.7.3 Litter

The litter management table (Table 6-10) describes the complaints management system in place at KWMF, and details mitigation measures in place to reduce the occurrence of litter nuisances to the surrounding properties.

**Table 6-10. Litter management**

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>           | <ul style="list-style-type: none"> <li>To ensure no litter nuisance to KWMF users, employees and surrounding land owners/users</li> <li>To minimise litter impacts to the surrounding environment</li> </ul>                                                                                                                                                                                                                  |
| <b>Mitigation / Control</b>          | <ul style="list-style-type: none"> <li>Litter will be regularly cleaned up and disposed of appropriately by KWMF staff</li> <li>The perimeter fence is designed to reduce wind-blown litter leaving the KWMF. This fence will be maintained.</li> <li>Additional litter fencing should be installed near Tindal Creek if existing fencing is inadequate in preventing windblown litter from entering the waterway.</li> </ul> |
| <b>Target / performance criteria</b> | <ul style="list-style-type: none"> <li>No complaints received from KWMF users, employees and surrounding land owners/users relating to litter</li> </ul>                                                                                                                                                                                                                                                                      |
| <b>Monitoring</b>                    | <ul style="list-style-type: none"> <li>Daily site inspections to include a visual check for litter</li> <li>Monthly formal site inspection including inspection of litter and litter controls</li> </ul>                                                                                                                                                                                                                      |
| <b>Corrective actions</b>            | <ul style="list-style-type: none"> <li>Training staff in complaints handling</li> </ul>                                                                                                                                                                                                                                                                                                                                       |

|                          |                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>and contingencies</b> | <ul style="list-style-type: none"> <li>• Raise concerns at toolbox talks / staff meetings</li> <li>• All complaints received will be logged in a complaints register</li> <li>• All complaints shall be responded to within 48 hours, with documentation added to the complaints register</li> </ul> |
| <b>Responsibility</b>    | KWMF Site Manager                                                                                                                                                                                                                                                                                    |

## 6.8 Environmental management

### 6.8.1 Flora and fauna

The flora and fauna management table (Table 6-11) details mitigation measures to reduce the risks to flora and fauna.

**Table 6-11. Flora and fauna management**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | <ul style="list-style-type: none"> <li>• To minimise impacts on flora and fauna at KWMF and in the surrounding environment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>• All clearing at KWMF will have the required approvals undertaken by KTC</li> <li>• Any sightings of threatened fauna species are to be reported to the Site Manager to determine whether the animal is at risk and requires relocation</li> <li>• Report any injured fauna to the Site Manager</li> <li>• No pets / domestic animals allowed to be brought onto KWMF</li> <li>• Speed limits will be enforced to minimise potential for fauna impact</li> <li>• Disturbed areas will be progressively rehabilitated, and done so with species local to the surrounding environment</li> <li>• Perimeter fencing around the landfill site to prevent large fauna entering the site</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>• No significant impacts to flora and fauna</li> <li>• No injured fauna as a result of KWMF activities</li> <li>• Disturbed areas progressively rehabilitated with local native species, and achieving a minimum 80% groundcover within the first year</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>• Monthly site inspections to check for signs of impacted flora and fauna</li> <li>• Monitoring of rehabilitation areas will be undertaken to ensure it is to an acceptable standard (i.e. a minimum 80% groundcover within the first year)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>• Training of staff regarding potentially significant fauna on site</li> <li>• Ensure clear signage of speed limits for users of KWMF</li> <li>• Raise concerns at toolbox talks or staff meetings</li> <li>• Further rehabilitation works if found to be to in-effective</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### 6.8.2 Pests and weeds

The pests and weeds management table (Table 6-12) details mitigation measures to reduce the likelihood of infestations, introduction and spread of pests and weeds. KTC have developed a Weed Management Plan (WMP) for the Katherine region, including the KWMF. This plan identifies three target weed species for the KWMF; Chinee apple (*Ziziphus mauritiana*), Neem (*Azadirachta indica*) (both class A) and Grader grass (*Themeda quadrivalvis*) (class B). The WMP is attached at Appendix B.



**Table 6-12. Pest and weed management**

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>                  | <ul style="list-style-type: none"> <li>To reduce the likelihood of weed infestations at KWMF</li> <li>To reduce the spread of weeds at KWMF</li> <li>To minimise the numbers of feral / pest species and mosquitos at KWMF</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Mitigation / Control</b>                 | <ul style="list-style-type: none"> <li>Declared weeds are not to be disposed of at KWMF without prior approval from KTC and the NT EPA</li> <li>Weeds identified on site will be managed in accordance with the KTC WMP</li> <li>Regular pest control activities to be undertaken at KWMF, including use of bait stations etc.</li> <li>Where an infestation has been identified, a qualified, licensed pest control contractor will be called in to control the infestation</li> <li>Boundary fence to be regularly inspected and maintained to prevent access to animals</li> <li>The pooling of water will be prevented where possible, to decrease the breeding grounds for mosquitos</li> </ul> |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>No declared weeds or introduction of noxious weeds at KWMF</li> <li>No spread of weeds from KWMF to surrounding environment</li> <li>No introduction of feral / pest species at KWMF</li> <li>No feral / pest / vector infestations at KWMF</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>A weed survey is to be undertaken at least annually</li> <li>Monthly site inspection to check for presence of pests and weeds in operational areas</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Seek advice from the NT Weeds Management Branch if required</li> <li>Seek advice from the NT Department of Health if mosquito eradication is required</li> <li>Review of the KTC WMP</li> <li>Implement more rigorous monitoring routines for pests and weeds as required</li> <li>Ensure clear signage for KWMF users so they know what declared weeds are</li> <li>Training for staff re weed identification and management of weeds at KWMF</li> <li>Raise concerns at toolbox talks or staff meetings</li> </ul>                                                                                                                                          |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 6.8.3 Fire prevention

Fire prevention management is detailed in Table 6-13 which includes mitigation measures relating to risks such as fires within the landfill and bushfires.

**Table 6-13. Fire prevention management**

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective / outcome</b>  | <ul style="list-style-type: none"> <li>To minimise the risk of fire from and to the landfill</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Mitigation / Control</b> | <ul style="list-style-type: none"> <li>Appropriate management of waste disposal into landfill cells to ensure no hot loads or smoking loads</li> <li>Ensure a clean and tidy operations area to minimise ignition sources</li> <li>Appropriate hot works procedures – no hot works undertaken during fire bans or near flammable materials</li> <li>Maintain fire-fighting equipment including extinguishers in date and accessible water cart.</li> <li>Smoking only to occur in designated smoking areas</li> </ul> |

|                                             |                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <ul style="list-style-type: none"> <li>Maintain a 4 m wide fire break around the perimeter of the KWMF, around buildings and operational areas</li> </ul>                                                                                                                                  |
| <b>Target / performance criteria</b>        | <ul style="list-style-type: none"> <li>Fire risk from and to the KWMF is reduced</li> <li>No fires started at KWMF</li> </ul>                                                                                                                                                              |
| <b>Monitoring</b>                           | <ul style="list-style-type: none"> <li>Visual monitoring of loads going to landfill cells for evidence of smoking or hot loads</li> <li>Site inspections to include checks for fire fighting equipment and fire risks such as site tidiness, appropriate hot works permits etc.</li> </ul> |
| <b>Corrective actions and contingencies</b> | <ul style="list-style-type: none"> <li>Training for staff re fire risks and response plan at KWMF</li> <li>Raise concerns at toolbox talks or staff meetings</li> </ul>                                                                                                                    |
| <b>Responsibility</b>                       | KWMF Site Manager                                                                                                                                                                                                                                                                          |

## 7 LISTED WASTE MANAGEMENT

### 7.1 Listed waste objectives & targets

The objectives, targets and performance measures for listed waste management at KWMF are detailed in Table 7-1.

**Table 7-1. Listed waste management objectives, targets and performance measures**

| Objectives                                                                                                                                                                                                                                                                                                                  | Targets                                                                                                                                                                                                                                                  | Performance Measures                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>To ensure no environmental harm occurs as a result of waste disposal</li> <li>To prevent contamination of surface water and groundwater</li> <li>To ensure no spills of hazardous substances occur</li> <li>To foster re-use / recycling of listed wastes, where possible</li> </ul> | <ul style="list-style-type: none"> <li>No significant impacts or environmental harm has occurred</li> <li>No incident in breach of the EPL conditions causing environmental harm</li> <li>Re-use / recycling of listed wastes, where possible</li> </ul> | <ul style="list-style-type: none"> <li>All wastes disposed of in accordance with the conditions of the EPL and good industry practice</li> <li>Listed waste handling and spill response undertaken in accordance with relevant procedures</li> <li>Transfer of listed wastes with potential for re-use / recycling</li> </ul> |

### 7.2 Waste volumes

The listed waste types and approximate volumes for storage, treatment and/or disposal at KWMF are detailed in Table 7-2.

**Table 7-2. Approximate annual listed waste volumes for storage, treatment and/or disposal**

| Schedule 2 waste                                         | Store | Dispose | Annual Quantity |
|----------------------------------------------------------|-------|---------|-----------------|
| Animal Effluent and Residues                             |       | ✓       | 3 tonnes        |
| Asbestos                                                 |       | ✓       | 100 tonnes      |
| Acids (solutions & solids)*                              | ✓     |         | 20 tonnes       |
| Lead, lead compounds*                                    | ✓     |         | 20 tonnes       |
| Tyres                                                    | ✓     | ✓       | 400 tonnes      |
| Waste mineral oils unfit for their original intended use | ✓     |         | 1.7 kilolitres  |

\*as batteries

### 7.3 Listed waste tracking

Records of all listed waste being stored or disposed of on-site shall be maintained as electronic files, and include the following details:

- The date of collection
- The source of the listed waste
- The name of the transport company, if not the licensee
- Vehicle registration
- Listed waste type
- Quantity of listed waste
- Whether the listed waste was stored, treated, recycled or disposed of

- Final destination of the listed waste.

Where domestic users are disposing of listed wastes to the transfer station (i.e. batteries, waste oil, tyres), waste volumes will be tracked when removed from site for recycling or disposal. The records will be reconciled and reported on annually through the EPL Annual Return.

## 7.4 Listed waste management measures

The acceptance criteria, storage, disposal, monitoring, corrective actions and reporting requirements for each listed waste product handled on-site is detailed in the corresponding Table 7-3 to Table 7-7 below.

**Table 7-3. Animal carcass management (Animal effluent and residues)**

|                                  |                                                                                                                                                                                                                                                                                                                                                                                     |             |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Animal carcass acceptance</b> | <ul style="list-style-type: none"> <li>• Animal carcass acceptance limited to the following:<br/><i>Domestic animals brought in by residential users</i><br/><i>Domestic animals from veterinary clinics or animal pound</i><br/><i>Animal carcasses from traffic incidents or municipal events</i></li> <li>• Animal carcass acceptance is by pre-approved arrangement.</li> </ul> | Per load    |
| <b>Animal carcass disposal</b>   | <ul style="list-style-type: none"> <li>• The animal carcass is to be disposed of in a pre-prepared hole excavated within the active tip face.</li> <li>• The carcass is to be immediately covered with waste material upon disposal.</li> </ul>                                                                                                                                     | Per load    |
| <b>Monitoring</b>                | • Inspection of the tip face for correct disposal.                                                                                                                                                                                                                                                                                                                                  | As required |
|                                  | • Inspection of other tip areas to detect any illegal dumping of animal carcasses.                                                                                                                                                                                                                                                                                                  | Daily       |
| <b>Corrective Actions</b>        | • Rectification of any incorrect animal carcass disposal.                                                                                                                                                                                                                                                                                                                           | As required |
|                                  | • Raising community awareness as required.                                                                                                                                                                                                                                                                                                                                          | As required |
| <b>Reporting</b>                 | <ul style="list-style-type: none"> <li>• Listed waste volumes to be reported in the Annual Return.</li> <li>• Incident reports completed and filed, including any necessary incident notification.</li> </ul>                                                                                                                                                                       | As required |

**Table 7-4. Asbestos and asbestos containing material management**

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Asbestos acceptance</b> | <ul style="list-style-type: none"> <li>• All asbestos loads for disposal must be pre-arranged through completion of an <i>Asbestos Disposal Application</i>.</li> <li>• Approved loads are given a booking time for disposal in order to adequately prepare the disposal area and coordinate loads for maximum use and efficiency of the asbestos cell.</li> <li>• Check compliance of asbestos loads with the <i>National Occupational Health and Safety Commissions Asbestos Code of Practice and Guidance Notes</i>.</li> </ul>                                                                                                                                                                                                                                               | Per load |
| <b>Asbestos disposal</b>   | <ul style="list-style-type: none"> <li>• Only correctly wrapped asbestos will be accepted at the KWMF for disposal - in accordance with Section 4.8 of the <i>NT Worksafe and Safe Work Australia How to Safely Remove Asbestos Code of Practice</i>.</li> <li>• Deposited asbestos waste at the asbestos cell area must immediately be covered by suitable material to prevent the release of fibres into the air.</li> <li>• Final cover of the asbestos shall be to a minimum thickness of 3 metres in the case of asbestos fibre and dust wastes, and 1 metre in the case of stabilised asbestos wastes in a bonded matrix.</li> <li>• GPS location and total volume of disposed waste, for each asbestos disposal, will be recorded and maintained in the listed</li> </ul> | Per load |

|                           |                                                                                                                                                                                                                    |               |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                           | waste tracking register.                                                                                                                                                                                           |               |
| <b>Monitoring</b>         | <ul style="list-style-type: none"> <li>Inspection of the asbestos cell for correct disposal.</li> </ul>                                                                                                            | As required   |
|                           | <ul style="list-style-type: none"> <li>Inspection of other tip areas to detect any illegal dumping of asbestos material.</li> </ul>                                                                                | Daily         |
| <b>Corrective Actions</b> | <ul style="list-style-type: none"> <li>Rectification of any incorrect asbestos disposal</li> <li>Additional training for staff involved in asbestos acceptance and disposal.</li> <li>Increased signage</li> </ul> | As required   |
|                           | <ul style="list-style-type: none"> <li>Raising community awareness if required.</li> </ul>                                                                                                                         | Regular basis |
| <b>Reporting</b>          | <ul style="list-style-type: none"> <li>Listed waste volumes to be reported in the Annual Return.</li> <li>Incident reports completed and filed, including any necessary incident notification.</li> </ul>          | As required   |

**Table 7-5. Battery management (Acids (solids & solutions) & lead)**

|                           |                                                                                                                                                                                                          |             |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Battery acceptance</b> | <ul style="list-style-type: none"> <li>Batteries only accepted from residential users (i.e. no commercial quantities)</li> </ul>                                                                         | Per load    |
| <b>Battery storage</b>    | <ul style="list-style-type: none"> <li>Batteries are to be stored on bunded pallets at the transfer station and protected from rainfall ingress</li> </ul>                                               | Per load    |
| <b>Battery disposal</b>   | <ul style="list-style-type: none"> <li>Batteries to be removed from site by a licenced waste transporter, for recycling/disposal at an appropriately licenced facility.</li> </ul>                       | As required |
| <b>Monitoring</b>         | <ul style="list-style-type: none"> <li>Inspection of battery disposal area for correct disposal.</li> </ul>                                                                                              | Daily       |
| <b>Corrective Actions</b> | <ul style="list-style-type: none"> <li>Rectification of any incorrect battery disposal.</li> <li>Increased signage or community awareness if required.</li> </ul>                                        | As required |
| <b>Reporting</b>          | <ul style="list-style-type: none"> <li>Listed waste volumes to be reported in the Annual Return</li> <li>Incident reports completed and filed, including any necessary incident notification.</li> </ul> | As required |

**Table 7-6. Waste tyre management**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                  |             |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Tyre acceptance</b> | <ul style="list-style-type: none"> <li>KWMF accepts both whole and shredded tyres</li> <li>All tyres for disposal are presented to the weighbridge and relevant charges applied for both domestic and commercial users.</li> </ul>                                                                                                                                                                               | Per load    |
| <b>Tyre storage</b>    | <ul style="list-style-type: none"> <li>Tyres are stored in a designated area and stacked on their sides or in a laced arrangement.</li> <li>Tyre stockpiles shall not exceed 3m in height and be no more than 6m wide and 20m in length to assist in firefighting operations.</li> <li>Tyres should be covered or arranged so as to prevent water pooling and creation of mosquito breeding habitats.</li> </ul> | Per load    |
| <b>Tyre disposal</b>   | <ul style="list-style-type: none"> <li>First preference for tyre disposal is to transport them to a tyre recycler for processing; alternatively tyres will be landfilled.</li> <li>When landfilling tyres, tyres shall be spread amongst the tip face to minimise movement.</li> </ul>                                                                                                                           | Per load    |
| <b>Monitoring</b>      | <ul style="list-style-type: none"> <li>Visual inspection of the tyre storage area to identify any ponding water, appropriate fire breaks, appropriate stacking of tyres, etc.</li> </ul>                                                                                                                                                                                                                         | As required |



|                           |                                                                                                                                                                                                           |             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Corrective Actions</b> | <ul style="list-style-type: none"> <li>Rectification of any incorrect tyre disposal.</li> <li>Increased signage or community awareness if required.</li> </ul>                                            | Per event   |
| <b>Reporting</b>          | <ul style="list-style-type: none"> <li>Listed waste volumes to be reported in the Annual Return.</li> <li>Incident reports completed and filed, including any necessary incident notification.</li> </ul> | As required |

**Table 7-7. Waste oil management**

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Waste oil acceptance</b> | <ul style="list-style-type: none"> <li>Domestic volumes of waste mineral oil or cooking oil accepted only.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Per load    |
| <b>Waste oil storage</b>    | <ul style="list-style-type: none"> <li>Storage of fuels and oils must be to Australian Standard 1940-2004 The storage and handling of flammable and combustible liquids (AS 1940), including within a bunded and impervious area.</li> <li>Any leaks of hazardous materials or chemicals will be treated in accordance with emergency response procedures.</li> <li>In the event of an oil / fuel spill, the Supervisor will be notified and all persons directed away from the spill area. If safe to do so, contain the spill to prevent further spill from occurring.</li> <li>If the spill is too large or hazardous to control safely, the fire brigade will be notified by the Supervisor and the appropriate safety precautions taken as deemed necessary (i.e. evacuation). When the fire brigade arrives, the Supervisor will surrender control of the site to the officer on duty.</li> <li>Disposing of absorbent material used in any clean up shall be done in an appropriate manner with consideration given to any hazardous substances or dangerous goods.</li> <li>Spill kits and response equipment will be available near the storage areas.</li> </ul> | As required |
| <b>Waste oil disposal</b>   | <ul style="list-style-type: none"> <li>Waste oil to be removed from site by a licenced waste transporter, for recycling/disposal at an appropriately licenced facility.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | As required |
| <b>Monitoring</b>           | <ul style="list-style-type: none"> <li>Inspection of waste oil tank and disposal area for correct disposal, and signs of any leaks or spills.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Daily       |
| <b>Corrective Actions</b>   | <ul style="list-style-type: none"> <li>Rectification of any incorrect waste oil disposal.</li> <li>Implement appropriate spill clean-up measures.</li> <li>Increased signage or community awareness if required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | As required |
| <b>Reporting</b>            | <ul style="list-style-type: none"> <li>Listed waste volumes to be reported in the Annual Return.</li> <li>Incident reports completed and filed, including any necessary incident notification.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | As required |

## 8 WATER MONITORING

### 8.1 Monitoring locations

Water monitoring locations are detailed in Table 8-1 and shown in Figure 8-1.

There are two surface water monitoring locations, one leachate monitoring location, and six groundwater monitoring locations. All sampling is undertaken quarterly, noting that surface water and leachate sampling is only undertaken when there is water present at the sites. Surface water sites should only be sampled when the watercourse is flowing.

All sampling should be undertaken at the same time each round (i.e. in one day or concurrent days), to allow comparison of data between sites.

**Table 8-1. Monitoring location details**

| Site Name         | GPS Location             | Description                                                           | Type          | Details                                                                               |
|-------------------|--------------------------|-----------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|
| SWB               | -14.5044°S,<br>132.242°E | Tindal Creek -<br>upstream at railway<br>bridge crossing              | Surface water | Quarterly sampling (when<br>flowing), nominally January,<br>April, July, October.     |
| SWC               | -14.5064°S,<br>132.237°E | Tindal Creek -<br>downstream at Novis<br>Quarry Rd bridge<br>crossing | Surface water | Quarterly sampling (when<br>flowing), nominally January,<br>April, July, October.     |
| LD                | Active tip face          | Active tip face                                                       | Leachate      | Quarterly sampling (if water<br>present), nominally January,<br>April, July, October. |
| GWA<br>(RN031131) | -14.5103°S,<br>132.241°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |
| GWE<br>(RN022487) | -14.5084°S,<br>132.238°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |
| GWB01             | -14.5057°S,<br>132.239°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |
| GWB02             | -14.5068°S,<br>132.240°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |
| GWB03             | -14.5055°S,<br>132.242°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |
| GWB04             | -14.5084°S,<br>132.244°E | Bore                                                                  | Groundwater   | Quarterly sampling,<br>nominally January, April,<br>July, October.                    |

## 8.2 Sampling parameters and frequency

A water monitoring program has been developed for KWMF. Analytes and frequencies for undertaking water monitoring at KWMF are detailed in Table 8-2.

**Table 8-2. Water monitoring parameters and sampling frequency**

| Frequency | Sample type                   | Analytes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Quarterly | Surface water and groundwater | <ul style="list-style-type: none"> <li>• pH</li> <li>• Temperature</li> <li>• Electrical Conductivity (EC)</li> <li>• Dissolved Oxygen (DO)</li> <li>• Turbidity</li> <li>• Alkalinity</li> <li>• Hardness</li> <li>• Major ions</li> <li>• Total Organic Nitrogen (TON)</li> <li>• Total Organic Carbon (TOC)</li> <li>• Biological Oxygen Demand (BOD)</li> <li>• Chemical Oxygen Demand (COD)</li> <li>• Ammonia (NH<sub>3</sub>)</li> <li>• Dissolved metals (Sb, As, Ba, Be, Cd, CrIII, CrVI, Co, Cu, FeII, FeIII, Pb, Mn, Ni, Se, Ag, Th, V, Zn)</li> <li>• Total Recoverable Hydrocarbons (TRHs)</li> <li>• Polycyclic Aromatic Hydrocarbons (PAHs)</li> <li>• Benzene, toluene, ethylbenzene and xylene (BTEX)</li> <li>• Polychlorinated biphenyls (PCB)</li> </ul> |

## 8.3 Sampling procedures and QAQC

### 8.3.1 Sampling procedures

All water sampling will be undertaken in accordance with the below listed accepted standards and guidelines for monitoring of water quality:

- Australian/New Zealand Standard on Water Quality Sampling - Part 1: *Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples* (AS/NZS 5667.1:1998)
- Australian/New Zealand Standard on Water Quality Sampling – Part 6: *Guidance on sampling of rivers and streams* (AS/NZS 5667.6:1998).
- Australian/New Zealand Standard on Water Quality Sampling – Part 11: *Guidance on sampling of groundwater* (AS/NZS 5667.11:1998), Standards Australia, New South Wales.
- ANZECC & AMRCANZ 2000, *Australian Guidelines for Water Quality Monitoring and Reporting, National Water Quality Management Strategy Paper No 7*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.
- ANZECC & AMRCANZ 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy Paper No 4*, Australian and New

Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

### 8.3.2 Quality control and assurance

Water quality meters used for field measurements of in-situ surface water and groundwater physical parameters are calibrated in accordance with Operating Manuals prior to each sampling day and calibration results are recorded in a log book.

All laboratory samples are analysed by a NATA-accredited laboratory, which incorporates laboratory duplicates, blanks and spikes to assess data accuracy.

## 8.4 Trigger values

Water monitoring results shall be assessed against trigger values in order to detect potential downstream contamination caused by the KWMF for surface water and groundwater.

The trigger values to be used for assessing the results of water monitoring are derived from Chapters 3 (Aquatic Ecosystems), 5 (Recreational Water Quality), and 8 (Aquatic Ecosystems – rationale and background information) of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC 2000), applied at a level of protection of 95% of species (Table 8-3). Where the guidelines have not specified trigger values, the results will be used as a general measure of water quality. The results of leachate testing from the tip face will also be used as a comparison to the quality of the surface and groundwater at the time of testing.

**Table 8-3. Water quality trigger values**

| Analyte                      | Trigger value | ANZECC Chapter |
|------------------------------|---------------|----------------|
| pH                           | 6-8           | 3.3            |
| Electrical Conductivity (EC) | 20-250 µS/cm  | 3.3            |
| Dissolved Oxygen (DO)        | 80-110%       | 3.3            |
| Turbidity                    | 2-15 NTU      | 3.3            |
| Alkalinity & Hardness        | 500 mg/L      | 5.2            |
| <b>Major ions</b>            |               |                |
| Chloride                     | 400 mg/L      | 5.2            |
| Sodium                       | 300 mg/L      |                |
| Sulfate                      | 400 mg/L      |                |
| Ammonia (NH <sub>3</sub> )   | 0.9 mg/L      | 3.4            |
| Antimony (Sb)                | 0.009 mg/L    | 8.3            |
| Arsenic (AsIII)              | 0.024 mg/L    | 3.4            |
| Beryllium (Be)               | 0.00013 mg/L  | 8.3            |
| Cadmium (Cd)                 | 0.0002 mg/L   | 3.4            |
| Chromium (CrIII)             | 0.0033 mg/L   | 8.3            |
| Chromium (CrVI)              | 0.001 mg/L    | 3.4            |
| Cobalt (Co)                  | 0.0028 mg/L   | 8.3            |
| Copper (Cu)                  | 0.0014 mg/L   | 3.4            |
| Iron (Fe)                    | 0.3 mg/L      | 5.2            |

| Analyte        | Trigger value | ANZECC Chapter |
|----------------|---------------|----------------|
| Lead (Pb)      | 0.0034 mg/L   | 3.4            |
| Manganese (Mn) | 1.9 mg/L      | 3.4            |
| Nickel (Ni)    | 0.011 mg/L    | 3.4            |
| Selenium (Se)  | 0.011 mg/L    | 3.4            |
| Silver (Ag)    | 0.00005 mg/L  | 3.4            |
| Thallium (Th)  | 0.00003 mg/L  | 8.3            |
| Vanadium (V)   | 0.006 mg/L    | 3.4            |
| Zinc (Zn)      | 0.008 mg/L    | 3.4            |
| <b>PAH</b>     |               |                |
| Napthalene     | 0.016 mg/L    | 3.4            |
| <b>BTEX</b>    |               |                |
| Benzene        | 0.95 mg/L     | 3.4            |
| o-xylene       | 0.35 mg/L     |                |
| p-xylene       | 0.20 mg/L     |                |

As surface water sites are monitored upstream and downstream of the facility, where the results exceed trigger values, the downstream results can also be compared with upstream to determine if exceedances may be attributable to site activities. The guideline trigger values will be utilised until such time as there is sufficient site monitoring data to develop site specific trigger values.

## 8.5 Data management, analysis and reporting

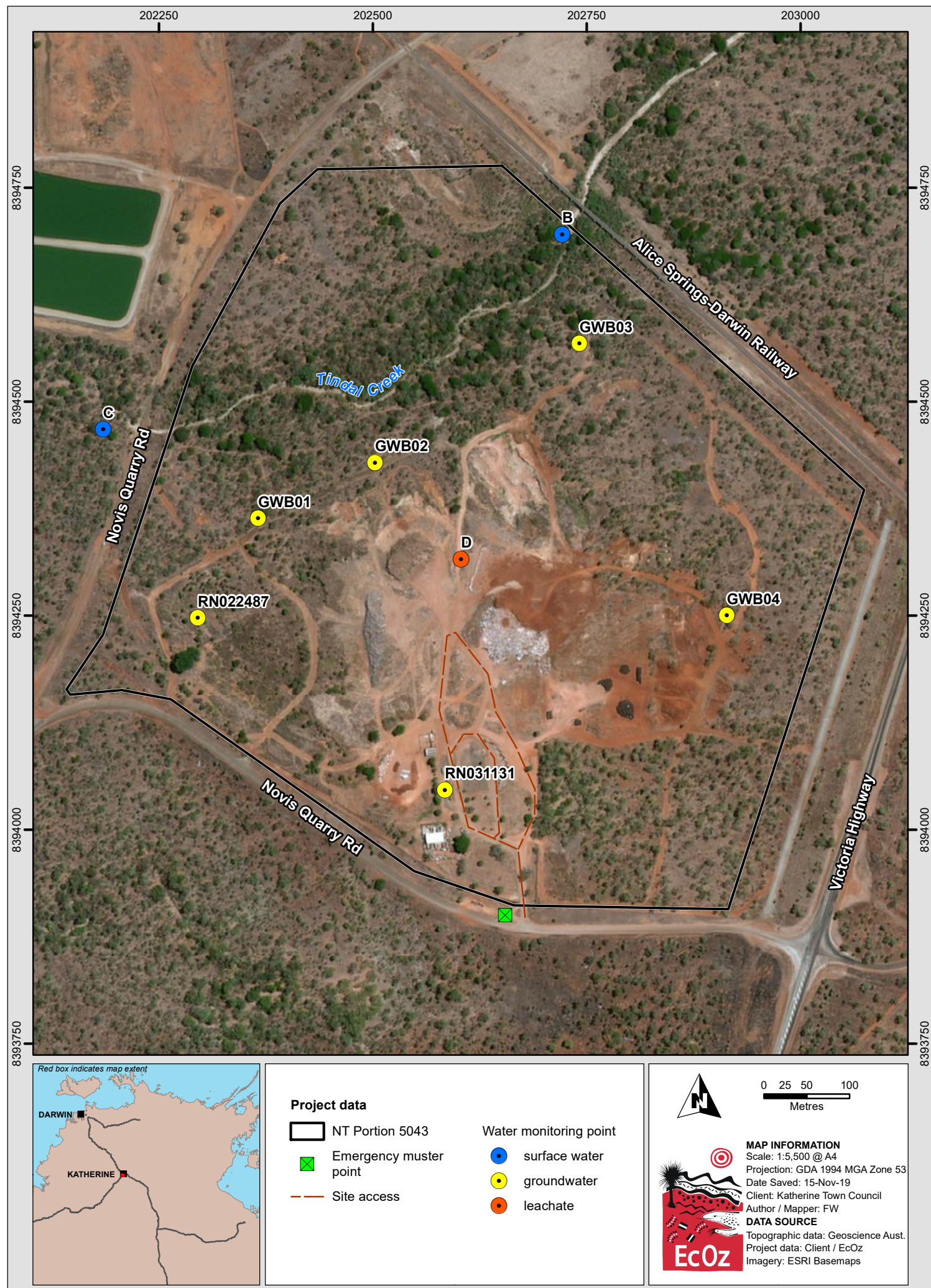
The following information will be recorded with each sample collected:

- Date the sample was collected
- Time the sample was collected
- Type of sample collected (i.e. surface water or groundwater)
- Any comments in regards to sample i.e. surface water stagnant or flowing, depth of groundwater etc.
- Location the sample was collected
- Name of the person who collected the sample
- Chain of custody forms relating to the sample
- Laboratory quality assurance and quality control documentation
- Database of the field measurements (if any) and laboratory results (if any) relating to the sample

All routine monitoring data is to be recorded in a dedicated water monitoring database. As data is entered, a review against the relevant trigger values is to be undertaken to determine any exceedances. Water quality monitoring data will also be assessed for any long term emerging trends.

Any exceedances of trigger values will be reported to the NT EPA under the conditions of the EPL. An annual monitoring report will also be prepared for the NT EPA compiling all monitoring data, highlighting any trends and providing an assessment of environmental impact from the KWMF operations.





Path: Z:\01 EcOz\_Documents\04 EcOz Vantage GIS\EZ19181 - KTC EPL Update and EMP\01 Project Files\Figure 8-1 Map of KWMF water monitoring locations.mxd

**Figure 8-1 Map of KWMF water monitoring locations**



## 9 EMERGENCY RESPONSE PLAN

Emergency response planning includes responses to environmental emergencies, and operational actions that cause an environmental incident. This Emergency Response Plan (ERP) outlines the environmental emergency risks, emergency preparedness, mitigation and reporting requirements specifically relating to environmental incidents for KWMF.

### 9.1 Emergency incidents

Emergency incidents that may occur at KWMF include:

- **Extreme weather event** (i.e. cyclone) resulting in damage to facilities, and/or flooding that leads to uncontrolled discharges to the surrounding properties
- **Flooding** as a result of high rainfall events leading to uncontrolled discharges to the surrounding properties
- **Lightning strike** that may disrupt power sources and impact on operations
- **Fuel, chemical or leachate spill** that may contaminate water or soils
- **Fire** as a result of bushfire or accidental fire as a result of operations.

### 9.2 Emergency contacts

The Site Manager is the contact person for all emergencies and environmental incidents. All incidents which cause or have the potential to cause material or serious environmental harm, will be reported to NT Environment Protection Authority (NT EPA) as soon as the Site Manager becomes aware of the incident, or in any case within 24 hours as required under Section 14 of the *NT Waste Management and Pollution Control Act*.

The details of the designated contact persons responsible for on-site environmental management are included in Table 9-1. Also included are emergency contacts for reporting pollution incidents (including non-urgent problems such as dust/noise) and contacts for provision of advice.

**Table 9-1. Emergency contact details**

| Contact                                           | Details                                                                                                                                                                                |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site Manager                                      | Brett Kimpton<br>Manager of Environment and Municipal<br>Katherine Town Council<br>Ph: 08 8972 5500<br>E: <a href="mailto:brett.kimpton@kwc.nt.gov.au">brett.kimpton@kwc.nt.gov.au</a> |
| NT EPA<br>Pollution Hotline / Pollution Reporting | GPO Box 3675, Darwin NT, 0801<br>Pollution Hotline: 1800 064 567<br><a href="mailto:pollution@nt.gov.au">pollution@nt.gov.au</a>                                                       |
| Emergency Services<br>(police, fire, ambulance)   | 000                                                                                                                                                                                    |
| NT Police (non-emergency)                         | 131 444                                                                                                                                                                                |

Environmental conditions are monitored by the Site Manager through the Bureau of Meteorology website, NT Police, Fire and Emergency Services announcements, social media and local radio emergency.

## 9.3 Objectives, targets and indicators of the ERP

The objectives, targets and indicators of this ERP are summarised in Table 9-2.

**Table 9-2. Emergency objectives, targets and indicators summary**

| Objectives                                                                                                                                             | Targets                                                                                                                                                                     | Indicators                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Protect people, property and the environment</li> </ul>                                                         | <ul style="list-style-type: none"> <li>No incidents of harm to people, property or the environment from activities associated with an environmental emergency</li> </ul>    | <ul style="list-style-type: none"> <li>Number of incidents recorded</li> </ul>   |
| <ul style="list-style-type: none"> <li>Identify potential environmental emergency risks</li> </ul>                                                     | <ul style="list-style-type: none"> <li>All risks identified and management controls are in place</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>Audits and inspection findings</li> </ul> |
| <ul style="list-style-type: none"> <li>Identify and implement management and mitigation controls to reduce the residual risk</li> </ul>                |                                                                                                                                                                             |                                                                                  |
| <ul style="list-style-type: none"> <li>Ensure emergency response equipment requirements are able to be identified and are available</li> </ul>         | <ul style="list-style-type: none"> <li>All risks are identified and management controls are in place.</li> <li>Emergency response scenarios have been identified</li> </ul> | <ul style="list-style-type: none"> <li>Audits and inspection findings</li> </ul> |
| <ul style="list-style-type: none"> <li>Ensure a high level of preparedness is maintained</li> </ul>                                                    |                                                                                                                                                                             |                                                                                  |
| <ul style="list-style-type: none"> <li>Facilitate efficient response to emergencies to limit the impacts to the environment</li> </ul>                 |                                                                                                                                                                             |                                                                                  |
| <ul style="list-style-type: none"> <li>Ensure emergency response training is relevant for the types of emergencies that KWMF may experience</li> </ul> | <ul style="list-style-type: none"> <li>Training for all employees</li> </ul>                                                                                                | <ul style="list-style-type: none"> <li>Training records</li> </ul>               |

## 9.4 Emergency response procedures

### 9.4.1 General emergency preparedness

KWMF commit to continuous emergency preparedness through the following actions:

- Ensure that all personnel, including management, have received a site induction that specifically covers emergency response procedures.
- The Site Manager will regularly liaise with staff to ensure that they are competent in responding to emergencies
- Conduct regular inspections on all emergency response equipment and ensure that all equipment is in good working order
- Following an emergency event, undertake an incident debrief and provide all staff with training into improved emergency response procedures or actions.

When advice is issued by authorities (e.g. cyclone watch, cyclone warning, evacuation order), the Site Manager will ensure that the following steps will be undertaken:

- All employees and contractors will report to the designated evacuation point (front gate), and receive further instructions regarding preparations for the emergency or evacuation.
- Where there is sufficient preparation time (i.e. in the event of a cyclone watch issued by the Bureau of Meteorology),
  - All essential vehicles will be fuelled, if required to evacuate employees, and non-essential vehicles will be parked and secured.
  - All potentially mobile items will be secured, tied down and/or stored and locked in the site buildings.

### **9.4.2 Fire**

There are many different situations on-site where fire may result, such as landfill fire, fire in a waste haulage vehicle, office/building fire, transfer station fire, plant and equipment fire or bushfire.

In response to discovery of a fire, the following general steps must be undertaken:

- Notify the Site Manager immediately, with the location, type of fire, and details of any potential injuries or hazards. If necessary the Site Manager will notify emergency services.
- Any plant or equipment in the vicinity of the fire should be moved to a suitable location or shutdown if safe to do so.
- If evacuation of the site is necessary, all employees and contractors will report to the designated evacuation point, and receive further instructions regarding the emergency or evacuation.
- The affected area is not to be re-entered until the Site Manager deems the area safe
- All fire-fighting water is to be treated as leachate and must be managed accordingly.

#### ***Landfill fire***

- Landfill fires can be managed by attempting to smother the fire with inert soil or similar material, or using a water cart.
- Power supply and gas lines should be switched off only if there is ensuing risk.

#### ***Fire in waste haulage vehicle***

- In the event of fire within a waste haulage vehicle, the vehicle must stop on a hardstand, vegetation free area (where possible and safe to do so) where the load can be extinguished (i.e. wash-down bay).
- If possible, the driver should exit the vehicle and remain at a safe distance whilst the fire is being extinguished by water or smothering

### **9.4.3 Spills (fuels or leachate)**

In the case of any spills the following procedure is to be implemented:

- Locate the source to identify volume and type of spill
- Assess the risk to workers and environment to ensure appropriate PPE and measures to be implemented.

- Control and contain the spill by isolating or removing source.
- Clean the spill using spill kit and absorbent material or installing bunds.
- Appropriate disposal of any material that was used to control and clean up the spill
- Repair any damaged plant or infrastructure associated with the spill.
- Report significant spills or spills that have entered stormwater to NT EPA Pollution Hotline (1800 064 567).

Spill containment equipment kits will be available in works areas. All personnel on site will be trained in how to use these spill kits.

#### **9.4.4 Flood**

In response to forecast periods of heavy rainfall that could result in flooding, the following procedure is to be implemented:

- Cease waste acceptance operations and ensure all exposed tip faces are covered with at least 300mm of cover.
- Ensure transfer station is in a clean condition and arrange for removal of skip bins where possible.
- Construct perimeter berms, drains or diversion bunds wherever practical or feasible.
- Removal of excess ponding water for disposal, evaporation or recirculation as leachate once floodwaters subside.

#### **9.4.5 Environmental incidents**

In accordance with the conditions of the EPL, the NT EPA will be notified in the event of an incident causing or with the potential to cause environmental harm, including but not limited to the following:

- Fire
- Spills involving waste/leachate which can result in environmental harm
- Release of potentially contaminated leachate or stormwater to receiving environment
- Exceedance of monitoring parameters
- Incidents which may have public health consequences or cause nuisance

Environmental incidents can also occur as a result of illegal waste being delivered to the landfill. This can occur where the illegal waste is not discovered at the weighbridge because it is mixed in with other waste material. Where an employee becomes aware of such an incident, the Site Manager must be notified and the waste identified.

The Site Manager will be responsible for seeking advice on how to manage the situation.

#### **9.4.6 Medical emergencies**

In the event of a medical emergency, where possible the First Aid Officer will administer assistance to their level of training and competence. Where required, emergency services will be contacted immediately.

### **9.5 Officer training**

Appropriate employees will be appointed the roles of Workplace Health and Safety Officer and First Aid Officer. Appropriate training will be provided, so that they can effectively do the required tasks in such roles.

Refresher training will be provided as required. The First Aid Officer will at all times hold a current nationally recognised certificate in applying first aid, and the WHS Officer will at all times hold a current nationally recognised certificate in AHCWHS201 - Participate in work health and safety processes.

Contact details of the site First Aid Officer and WHS Officer will be clearly displayed around the weighbridge and site buildings.

## 9.6 Emergency training

All employees must be trained in the contents of this ERP, including the location of the designated evacuation point, emergency contact details and incident notification during the induction process.

Specific training will be provided for appropriate persons in the following:

- First Aid
- Spill response
- Evacuation drill
- Fire extinguishers
- Any other training identified for the purposes of emergency response

An annual emergency drill shall be undertaken to evaluate compliance with this ERP and identify areas for further training or updates to the ERP as required.

## 9.7 Emergency response equipment

All emergency response equipment will be serviced and maintained in accordance with relevant Australian Standards and/or manufacturer's instructions.

Regular training will be carried out to ensure that designated/appropriate employees can operate the equipment as required.

The equipment will include as a minimum:

- Fire extinguishers, appropriate to materials on site
- Fire hose, pump and water tank
- Operational machinery such as Traxcavator and water cart
- Appropriate spill kits and clean-up material



## 10 REHABILITATION AND CLOSURE PLAN

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### 10.1 Site closure

In preparation for the managed closure and rehabilitation of KWMF a background data review, landfill gas and hydrogeological (leachate) assessment has been undertaken. The key objectives of the assessment was:

- To identify the primary risks associated with continuing landfill gas and leachate production
- Propose suitable landfill gas and leachate control measures, where required

The final report provided a number of recommendations for consideration during final capping design and ongoing environmental monitoring post-closure.

The next stage of the process is to undertake a detailed capping design for the final landform. At a minimum, capping will be undertaken in accordance with the NT EPA *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (2013).

#### 10.1.1 Rehabilitation objectives

The main rehabilitation objectives for the KWMF include:

- Final landform designed and rehabilitated to ensure structural stability, revegetation success and containment of wastes.
- Final landform is maintained in a manner that minimises leachate generation.
- Final landform is safe and non-polluting.
- Post-landfill land use is compatible with surrounding and future land uses

### 10.2 Post closure

Monitoring and maintenance activities must be undertaken post-closure until such time as the landfill no longer poses a threat to the environment. A post closure plan for KWMF is yet to be developed but will include the following elements:

- Maintenance requirements for any surface or sub-surface drainage systems.
- Maintenance of final cover, including revegetation, restoration of eroded areas and grading of areas experiencing compaction.
- Surface water, groundwater and landfill gas monitoring programs.
- Cost estimates for plan implementation.

# 11 REFERENCES

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- EcOz Environmental Consultants (2024). *EPL298-01 Monitoring Report, Katherine Waste Management Facility (August 2023 – July 2024) Reporting prepared for Katherine Town Council.*
- GHD (2018). *Katherine Town Council Waste Management Facility Closure Plan Stage 1 Report – Background data review and work plan.* [unpublished]
- GHD (2019). *Katherine Town Council Waste Management Facility Closure Plan Stage 2 Report – Landfill Gas Risk Assessment and Hydrogeological Assessment.* [unpublished]
- Howe, D. (2006). *Land Resources of the Daly River Basin.* Darwin: Northern Territory Government Department of National Resources, Environment and the Arts.
- Katherine Town Council (KTC) (2019). *Monitoring Report on Water Quality (Mar 2018 - Feb 2019) Report prepared for the NT EPA.* [unpublished]
- Kruse, P. and Munson, T. (2013). Chapter 31: Daly Basin: in Ahmad M and Munson T (compilers). 'Geology and mineral resources of the Northern Territory' Northern Territory Geological Survey Special Publication 5. Darwin: Northern Territory Government.

## APPENDIX A KWMF SITE INSPECTION CHECKLIST

# KWMF Site Inspection Checklist

|                                                                         |               |                |
|-------------------------------------------------------------------------|---------------|----------------|
| Work Area / Location:                                                   |               | Date and Time: |
| Inspected by<br>(include all personnel who took part in the inspection) | Name(s):      |                |
|                                                                         | Position(s):  |                |
|                                                                         | Signature(s): |                |

| #                              | Inspection items                                                                                                   | Yes                      | No                       | N/A                      | Comments |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| General site management        |                                                                                                                    |                          |                          |                          |          |
| 1.                             | Have all actions raised in the previous inspections been closed out?                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 2.                             | Have all actions from any recent environmental incidents been adequately investigated and appropriately addressed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 3.                             | Is the work area free from visible incidents (i.e. chemical / hydrocarbon spills, leachate pools etc.)?            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 4.                             | Have all incidents been reported?                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 5.                             | Is the boundary fence in good working order?                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 6.                             | Is the induction register up to date? Are all staff and contractors working on site being inducted?                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 7.                             | Is the complaints register being used correctly? Are complaints being addressed ?                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 8.                             | Are the weighbridge operators following waste acceptance criteria guidelines in the EMP?                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Water quality management       |                                                                                                                    |                          |                          |                          |          |
| 9.                             | Is water quality monitoring being undertaken as per the program in the EMP / EPL?                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 10.                            | Are all surface water courses unobstructed?                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 11.                            | Are erosion and sediment control structures intact and maintained (in good working order)?                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 12.                            | Are surface water structures free from erosion or scour?                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 13.                            | Is potentially contaminated storm water prevented from being discharged into the environment?                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 14.                            | Is there any evidence of leachate breakout or runoff from the landfill cells?                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Dust and aesthetics management |                                                                                                                    |                          |                          |                          |          |
| 15.                            | Is the work area free from excessive visible dust?                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 16.                            | Are activities in the area creating minimal dust?                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 17.                            | Is dust suppression of dirt roads and other cleared areas being undertaken where excessive dust is visible?        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 18.                            | Are speed limits being enforced at site to reduce dust?                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 19.                            | Is there scattered rubbish around the site?                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 20.                            | Are there controls in place to catch wind-blown litter? Do these require maintenance?                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |

# KWMF Site Inspection Checklist

| #                                 | Inspection items                                                                                                                                | Yes                      | No                       | N/A                      | Comments |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| Noise management                  |                                                                                                                                                 |                          |                          |                          |          |
| 21.                               | Are all equipment and machinery being maintained to manufacturers standards to prevent noise issues?                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 22.                               | Are any operations occurring outside standard work hours? Have the public, users and surrounding land owners been notified of works?            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Chemical, oil and fuel management |                                                                                                                                                 |                          |                          |                          |          |
| 23.                               | Are all chemicals, oils and fuels will be stored appropriately in locked areas that are bunded, impervious areas in accordance with their MSDS? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 24.                               | Is bunding in good condition?                                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 25.                               | Are MSDS available in a folder where the chemicals, oils and fuels are stored?                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 26.                               | Is equipment containing hazardous materials (including hydrocarbons, and hoses/pipes) free of spills/leaks?                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 27.                               | Are adequate spills kits available and fully stocked?                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Flora and fauna management        |                                                                                                                                                 |                          |                          |                          |          |
| 28.                               | Do clearing works have the required approvals?                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 29.                               | Have any significant fauna sightings been reported to the Site Manager?                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 30.                               | Have any injured fauna been reported to the Site Manager?                                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 31.                               | Are speed limits being enforced to minimise potential for fauna impact?                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 32.                               | Are disturbed areas being progressively rehabilitated, and done so with species local to the surrounding environment?                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Pest and weed management          |                                                                                                                                                 |                          |                          |                          |          |
| 33.                               | Are there any pests and weeds in operational areas?                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 34.                               | Are pests and weeds being managed/controlled on site?                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 35.                               | Are there any signs of pooled water that could provide a breeding ground for mosquitos?                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Fire prevention                   |                                                                                                                                                 |                          |                          |                          |          |
| 36.                               | Are staff undertaking visual monitoring of loads going to landfill cells for evidence of smoking or hot loads?                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 37.                               | Are appropriate hot works procedures being followed?                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 38.                               | Is all fire-fighting equipment in date and accessible?                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 39.                               | Is there a designated smoking area? Is it being used?                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 40.                               | Is the 4m wide fire break (around the perimeter of the KWMF, around buildings and around operational areas) being maintained?                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| Chemical containers (DrumMuster)  |                                                                                                                                                 |                          |                          |                          |          |
| 41.                               | Is the area kept clean and tidy?                                                                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 42.                               | All containers are contained?                                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 43.                               | All containers are empty?                                                                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 44.                               | Signage is erected? Not faded?                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |



# KWMF Site Inspection Checklist

| #                                                                      | Inspection items                                                                                                                 | Yes                      | No                       | N/A                      | Comments |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| <b>Tyres</b>                                                           |                                                                                                                                  |                          |                          |                          |          |
| 45.                                                                    | Is the area kept clean and tidy?                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 46.                                                                    | All waste is contained?                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 47.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 48.                                                                    | Are tyres stacked in accordance with the CEMP?                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 49.                                                                    | Is there sufficient separation between stockpiles for fire access?                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Metal</b>                                                           |                                                                                                                                  |                          |                          |                          |          |
| 50.                                                                    | Is the area kept clean and tidy?                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 51.                                                                    | All waste is contained?                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 52.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Green waste</b>                                                     |                                                                                                                                  |                          |                          |                          |          |
| 53.                                                                    | Is the area kept clean and tidy?                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 54.                                                                    | Is all green waste contained within the area?                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 55.                                                                    | Are there any contaminants e.g. stone, plastic, steel?                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 56.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 57.                                                                    | Does the green waste require shredding/composting?                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 58.                                                                    | Is there any leachate or discoloured water flowing from the green waste area?                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Transfer Station – batteries, waste oil, gas bottles, skip bins</b> |                                                                                                                                  |                          |                          |                          |          |
| 59.                                                                    | Is the area kept clean and tidy?                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 60.                                                                    | All waste is contained?                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 61.                                                                    | Are transfer station skip bins being emptied when full and at least at the close of each working day?                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 62.                                                                    | Are skip bins at the transfer station being cleaned at least monthly to prevent build-up of odours? Do they have a strong odour? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 63.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 64.                                                                    | No cross contamination of wastes?                                                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 65.                                                                    | All waste oil is contained within the bund?                                                                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 66.                                                                    | Empty oil containers are kept within the wheelie bins?                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Landfill cells</b>                                                  |                                                                                                                                  |                          |                          |                          |          |
| 67.                                                                    | Is cover material being placed as required?                                                                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 68.                                                                    | Is there acceptable plant and people separation at the tip face?                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 69.                                                                    | Is there any evidence of prohibited waste disposal?                                                                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 70.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| <b>Asbestos cell</b>                                                   |                                                                                                                                  |                          |                          |                          |          |
| 71.                                                                    | Is the area kept clean and tidy?                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 72.                                                                    | All asbestos covered as per Regulations?                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 73.                                                                    | Is there sufficient space for more deposits into the cell?                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 74.                                                                    | Signage is erected? Not faded?                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |

# KWMF Site Inspection Checklist



| #                       | Inspection items                                                                 | Yes                      | No                       | N/A                      | Comments |
|-------------------------|----------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| Incidents and reporting |                                                                                  |                          |                          |                          |          |
| 75.                     | Have any incidents occurred or been identified that require NT EPA notification? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |
| 76.                     | Has the appropriate incident response been initiated?                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |

| Issues raised during inspection |                   |                  |          |                    |
|---------------------------------|-------------------|------------------|----------|--------------------|
| #                               | Identified Hazard | Actions Required | Due Date | Responsible Person |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |
|                                 |                   |                  |          |                    |

*Note: These actions need to be entered into the Management System for tracking and closeout with adequate evidence*

Other Comments/ Notes:

## APPENDIX B    KTC WEED MANAGEMENT PLAN

**KATHERINE TOWN COUNCIL**

# **Katherine Town Council Weed Management Plan**

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# 1 Purpose and development of the Plan

Weeds are an increasing threat to the region's natural, economic and cultural assets despite the time and effort already invested in weed management across the Katherine Region.

This Plan forms part of a strategic approach to reducing the impact of the region's priority weeds and links to meet the aims and objectives of the Katherine Regional Weed Management Plan 2015 – 2020.

This Plan has been written in partnership between KTC staff and DENR Weed Management Branch staff.

## 2 Aim of the Plan

This Plan aims to reduce the spread of weeds on KTC land, along road reserves and eradication within the Katherine Town Council Municipality by:

- Providing clear regional strategic priorities
- Providing clear, achievable and measurable management actions.

The Plan has been broken down into Management Areas to assist with strategic management of priority weeds in the road reserve.

## 3 Legal requirements

All landholders must take all reasonable measures to prevent their land being infested with a declared weed and prevent a declare weed on their land spreading.

All landholders must meet the management requirements as outline in statutory Weed Management Plans in order to secure compliance with the Weeds Management Act (the Act). The purpose of the Act, as set out in section 3, is:

- a) To prevent the spread of weeds in, into and out of the Territory and to ensure that the management of weeds is an integral component of land management in accordance with the Northern Territory Weeds Management Strategy 1996 – 2005 or any other strategy adopted to control weeds in the Territory;
- b) To ensure there is community consultation in the creation of weed management plans;
- c) To ensure that there is community responsibility in implementing weed management plans;

## 4 Principles of weed management

Strategic weed management involves targeting priority species at appropriate times, on-going monitoring and weed spread prevention.

Key actions for strategic management include:

- Map the locations and densities of declared weeds
- All contractors and staff should be able to identify declared weeds within the Katherine Region.
- All Class A species must be prioritised for eradication and reported to the Weed Management Branch.
- Adhere to Statutory Weed Management Plans (eg isolated plants and infestations must be eradicated).
- Coordinate slashing, spraying and burning programs.
- Spray weeds while actively growing but before seeding.



- Ensure weed hygiene is adhered to during spraying and slashing.
- Do not drive through seeding weeds. Where this cannot be avoided, vehicles should be cleaned before moving to weed free areas.
- Clean down into accessible, flat areas that do not run into drains or waterways. Record the location of clean down areas. Check clean down areas after rain and treat emerging weeds if necessary.
- Establish a monitoring program so control and weed spread can be evaluated.

Weed spread prevention is always the most successful and cost effective type of weed management. Successful prevention and management of weeds requires effective partnerships, clear management goals, best practice weed management techniques and methods to monitor progress.

## 5 Priority weeds for the Katherine Region

Weed species that require priority management attention within the region as determined by the Katherine Regional Weed Management Plan 2015 – 2020 are as follows:

| Weed species                                                                        | Declaration status | Statutory Weed Management Plan | Information                                                                                                                                                                           |
|-------------------------------------------------------------------------------------|--------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesquite<br><i>Prosopis</i> spp.                                                    | Class A and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/mesquite">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/mesquite</a>             |
| Prickly acacia<br><i>Vachellia nilotica</i><br>(previously <i>Acacia nilotica</i> ) | Class A and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/prickly-acacia">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/prickly-acacia</a> |
| Parkinsonia<br><i>Parkinsonia aculeata</i>                                          | Class B and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/parkinsonia">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/parkinsonia</a>       |
| Chinee apple<br><i>Ziziphus mauritiana</i>                                          | Class A and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/chinee-apple">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/chinee-apple</a>     |
| Mimosa<br><i>Mimosa pigra</i>                                                       | Class A and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/mimosa">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/mimosa</a>                 |
| Bellyache bush<br><i>Jatropha gossypifolia</i>                                      | Class A, B and C   | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/bellyache-bush">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/bellyache-bush</a> |
| Gamba grass<br><i>Andropogon gayanus</i>                                            | Class A, B and C   | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/gamba-grass">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/gamba-grass</a>       |
| Neem<br><i>Azadirachta indica</i>                                                   | Class B and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/neem">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/neem</a>                     |

| Weed species                                | Declaration status | Statutory Weed Management Plan | Information                                                                                                                                                                       |
|---------------------------------------------|--------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Grader grass<br><i>Themeda quadrivalvis</i> | Class B and C      | Yes                            | <a href="https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/grader-grass">https://nt.gov.au/environment/weeds/list-of-declared-weeds-in-the-nt/grader-grass</a> |
| Snake weed<br><i>Strachytarpheta</i> spp.   | Class B and C      |                                |                                                                                                                                                                                   |
| Devils claw<br><i>Martynia annua</i>        | Class A and C      |                                |                                                                                                                                                                                   |

Please note that all other Class A and C weeds are also of high priority, for example ornamental rubbervine, lantana and thatch grass.

## 6 Supporting documentation

| Document                                           | Link                                                                                                                                                                          | Type of support                                                       |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Northern Territory Statutory Weed Management Plans | <a href="https://nt.gov.au/environment/weeds/weed-management-planning">https://nt.gov.au/environment/weeds/weed-management-planning</a>                                       | Obligations under the Weeds Management Act<br>Compliance requirements |
| Northern Territory Weed ID Deck                    | Hard copy                                                                                                                                                                     | Weed identification                                                   |
| Northern Territory Weed Management Handbook        | <a href="https://nt.gov.au/environment/weeds/weed-management-handbook">https://nt.gov.au/environment/weeds/weed-management-handbook</a>                                       | Integrated weed control options                                       |
| Katherine Regional Weed Management Plan            | <a href="https://nt.gov.au/environment/weeds/weed-management-planning">https://nt.gov.au/environment/weeds/weed-management-planning</a>                                       | Katherine regional priorities and strategic management                |
| Preventing Weed Spread is Everybody's Business     | <a href="https://nt.gov.au/environment/weeds/prevent-weed-spread-industry-and-recreation">https://nt.gov.au/environment/weeds/prevent-weed-spread-industry-and-recreation</a> | Weed spread prevention                                                |

## 7 Weed data collection

Consistent and reliable data is critical for effective weed management and as such data needs to be collected. It is essential that weed data is collected to assist with planning and monitoring of management areas across the region.

## 8 Management Areas

The Katherine region has been broken down into six management areas:

### **Management Area 1:**

Quarry Rd, Niceforo Rd, Allwright Crt, Lansdowne Rd, Byers Rd, Collins Rd, Cragborn Rd, Uralla Rd.

### **Management Area 2:**

KATHERINE EAST URBAN AREA, NORT-SIDE URBAN AREA, Gorge Rd, Knotts Crossing Rd, Morris Rd, Jaensch Rd

### **Management Area 3:**

Emungalan Rd, Moray Rd, Usher Rd, Mahony Rd, Shadforth Rd, Gillard Cres, Tokmakoff Rd, Lya Rd.

### **Management Area 4:**

NORTHSIDE RESIDENTIAL STREETS, Bicentennial Rd, Novis Quarry Rd, Zimin Dr, Shadforth Rd

### **Management Area 5:**

Florina Rd, Egan St, Kingston Rd, Cummings Rd, Kriloff Rd, Ivanoff Rd, Gory Rd, Cossack Rd.

### **Management Area 6:**

Katherine Waste Management Facility, Katherine Show Grounds.

Within each area, priorities have been identified with the High Priorities to be addressed in the 2018/19 weed control season. It should be noted that all weeds identified in each Management Area are important; however the high priorities must be addressed first. Some weeds such as chinee apple when juveniles take 7 years before producing fruit. If these plants are not treated in 2019/20, they will be picked up in the 2020/21 weed control season. Priorities can also change if new weeds and/or locations are identified and the priorities need to be adjusted accordingly.

Priorities for each Management Area are defined as follows:

## MANAGEMENT AREA 1

| Road Reserve  | Priority species      | Declaration status | Objective                                                                        | Action required                                                                                                                            | Milestones                                                                                                                                                                                                                                                | Recommended chemical control and chemical rate                                                                                              | Timing                                         |
|---------------|-----------------------|--------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Quarry Rd     | Gamba grass           | Class A            | Eradication of all gamba grass plants.                                           | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production<br><br>On-going monitoring | <ul style="list-style-type: none"> <li>Strategic control and eradication of gamba grass.</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring Treatment of any plants identified.</li> <li>On-going monitoring.</li> </ul> | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                    | Dec - Mar                                      |
|               | Chinee apple          | Class A            | Eradication of all chinee apple plants.                                          | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production<br><br>On-going monitoring | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>                                                                  | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access<br>Rate - 1L/60L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
|               | Hyptis                | Class B            | Continued reduction in density and occurrence of Hyptis within the road reserve. | Implementation of control program prior to maturity and/or further seed production.                                                        | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation</li> <li>On-going monitoring</li> </ul>                                                         | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                   | Dec - Mar                                      |
| Niceforo Rd   | None recorded to date |                    | Early detection and eradication of priority weeds.                               | Monitoring of road reserve for priority weeds especially for gamba, grass grader grass and neem.                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                                                 |                                                                                                                                             | Anytime                                        |
| Allwright Crt | None recorded to date |                    | Early detection and eradication of priority weeds.                               | Monitoring of road reserve for priority weeds especially for gamba, grass grader grass and neem.                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                                                 |                                                                                                                                             | Anytime                                        |
| Lansdowne Rd  | None recorded to date |                    | Early detection and eradication of priority weeds.                               | Monitoring of road reserve for priority weeds especially for gamba, grass grader grass and neem.                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                                                 |                                                                                                                                             | Anytime                                        |
| Byers Rd      | None recorded to date |                    | Early detection and eradication of priority weeds.                               | Monitoring of road reserve for priority weeds especially for gamba, grass grader grass and neem.                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                                                 |                                                                                                                                             | Anytime                                        |

|                    |                       |         |                                                                                  |                                                                                                                                            |                                                                                                                                                                                                           |                                                                                                                                                 |                                                |
|--------------------|-----------------------|---------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>Collins Rd</b>  | Chinee apple          | Class A | Eradication of all chinee apple plants.                                          | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production<br><br>On-going monitoring | <ul style="list-style-type: none"> <li>• Treatment and eradication of any plants identified.</li> <li>• Reduction in density and spread prevention.</li> <li>• On-going monitoring.</li> </ul>            | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access<br>Rate - 1L/60L diesel     | Foliar spray Mar-May<br><br>Basal bark Anytime |
| <b>Cragborn Rd</b> | None recorded to date |         | Early detection and eradication of priority weeds.                               | Monitoring of road reserve for priority weeds especially for gamba, grass grader grass and neem.                                           | <ul style="list-style-type: none"> <li>• Treatment of any priority weeds identified.</li> <li>• Data Collected on new weed incursions</li> <li>• On-going monitoring</li> </ul>                           |                                                                                                                                                 | Anytime                                        |
| <b>Uralla Rd</b>   | Chinee apple          | Class A | Eradication of all chinee apple plants.                                          | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production<br><br>On-going monitoring | <ul style="list-style-type: none"> <li>• Treatment and eradication of any plants identified.</li> <li>• Reduction in density and spread prevention.</li> <li>• On-going monitoring.</li> </ul>            | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access<br>Rate - 1L/60L diesel     | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                    | Neem                  | Class B | Continued reduction in density and occurrence of neem within the road reserve.   | Implementation of control program prior to maturity and/or further seed production.                                                        | <ul style="list-style-type: none"> <li>• Effective reduction in density and occurrence within the road reserve</li> <li>• On-going monitoring.</li> </ul>                                                 | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                    | Hyptis                | Class B | Continued reduction in density and occurrence of hyptis within the road reserve. | Implementation of control program prior to maturity and/or further seed production.                                                        | <ul style="list-style-type: none"> <li>• Effective targeted control</li> <li>• Prevention of hyptis seed production</li> <li>• Reduction in area of infestation</li> <li>• On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                       | Dec - Mar                                      |

|                     |
|---------------------|
| Highest priority    |
| Medium priority     |
| On-going monitoring |

## MANAGEMENT AREA 2

| Road Reserve              | Priority species      | Declaration status | Objective                                                | Action required                                                                                                       | Milestones                                                                                                                                                                                        | Recommended chemical control and chemical rate                                                                                                      | Timing                                         |
|---------------------------|-----------------------|--------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| KATHERINE EAST URBAN AREA | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring and treatment of any high priority weeds located                                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                         |                                                                                                                                                     | Anytime                                        |
| NORT-SIDE URBAN AREA      | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring and treatment of any high priority weeds located                                                           | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                         |                                                                                                                                                     | Anytime                                        |
| Gorge Rd                  | grader grass          | Class B            | Eradication of scattered plants.                         | Control of all grader grass plants within the management zone area.<br><br>Report of grader grass near Two Mile Creek | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>           | Foliar Spray -Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                             | Dec - Mar                                      |
|                           | Neem                  | Class B            | Continued reduction in density and occurrence of neem.   | Implementation of control program prior to maturity and/or further seed production.                                   | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                                             | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                           | Hyptis                | Class B            | Continued reduction in density and occurrence of hyptis. | Implementation of control program prior to maturity and/or further seed production.                                   | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation</li> <li>On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                           | Dec - Mar                                      |
| Knotts Crossing Rd        | Neem                  | Class B            | Eradication of scattered plants.                         | Implementation of control program prior to maturity and/or further seed production.                                   | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                                             | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
| Morris Rd                 | Chinee apple          | Class A            | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production       | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>          | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access Rate - 1L/60L diesel            | Foliar spray Mar-May                           |



|            |                       |         |                                                    |                                                                                                  |                                                                                                                                                                           |                                                                                                                                                 |                                                    |
|------------|-----------------------|---------|----------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
|            |                       |         |                                                    |                                                                                                  |                                                                                                                                                                           |                                                                                                                                                 | Basal bark Anytime                                 |
|            | neem                  | Class B | Eradication of scattered plants.                   | Implementation of control program prior to maturity and/or further seed production.              | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                     | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br><br>Basal bark Anytime |
| Jaensch Rd | None recorded to date |         | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem. | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul> |                                                                                                                                                 | Anytime                                            |

## MANAGEMENT AREA 3

| Road section and distance                                          | Priority species      | Declaration status | Objective                                                | Action required                                                                                                 | Milestones                                                                                                                                                                                                                    | Recommended chemical control and chemical rate                                                                                                      | Timing                                             |
|--------------------------------------------------------------------|-----------------------|--------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Emungalan Rd                                                       | Devil's Claw          | Class A            | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Effective removal of all identified plants</li> <li>Prevent further devils claw seed production.</li> <li>On-going monitoring</li> </ul>                                               | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                           | Dec - Mar                                          |
|                                                                    | Gamba grass           | Class B            | Eradication of scattered plants                          | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Strategic control and eradication of gamba grass.</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>                                       | Foliar Spray -Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                             | Dec - Mar                                          |
|                                                                    | Hyptis                | Class B            | Continued reduction in density and occurrence of hyptis. | Implementation of control program prior to maturity and/or further seed production                              | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation across the management area.</li> <li>On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                           | Dec - Mar                                          |
| STUART ESTATE<br>Moray Rd<br>Usher Rd<br>Mahony Rd<br>Shadforth Rd | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring of road reserve for priority weeds especially for gamba and grass grader grass.                      | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     |                                                                                                                                                     | Anytime                                            |
| Gillard Cres                                                       | Neem                  | Class B and C      | Monitor and treat any scattered plants found.            | Implementation of control program prior to maturity and/or further seed production                              | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br><br>Basal bark Anytime |
| Tokmakoff Rd                                                       | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring of road reserve for priority weeds especially for gamba grass and grader grass.                      | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     |                                                                                                                                                     | Anytime                                            |
| Lya Rd                                                             | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring of road reserve for priority weeds especially for gamba grass and grader grass.                      | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     |                                                                                                                                                     | Anytime                                            |

## MANAGEMENT AREA 4

| Road section and distance            | Priority species      | Declaration status | Objective                                                | Action required                                                                                                  | Milestones                                                                                                                                                                                         |                                                                                                                                                     | Timing                                         |
|--------------------------------------|-----------------------|--------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>NORTHSIDE RESIDENTIAL STREETS</b> | None recorded to date |                    | Early detection and eradication of priority weeds.       | Monitoring and treatment of any high priority weeds located                                                      | <ul style="list-style-type: none"> <li>On-going monitoring</li> <li>Record all declared weeds</li> </ul>                                                                                           |                                                                                                                                                     | Anytime                                        |
| <b>Bicentennial Rd</b>               | Grader grass          | Class B            | Eradication of scattered plants within the road reserve. | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production  | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>            | Foliar Spray -Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                             | Dec - Mar                                      |
|                                      | Neem                  | Class B            | Continued reduction in density and occurrence of neem.   | Implementation of control program prior to maturity and/or further seed production.                              | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                                              | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                                      | Hyptis                | Class B            | Continued reduction in density and occurrence of hyptis. | Implementation of control program prior to maturity and/or further seed production.                              | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation.</li> <li>On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                           | Dec - Mar                                      |
| <b>Novis Quarry Road</b>             | Chinee apple          | Class A            | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production. | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>           | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access Rate - 1L/60L diesel            | Foliar spray Mar-May<br><br>Basal bark Anytime |
| <b>Zimin Dr</b>                      | Chinee apple          | Class A            | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production  | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>           | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access Rate - 1L/60L diesel            | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                                      | Gamba grass           | Class B            | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production  | <ul style="list-style-type: none"> <li>Strategic control and eradication of gamba grass.</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>            | Foliar Spray -Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                             | Dec - Mar                                      |

|              |              |         |                                                          |                                                                                                                  |                                                                                                                                                                                                                               |                                                                                                                                                     |                                                |
|--------------|--------------|---------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
|              |              |         |                                                          |                                                                                                                  |                                                                                                                                                                                                                               |                                                                                                                                                     |                                                |
|              | Grader grass | Class B | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production  | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>                                       | Foliar Spray -Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                             | Dec - Mar                                      |
|              | Neem         | Class B | Continued reduction in density and occurrence of neem.   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production. | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                                                                         | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
| Shadforth Rd | Chinee apple | Class A | Eradication of scattered plants.                         | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production  | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>                                      | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access Rate - 1L/60L diesel            | Foliar spray Mar-May<br><br>Basal bark Anytime |
|              | Neem         | Class B | Continued reduction in density and occurrence of neem.   | Implementation of control program prior to maturity and/or further seed production.                              | <ul style="list-style-type: none"> <li>Effective reduction in density and occurrence within the road reserve</li> <li>On-going monitoring.</li> </ul>                                                                         | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane Rate – 1.8L/100L diesel        | Foliar spray Mar-May<br><br>Basal bark Anytime |
|              | Hyptis       | Class B | Continued reduction in density and occurrence of Hyptis. | Implementation of control program prior to maturity and/or further seed production.                              | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation across the management area.</li> <li>On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                           | Dec - Mar                                      |

## MANAGEMENT AREA 5

| Road section and distance | Priority species      | Declaration status                                 | Objective                                                                                        | Action required                                                                                                 | Milestones                                                                                                                                                                                                                    | Recommended chemical control and chemical rate                                                                                                  | Timing                                         |
|---------------------------|-----------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Florina Rd                | Chinee apple          | Class A                                            | Eradication of scattered plants.                                                                 | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Treatment and eradication of any plants identified.</li> <li>Reduction in density and spread prevention.</li> <li>On-going monitoring.</li> </ul>                                      | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Access<br>Rate - 1L/60L diesel     | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                           | Devil's Claw          | Class A                                            | Eradication of scattered plants.                                                                 | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Effective removal of all identified plants</li> <li>Prevent further devils claw seed production.</li> <li>On-going monitoring</li> </ul>                                               | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                       | Dec - Mar                                      |
|                           | Grader grass          | Class B                                            | Continued reduction in density and occurrence of grader grass.                                   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul>                                       | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                        | Dec - Mar                                      |
|                           | Neem                  | Class B                                            | Eradication of scattered plants.                                                                 | Survey and eradicate all plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Treatment of any plants identified.</li> <li>On-going monitoring.</li> </ul>                                                                                                           | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                           | Hyptis                | Class B                                            | Continued reduction in density and occurrence of hyptis.                                         | Implementation of control program prior to maturity and/or further seed production                              | <ul style="list-style-type: none"> <li>Effective targeted control</li> <li>Prevention of hyptis seed production</li> <li>Reduction in area of infestation across the management area.</li> <li>On-going monitoring</li> </ul> | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L                                                                                       | Dec - Mar                                      |
| Egan St                   | None recorded to date | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem. | Monitoring of road reserve for priority weeds especially for gamba grass grader grass and neem.                 | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     |                                                                                                                                                 | Anytime                                        |
| Kingston Rd               | None recorded to date | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass,                        | Monitoring of road reserve for priority weeds especially for gamba                                              | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>                                                     |                                                                                                                                                 | Anytime                                        |

|             |                       |                                                    |                                                                                                  |                                                                                                                 |                                                                                                                                                                                         |                                                                                                                                                     |                                                |
|-------------|-----------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
|             |                       |                                                    | grader grass and neem.                                                                           | grass grader grass and neem.                                                                                    |                                                                                                                                                                                         |                                                                                                                                                     |                                                |
| Cummings Rd | None recorded to date | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem. | Monitoring of road reserve for priority weeds especially for gamba grass grader grass and neem.                 | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>               |                                                                                                                                                     | Anytime                                        |
| Krilloff Rd | Grader grass          | Class B                                            | Continued reduction in density and occurrence of grader grass.                                   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul> | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                            | Dec - Mar                                      |
| Ivanoff Rd  | None recorded to date | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem.                | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>               |                                                                                                                                                     | Anytime                                        |
| Gory Rd     | None recorded to date | Early detection and eradication of priority weeds. | Monitoring of road reserve for priority weeds especially for gamba grass, grader grass and neem. | Monitoring of road reserve for priority weeds especially for gamba grass grader grass and neem.                 | <ul style="list-style-type: none"> <li>Treatment of any priority weeds identified.</li> <li>Data Collected on new weed incursions</li> <li>On-going monitoring</li> </ul>               |                                                                                                                                                     | Anytime                                        |
| Cossack Rd  | Grader grass          | Class B                                            | Continued reduction in density and occurrence of grader grass.                                   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul> | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L                                                                                            | Dec - Mar                                      |
|             | Neem                  | Class B                                            | Continued reduction in density and occurrence of neem.                                           | Implementation of control program prior to maturity and/or further seed production                              | <ul style="list-style-type: none"> <li>Treatment of any plants identified.</li> <li>On-going monitoring.</li> </ul>                                                                     | Foliar spray - Grazon Extra or generic product<br>Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel | Foliar spray Mar-May<br><br>Basal bark Anytime |



## Management Area 5

| Council Facility                    | Priority species | Declaration status | Objective                                                                          | Action required                                                                                                     | Milestones                                                                                                                                                                              | Recommended chemical control and chemical rate            | Timing                                         |
|-------------------------------------|------------------|--------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------|
| Katherine Waste Management Facility | Chinee apple     | Class A            | Implementation of control program prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Treatment of any plants identified.</li> <li>On-going monitoring.</li> </ul> | Foliar spray - Grazon Extra or generic product Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel                                        | Foliar spray Mar-May<br><br>Basal bark Anytime            | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                                     | Neem             | Class A            | Eradication of scattered plants.                                                   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production     | <ul style="list-style-type: none"> <li>Effective removal of all identified plants</li> <li>Prevent further devils claw seed production.</li> <li>On-going monitoring</li> </ul>         | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L | Dec - Mar                                      |
|                                     | Grader grass     | Class B            | Continued reduction in density and occurrence of grader grass.                     | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production     | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul> | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L  | Dec - Mar                                      |

## Katherine Show Grounds

| Council Facility       | Priority species | Declaration status | Objective                                                                          | Action required                                                                                                     | Milestones                                                                                                                                                                              | Recommended chemical control and chemical rate            | Timing                                         |
|------------------------|------------------|--------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------|
| Katherine Show Grounds | Chinee apple     | Class A            | Implementation of control program prior to maturity and/or further seed production | <ul style="list-style-type: none"> <li>Treatment of any plants identified.</li> <li>On-going monitoring.</li> </ul> | Foliar spray - Grazon Extra or generic product Rate - 350ml/ 100L<br><br>>15cm stem diameter basal bark - Starane<br><br>Rate – 1.8L/100L diesel                                        | Foliar spray Mar-May<br><br>Basal bark Anytime            | Foliar spray Mar-May<br><br>Basal bark Anytime |
|                        | Neem             | Class A            | Eradication of scattered plants.                                                   | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production     | <ul style="list-style-type: none"> <li>Effective removal of all identified plants</li> <li>Prevent further devils claw seed production.</li> <li>On-going monitoring</li> </ul>         | Foliar Spray – 2,4-D amine 625g/L<br><br>Rate 320mL/ 100L | Dec - Mar                                      |
|                        | Grader grass     | Class B            | Continued reduction in density and occurrence of grader grass.                     | Survey and eradicate any plants found.<br><br>Treat all plants prior to maturity and/or further seed production     | <ul style="list-style-type: none"> <li>Strategic control and eradication of grader grass</li> <li>Prevent further grader grass seed production.</li> <li>On-going monitoring</li> </ul> | Foliar Spray - Glyphosate 360 g/L<br><br>Rate - 10mL/ 1L  | Dec - Mar                                      |

## 9 Monitoring and evaluation

Monitoring assists to:

- Identify changes in weed infestations annually.
- Evaluate efficacy of the treatment (both slashing and chemical control).
- Help inform weed control priorities for the next season (in conjunction with a post-season review).
- Include areas of high density weed infestation and also areas known to be free from weeds at the commencement spray season.

Effectiveness of control and spread prevention for 2019/20 will be assessed by:

- Individual site assessments at treatment sites to determine a change in weed densities.
- Monitoring of known weed free areas for new infestations.

## 10 Evaluation

Evaluation assists to reassess priorities, address any issues and fine tune processes so that the aims of the Plan can be met.





### Katherine Show Grounds

Date:

Time:

Name:

Weed Type and growth stage (actively growing/seeding).

Coverage m<sup>2</sup> / number of plants.

- Treatment
- Herbicide

### Indicate on map location of weeds

**N** – Neem, **G** – Grader Grass, **C** – Chinee Apple,

**GB** – Gamba Grass, **BA** – Bellyache, **DC** – Devils Claw





### **Katherine Waste Management**

Date:

Time:

Name:

| Weed Type and growth stage (actively growing/seeding). | Coverage m <sup>2</sup> / number of plants. | <ul style="list-style-type: none"> <li>• Treatment</li> <li>• Herbicide</li> </ul> |
|--------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------|
|                                                        |                                             |                                                                                    |

#### **Indicate on map location of weeds**

**N** – Neem, **G** – Grader Grass, **C** – Chinee Apple,

**GB** – Gamba Grass, **BA** – Bellyache, **DC** – Devils Claw



**KTC ROAD CORRIDOR****EXAMPLE**

|                                                                                                                                                                                                                              |  |                                                      |                                                                                                                     |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--|--|
| Road: <b>Florina</b>                                                                                                                                                                                                         |  |                                                      | Adjacent to lot No: <b>2860</b>                                                                                     |  |  |
| Date: <b>10/12/2019</b>                                                                                                                                                                                                      |  |                                                      | Time: <b>08:00</b>                                                                                                  |  |  |
| Name: <b>Darth Vader</b>                                                                                                                                                                                                     |  |                                                      |                                                                                                                     |  |  |
| Weed Type and growth stage<br>(actively growing/ seeding).                                                                                                                                                                   |  | Coverage<br>m <sup>2</sup> /<br>number of<br>plants. | <ul style="list-style-type: none"> <li>• Treatment</li> <li>• Herbicide</li> <li>• Identified for action</li> </ul> |  |  |
| <b>DC – young plants not flowering.</b>                                                                                                                                                                                      |  | <b>15m<sup>2</sup></b><br><b>20-30</b>               | <b>Foliar spray</b><br><b>2,4-D. 625g/l</b><br><b>320ml/100L</b>                                                    |  |  |
| <p align="center"><b><u>Indicate on map location of weeds</u></b></p> <p><b>N</b> – Neem, <b>G</b> – Grader Grass, <b>C</b> – Chinee Apple,<br/> <b>GB</b> – Gamba Grass, <b>BA</b> – Bellyache, <b>DC</b> – Devils Claw</p> |  |                                                      |                                                                                                                     |  |  |



## EcOz Environmental Consultants

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