# Environmental Management Procedure
# Beetaloo – Northern Territory
# Doc No: WSG ENV PRO 002 Rev: 1
# Issued: April 2022

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| Document Information Sheet | | | | |
|---|---|---|---|---|
| Title: Environmental Management Procedure | | | | |
| Document No: WSG ENV PRO 002 | Rev No: 1 | | Issue Date: 19.04.2022 | |
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| **Revision Record:** | | | | |
| **Rev** | **Date** | **Description** | **Revised By** | **Approved By** |
| 1 | 19.04.2022 | Implementation for Beetaloo Project | C. Allen | T. Avery |

## Table of Contents

## List of Tables

# 1. Purpose

The purpose of this environmental procedure is to clearly define the responsibilities, accountabilities, management systems, procedures and processes utilised by the company to ensure the policy is properly implemented. This is to be obtained by ensuring;

- to comply with the requirements of this procedure in order to reduce impacts on plants, animals, the landscape and the atmosphere
- To reduce waste disposal and to reuse and recycle
- To comply with statutory requirements relevant to environmental management including but not limited to
    - Licenses,
    - Sections of acts and regulations
    - Spill release control; and
    - Waste management processes
    - Weed management
    - reporting

# 2. Scope

All MPC Kinetic Pty Ltd (MPK) Employees and contractors shall comply with the environmental requirements for all applicable worksites, jobs and transport activities as specified by regulatory requirements and by client requirements when onsite. This procedure has been developed to supplement state environmental legislative requirements and to outline basic MPC Kinetic requirements. Where legislative requirements are in conflict with or exceed the requirements specified in this Procedure, the legislative requirements shall take precedence and shall be complied with.

# 3. Reference Documents

| Document No. | Document Name |
|---|---|
| KIN-AOG-QHSE-MAP008 | Emergency Response Plan (FMPS) - Beetaloo |
| GRP STD WHS 001 | Incident Management Standard |
| GRP POL 002 | Environmental and Social Responsibility Policy |
| | NT Petroleum Environment Regulations 2016 |
| | NT Waste Management and Pollution Control Act 1998 |
| | NT Petroleum Act 1984 |
| | Schedule of Onshore Petroleum Exploration and Production Requirements |
| | Weeds Management Act 2013 |

## 4. Definitions

| Term | Definition |
|---|---|
| Environmental Incident | An incident that results (including a near miss that had the potential to result) in the spilling, leaking, pouring, emitting, emptying, discharging, escaping, leaching, dumping, or disposing of oil or any hazardous substances into the environment during transport, operations, or storage. |
| Waste | For the purposes of this procedure, waste is defined as a material that is no longer usable or no longer wanted. It includes materials that are to be reused or recycled. |
| EMP | Environmental Management Procedure |
| MPK | MPC Kinetic |
| NT | Northern Territory |

# 5. Roles and Responsibilities

The *NT Petroleum Environment Regulations 2016details* all requirements for environmental performance for all MPK operations.

- 'A person must not carry out an activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practical measures to prevent or minimise the harm'.
- Everyone has this general environmental duty of care. In line with this duty of care the following responsibilities and accountabilities have been allocated to all MPC Kinetic personnel.

## 5.1 Executive General Management Responsibilities

- Define and endorse the environmental policy.
- Endorse environmental objectives and ensure that adequate resources are available to meet environmental objectives.
- Designate program authority and appoint an individual to be responsible for overall environmental quality and environmental due diligence within the company.
- Hold Operations Managers responsible for environmental performance within their work groups.
- Ensure environmental issues are communicated and addressed at Management Review.

## 5.2 Operations Manager Responsibilities

- Reinforce environmental management directives and objectives.
- Ensure employees and contractors are aware of company expectations.
- Include environmental objectives in project planning.
- Review environmental incidents and follow-up actions.
- Hold Supervisors accountable for environmental performance.
- In the absence of the Operations Manager, the Executive General Manager assumes the role.

## 5.3 Field Superintendent/Project Manager Responsibilities

- Ensure respective areas of operation are in conformance with MPC and legislative environmental requirements including waste management, spill prevention and chemical storage.
- Reinforce environmental management directives and objectives.
- Ensure employees and contractors are aware of MPC environmental requirements and expectations, including spill / release reporting and clean-up and hold them accountable for their environmental performance.
- Maintain a list of approved waste contractors and ensure that wastes are only disposed of through approved transporters and at approved disposal sites.
- Ensure work sites are equipped with appropriate waste storage areas and equipment and that waste is properly stored.
- Ensure all waste, transportation, spill, and product inventory records are maintained for respective areas of responsibility.

- Participate in HSE inspections of facilities and worksites and ensure that identified deficiencies are corrected within realistic timelines.
- Review environmental incidents and follow-up actions.
- Ensure corrective actions are taken as warranted.
- Include environmental objectives in business planning.

## 5.4 Site Supervisor Responsibilities

- Ensure jobs and activities are in conformance with company Environmental requirements including waste management, spill prevention, facility standards and chemical storage.
- Ensure that all equipment required for a job is in a properly maintained condition and appropriate for the job.
- Assess job hazards as specified by program requirements and ensure environmental risks (waste management, spill / release prevention, chemical transport, handling and storage) are considered as part of the assessments.
- Ensure work activities are performed in a manner that minimises the risk of accidental spills and releases.
- Correct operating practices leading to environmental damage; e.g., leaks, spills, improper waste storage.
- Ensure employees and contractors are aware of environmental requirements and expectations, including spill / release reporting and clean-up and hold them accountable for their environmental performance.
- Be familiar with emergency procedures and the proper use and location of spill response equipment.
- Report all spills-releases.
- Participate in HSE inspections of facilities and worksites and participate in the correction of identified deficiencies.
- Make recommendations for improvements to the Environmental Plan and to the reduction of waste when opportunities to do so arise.

## 5.5 Employee Responsibilities

- Protect yourself, your fellow workers and the public from environmental harm. This is accomplished by complying with MPK requirements including waste management, spill prevention, facility standards, chemical storage, emergency response and the performance of hazard assessments as specified by program standards.
- Assess job hazards as specified by program requirements and ensure environmental risks (waste management, spill / release prevention, chemical transport, handling and storage) are considered as part of the assessments.
- Report all environmental concerns and potential environmental hazards, spills and releases to your supervisor.
- Be familiar with emergency procedures and the proper use and location of spill response equipment.
- Clean up spills as they occur.
- Make recommendations for improvements to the Environmental Plan and to the reduction of waste when opportunities to do so arise.

## 5.6 HSET Department Employee Responsibilities

- Develop, administer and oversee the implementation and ongoing maintenance of the company environmental management requirements within respective areas of responsibility.
- Provide guidance, support and direction to managers and workers on compliance to environmental management requirements.
- Be aware of and maintain a file of relevant and current environmental regulations applicable to MPK operations. The file system shall include legislative / regulatory documents and applicable registrations, operating permits and certifications.
- Meet environmental due diligence requirements by ensuring the company environmental management program incorporates compliance to legislation / regulations.
- Participate in industry association activities.
- Identify and communicate environmental risks and inform management and workers of emerging environmental issues.
- Organise and / or collaborate with training providers to develop and provide environmental training for managers, supervisors and employees regarding environmental requirements and expectations including spill / release prevention, reporting and clean-up, waste management, categorisation and storage of chemicals and waste and emergency response.
- Provide assistance to front line employees in assessing and controlling hazards, spill response, and other environmental requirements. Seek and act upon employee feedback and concerns.
- Conduct audits as specified by program requirements and participate in HSE inspections of facilities, worksites and transport activities.
- Ensure action plan items arising from audits and inspections are addressed within realistic time lines.
- In conjunction with workers and management, participate in investigations, review incident reports and monitor follow-up corrective actions.
- Liaise with regulatory environmental agencies on an as-needed basis and ensure all spills / releases are reported to applicable agencies as specified by regulations.
- Generate environmental reports and information as specified by regulatory and / or permit requirements.
- Maintain copies of spill / release reports, transportation of Dangerous Goods incident reports, waste records, waste manifests, inspection / audit reports and other correspondence and reports that relate to environmental management within the business.

## 5.7 Contractor Environmental Responsibilities

- When conducting work activities on behalf of MPC, contractors shall comply with all applicable environmental regulations applicable to the state where the work is being performed.
- Contractors are responsible to ensure that their respective employees and subcontractors are aware of and comply with applicable regulatory environmental requirements for the work being performed.

- Contractors are responsible for all hazardous products, chemicals and fuel they bring on an MPC or MPC client site. This responsibility extends to clean up and site remediation in the event of a spill or release.
- Contractors shall have required permits, licenses and insurance coverage for the work being performed. Copies of applicable documents shall be provided to MPK prior to commencement of works.
- Contractors are required to identify environmental hazards and risks and communicate these to MPC personnel associated with the job.

## 6. Training Requirements

MPC Kinetic employees (field, workshop,) are provided with basic environmental training as part of the New Employee Induction and Orientation program. Environmental aspects of training include:

- Health and safety and environmental policies.
- Accountabilities and responsibilities.
- Chemical safety (chemical labelling requirements, safety data sheets, physical and health hazards of chemicals, procedures for the safe use, storage and handling of chemicals and emergency procedures).
- Spill / release reporting.
- Waste management and disposal.
- Emergency response.
- Training for employees who ship, receive or transport dangerous goods.
- Weed hygiene awareness and inspection processes
- Operations management, supervisory personnel and bulk plant employees shall receive spill response training.

As applicable to their job functions, operations management, supervisory and HSE employees shall receive additional environmental training in:

- Regulatory environmental and spill / release reporting requirements.
- Emergency response planning.
- Knowledge of the overall MPC Kinetic environmental management program including spill / release prevention, waste management and minimisation, waste disposal requirements, environmental standards for facilities and worksites including chemical and waste storage, environmental recordkeeping, and environmental inspection / audit requirements.

## 7. Compliance and Monitoring

MPC Kinetic will ensure that regular periodic inspections are undertaken in alignment with WEL-WHS-PLN-001 Wells Audit and Compliance Plan to ensure its environmental processes are reviewed and compliance with these are monitored.

Any assurance audits undertaken will be completed on location by the site safety manager or a HSET representative with any corrective actions identified to be documented within MPK's INX live corrective action database to monitor these for close out.

# 8. Well Site / Field Site Environmental Rules

- Maintain well sites and field work sites in a condition free of spills and leaks of hazardous chemicals.
- If spills / releases do occur, inform the client representative of the incident and assist in the coordination of clean-up efforts.
- Be equipped to control and clean up small spills that may occur on location by having appropriate spill kits for the chemicals / products being utilised on hand. This would include neutralisers for caustics and / or acids, absorbents for hydrocarbons and / or chemicals, an appropriate shovel, over packs or bags for the collection of hazardous waste, etc.
- In order to minimise the potential for spills / leaks, prior to pressure testing, the supervisor shall ensure all components are properly rigged in and function tested as applicable to the service line and equipment being utilised.
- When transferring liquids, equipment is to be grounded and bonded as required and the process is to be monitored to ensure leaks do not develop. Ensure overfilling does not occur.
- When disconnecting lines, pails are to be utilised to collect residual fluids. Do not drain lines or flush equipment onto the ground and do not utilise compressed air to flush fluids back to tanks.
- Waste liquids to be disposed of on location or other third-party sites shall only be transferred into approved tanks or containers.
- Unless other disposal arrangements have been made, remove all MPC generated waste (empty containers, pails, drums, empty chemical bags and rubbish, etc.) from the site when the work is complete. If client approval is granted, non-hazardous rubbish may be left in on site disposal containers.

# 9. Storage of Hazardous Substances

- Storage of hazardous chemicals shall comply with *WHS PRO 002 Hazardous Materials Procedure*.
- All containers shall be fit for purpose and be properly labelled.
- Hazardous chemicals are to be stored in a manner that minimises the potential of contaminating the atmosphere, soil and ground water as a result of spills or unplanned releases. If a spill or release should occur, proper containment at the source will prevent widespread contamination of soil and / or ground water.
- Chemicals which are reactive with water shall be stored under cover in a dry area.
- Do not store incompatible hazardous chemicals or waste together.
- Partially filled containers of chemicals being returned from field jobs are to be properly labelled and are to be reused if they are not contaminated.

# 10. Waste Management Principles

## 10.1 Principles

MPC Kinetic will apply sound waste management principles to company operations by **reducing, reusing and recycling waste**. Examples are:

### 10.1.1 Reducing

- Selecting less hazardous or non-hazardous products when viable.
- Minimising the potential for contamination of soil and water through sound storage, transport and disposal of wastes.
- Minimising the amount of waste volume for disposal by recycling and reusing when possible.
- Separating hazardous waste from non-hazardous waste as the waste is produced.

### 10.1.2 Reusing

- Properly labelling partially full chemical containers returned from field jobs, storing the chemicals so they do not become contaminated and utilising them for the next applicable field job.

### 10.1.3 Recycling

- Disposing of recyclable waste at approved recyclers. Examples of recyclable wastes are waste batteries, waste motor oil and in certain locations waste cardboard, used tires, etc.
- Maintaining a list of approved recyclers. This is a responsibility of the HSET Department.

### 10.1.4 Waste Management Rules

- MPC Kinetic shall ensure that waste generated at company sites is transported and disposed of in an environmentally responsible manner.
- The Operations Manager shall ensure that contracts are in place with certified and licensed recycling and / or waste disposal companies for the disposal of all wastes (hazardous and non-hazardous) generated by MPC and for the flushing of units that contain hazardous residues.
- All waste storage tanks and containers shall be properly labelled.
- Containers of waste chemicals shall be properly protected from accidental spillage.
- Employees shall not pour hazardous waste or rinse waste down sinks or drains that are connected to sewer systems.
- Do not store non-hazardous waste with hazardous waste as this will increase the risk of contaminating the non-hazardous waste and potentially result in higher disposal costs.
- Non-hazardous wastes are to be segregated into waste categories depending on type and disposal, for example to general landfill or to recycle.
- All wastes, both hazardous and non-hazardous shall be disposed of as per local regulations. In all cases, wastes shall only be disposed of or recycled at sites / facilities licensed and certified to accept the waste. Records of each waste stream shall be kept in the applicable facilities' environmental file.
- Where available and viable, recycling shall be the first option in the disposal of waste.

### 10.1.5 Project Chemicals and Wastewater Description

Throughout the duration of the nominated scope of work the following chemicals and wastewater categories may be stored on site. Some of the following products may require interaction with MPC Kinetic operations.

- Chemicals used for drilling
- Waste drilling fluids
- Chemicals used for stimulation
- Flowback Wastewater
- Completions fluid
- Condensate and oil
- Diesel and fuels
- General equipment maintenance chemicals (hydraulic oils, degreasers etc.)

### 10.1.6 Project Waste Management Requirements

MPC Kinetic in conjunction with the client will effectively ensure the following waste management guidelines are adhered to for the duration of the nominated work scope

- MPC Kinetic activities shall comply with the relevant requirements for drilling wastewater management as outlined in Origin Energy's Wastewater Management Plan NT-2050-MP15-028 and the Code of Practice for Onshore Petroleum Activities within the Northern Territory.
- All wastewater transport providers and wastewater disposal facilities will be licenced under the NT Waste Management and Pollution Control Act.
- MPC Kinetic shall provide a summary of waste management procedures, including the types of waste to be generated, onsite storage locations, waste category (listed), proposed waste transporter and proposed waste disposal location for each waste stream.
- MPC Kinetic must maintain up to date waste tracking spreadsheet of all onsite waste appropriate to its operational scope (including waste drilling muds, cutting and fluids) stored onsite and transported offsite including waste types, volumes generated, stored location (if applicable) transporter name and license details, waste tracking certificate number and final disposal locations. The details of all wastes generated, their disposal location and the waste certificates must be forwarded to the HSE Advisor/Well site Rep on at least a weekly frequency.
- All waste must remain within the designated work area and be secured at all times with appropriate storage and segregation.
- Waste must not be burned nor buried on site.
- MPC Kinetic shall be familiar with the requirements for drilling wastewater management as outlined in associated work scopes Wastewater management plan
- Only drilling fluid, muds and cuttings are permitted to be disposed of in the drilling mud sump. Other material, such as domestic and industrial waste, containers, waste oils, contaminated soils, waste chemicals must not be disposed of in the sump. The sump contents will be mixed buried covered onsite post disposal, with any non-approved waste jeopardizing final disposal options.
- All wastes (excluding completion fluids, drilling muds, drilling fluids and drilling cuttings)) must be removed from site at completion of works by licensed waste transport for disposal at a licensed facility as per the NT Waste management and Pollution Control Act.

- All listed wastes specified in Schedule 2 of the Waste Management and Pollution Control (Administration) Regulations must be transported by a licensed contractor and disposed of at a licensed facility.
- All wastewater irrigation must only be undertaken in the nominated irrigation area in accordance with the Northern Territory Code of Practice for On-site Wastewater Management.

**Table 1. Waste Disposal Options**

| Waste Type | Disposal Options |
|---|---|
| Used oil (crankcase oils, hydraulic oils, gear oil, differential oil, cutting oil, lubricating oil and transmission oil) | ▪ Do not store in containers that previously held chemicals. Recycle or dispose of as per local regulations |
| Used Oil Filters (properly drained) | ▪ Dispose of as per local regulations |
| Used Glycol (Do not store in containers that previously held chemicals) | ▪ Recycle or dispose of as per local regulations |
| Used Parts Wash Cleaner and Solvents ( Do not mix with used oil) | ▪ Do not store in containers that previously held chemicals<br>▪ Recycle or dispose of as per local regulations |
| Used Oily Rags (store in a metal container with closed lid) | ▪ Recycle if possible or dispose of as per local regulations |
| Saturated Absorbent Materials | ▪ Dispose of as per local regulations |
| Used Batteries (store in an enclosed area) | ▪ Recycle if possible or dispose of as per local regulations |
| Used Aerosol Cans | ▪ Dispose of as per local regulations |
| Used Florescent Tubes | ▪ Recycle or dispose of as per local regulations |
| Waste Pest Control Products and Containers | ▪ Dispose of as per local regulations |
| Empty Chemical Drums and Containers (ensure they are empty, bungs in place.<br>▪ Do not use empty chemical containers for the storage of water. Ensure they are destroyed so they cannot be used for this purpose | ▪ Recycle if possible or dispose of as per local regulations |
| Wash Bay Wastewater (with oil water separators) | ▪ Dispose of as per local regulations<br>▪ May require testing to meet disposal options<br>▪ Consider the installation of a recycle system |
| Grey Water and Effluent | ▪ Dispose of as per local regulations |
| Paint and Paint Sludge | ▪ Dispose of as per local regulations |
| Waste drilling fluids | ▪ Dispose of as per local regulations |
| Flowback wastewater | ▪ Dispose of as per local regulations |
| Completions fluid | ▪ Dispose of as per local regulations |
| Pond liner consumables | ▪ Dispose of as per local regulations |

## 11. Soil and Water Management

The following actions shall be undertaken in relation to water and soil management on MPC Kinetic sites:

- Ensure all environmental controls (silt fences, sediment socks etc.) are in place (where within MPC's scope of responsibility).
- Report or correct any deficient or missing controls.
- Use appropriate wash down facilities.
- Do not drive over existing environmental controls when on client leases.
- Limit tracking of mud onto public roads where appropriate.

## 12. Air Quality

The following actions shall be undertaken in relation to maintaining air quality:

- Arrange for dust control activities (water carting) as required.
- Limit road speed on dirt or gravel roads to reduce dust.
- Ensure maintenance requirements (as per manufacturers and MPC requirements) for all vehicles are maintained to reduce or limit emissions.
- Ensure all loads are covered

## 13. Noise

The following actions shall be undertaken in relation to limiting noise resulting from MPC work activities:

- Use noise limiting devices wherever possible and as is appropriate.
- Limit horn use, engine braking and over revving of engines near residences.
- Ensure maintenance requirements (as per manufacturers and MPC requirements) for all vehicles are maintained to reduce or noise emissions.
- Monitor noise levels with hand held devices or monitoring stations as appropriate for all high noise activities (do not tamper with any noise monitoring equipment).

## 14. Flora and Fauna

MPC Kinetic are aware that with any nominated work scope this can potentially introduce the interaction of its personnel and equipment with local flora and fauna. MPC Kinetic aim to effectively minimize any effect its people or operations will have on flora and fauna by ensuring

- Not to engage dangerous wildlife (snakes, spiders etc.) under any circumstances. Give them a wide berth and advise the environmental representative who shall arrange for their removal.
- Treat any wildlife encountered in a humane manner. Avoid contact wherever possible and advise the environmental representative of any injured or problem animals.
- Measures are implemented to prevent fauna entrapment/ exposure to pits, sumps, wastewater and chemicals.
- All personnel must be informed about the risks of fauna injury and death and trained on what to do if they see an injured animal (e.g. stop the work, report to supervisor)

- To document all fauna encountered during activities. This includes: Fauna strikes with equipment, fauna (including bird) interaction with ponds and any observed fauna mortality within or immediately adjacent to the lease pad. The details shall contain the following information date, time, species, location of interaction, interaction type (collision, entrapment, wastewater/chemical interaction etc.), Injury (No, minor, fatality)
- Firearms, interference with fauna and domestic pets are prohibited to be taken onto the project area,

## 15. Weed and Pest Management

Weed control is considered to be a significant land management issue in the Northern Territory.

The movement of rigs, vehicles, machinery and other materials to, from and within the exploration permit area may result in weeds being moved around the pastoral lease, into the lease from surrounding areas or interstate, depending on where the vehicles and materials are sourced from or returned to.

The focus of this EMP is therefore to ensure that infestations are eradicated, or at the very least that existing weed infestations are controlled such that no further weed species colonise the permit area as a result of MPC Kinetic's activities.

The following actions shall be undertaken in relation to weed and pest management at MPC Kinetic or client sites:

- Retain habitat trees wherever possible.
- Don't place felled vegetation in watercourses or gullies.
- All vehicles and plant attending client sites or leases shall be certified as weed and pest free.
- The site is free of weeds, with equipment movement from Queensland/ and Northern NT into the area representing a high risk of weed introduction. MPC Kinetic is to be familiar with the controls outlined in the associated work scope Weed Management Plan and ensure these controls have been implemented through its procedures and toolbox talks
- All vehicles, machinery, plant and equipment and demountable must be cleaned and declared free of biological material before being allowed access to site. This includes transport trucks, couriers, shipping containers, generators skids, equipment skids and other items brought onto site. Any machinery, vehicles and equipment not accompanied by an approved Biosecurity Hygiene Declaration must not be allowed

onto site. Any loads brought to site must be accompanied by a Weed Hygiene Declaration.

- A vehicle inspection and weed hygiene declaration for must be completed by a person who has an obtained a statement of attainment for AHCBIO201 Inspect and Clean machinery for Plant, Animal and Soil Material
- All Vehicles and equipment must have a valid weed hygiene declaration form on them or available upon request at all times. A vehicle or piece of equipment without a certification must be removed from site immediately, cleaned and certified.
- Where interstate transportation into the site is undertaken, the equipment shall be washdown as close as possible to the property. Vehicles with interstate weed certificates that arrive at the property soiled will require an additional washdown prior to entry. The Katherine saleyards washdown facility is the closest washdown facility.
- Any vehicle plant or equipment that has come into contact with weeds must be washed down, re inspected and a new Vehicle/Equipment Inspection Report issued before moving into an area that has been cleared of weeds or entering another property.
- Weed management requirements to be communicated to all personnel via site induction and toolbox talks. Attendance records are to be documented, retained and submitted to the HSE Advisor/Well site Rep
- All loads (including quarry materials (e.g. gravel, sand, soil), stock and domestic water, mulch, hay, seed, livestock) sourced from outside the project area must have a valid Weed Hygiene Declaration for the load. The weed hygiene declaration should be completed by the supplier and provided to OE Construction Supervisor prior to unloading.
- MPC Kinetic must notify any operating client of any potential weed outbreak identified within its activity area as soon as practicable.

## 15.1 Weed Species Information - NT Energy Beetaloo Project

Weed surveys completed in August 2018 indicates the abundance of weeds within the proposed project area is low. *Hyptis suaveolens* (Hyptis), was identified along the access track to the proposed Velkerri 98-E1-1 site, whilst Gamba Grass (*Andropogon gayanus*) is also known to be in the broader region and is used by some Pastoralists in the region for wet season pasture. The pastoral properties using Gamba would be required to control the growth and spread to neighbouring areas (NTG, 2000).

Previous surveys within the permit area completed in 2014, 2015 and 2016 also confirmed the presence of Hyptis in the vicinity of the Carpentaria Highway near Velkerri 98 N1-2 (previously known as Amungee NW-1) site.

*Parkinsonia aculeata* (Parkinsonia) and *Calotropis procera* (Rubber Bush) have been previously identified along/in close proximity to the Beetaloo access track. Parkinsonia is considered a Weed of National Significance (WoNS), which are weed species that are the focus of national management programs for the purpose of restricting their spread and/or eradicating them from parts of Australia. These species are specifically presented in Table 2 and Section 8.

Figure 2 illustrates the weeds species confirmed in the region during field surveys, along with other weed species that are known to occur or likely to occur within the wider exploration Permit Areas. This information is based on.

- Operating Client exploration program weed survey data (2014-2018 results)

- Mapping data provided by the Weed Management Branch, DENR.
- Guidelines for the *Management of the Weeds of Beetaloo 2018* (DLRM et al 2018).
- Barkly and Katherine Regional Weed Management Plans (RWMP)
- Department of the Environment and Energy (DOTEE) EPBC Act Protected Matters Report database.

Table 3 has been separated into priority weeds, RWMP alert species and other species previously identified in the area. Priority weed species are considered higher risk of being introduced or spread through the following criteria:

- Weed species that has been confirmed in the area within the relevant RWMP or through field surveys.
- Weed species listed in a RWMP that is in close proximity to Operating Client tenure.
- Weed species that are at risk of introduction through the use of machinery sourced from other regions in the NT or from other states.

Alert weed species are identified under the Katherine and Barkley RWMP. These species are not yet naturalised in the region, but have the potential to have a high level of impact to the region should it become established. The likelihood of the species naturalising and spreading in the region is perceived to be high (Department of Land Resource Management 2015).

It is noted that Parthenium (*Parthenium hysterophorus*) is a major problem in rangelands and cropping areas of Queensland and is estimated to cost farmers and graziers more than $22 million a year in reduced production and increased management costs. Vehicle, machinery and material movements from Queensland into the project area present a risk of spread of Parthenium if not managed correctly (Department of Primary Industry and Resources 2016).

Additional mapped locations of weeds within the Barkly and Katherine RWMP are provided in Figure 3 and Figure 4.

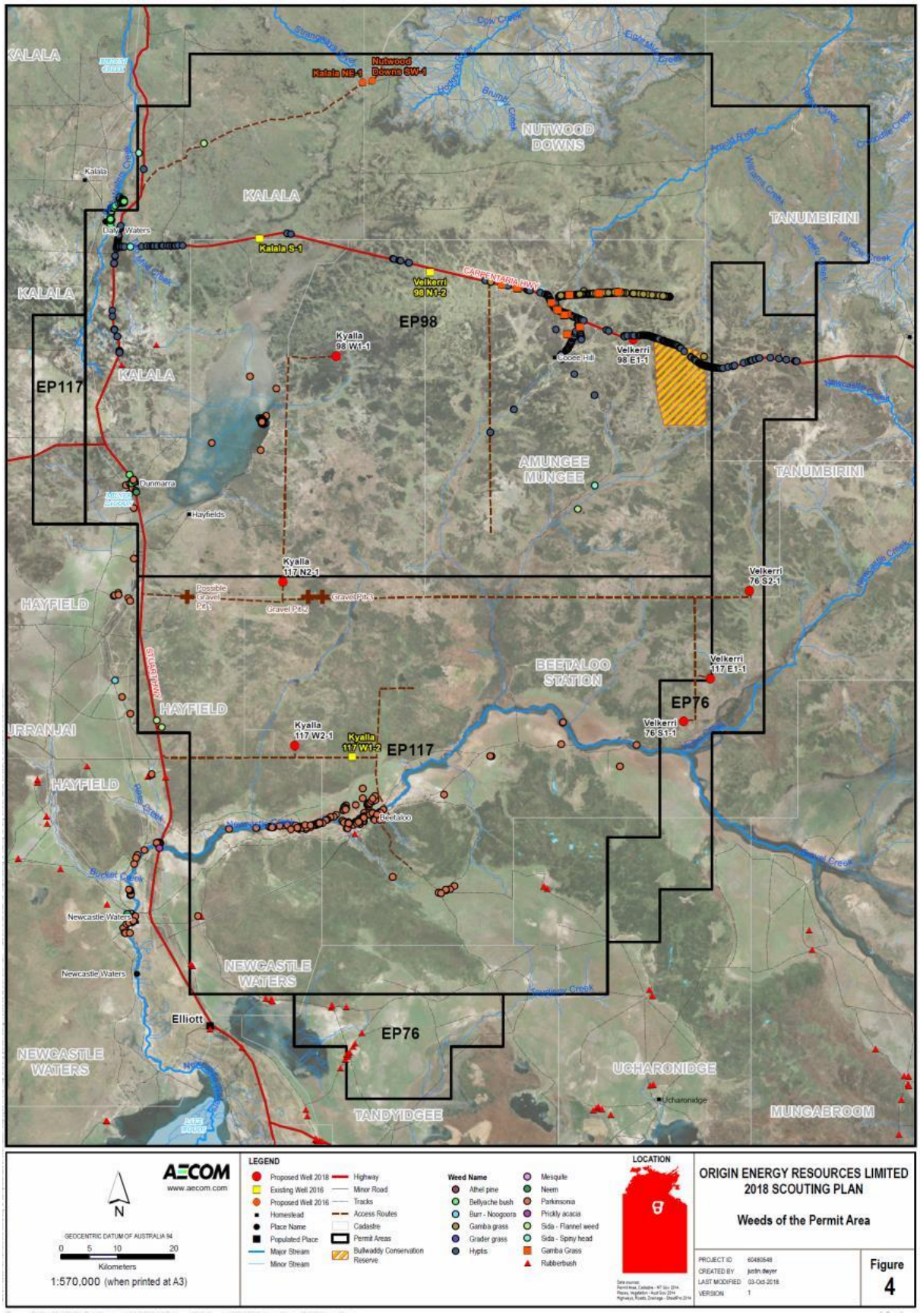



**Figure 2 - Location of Weeds Species in Permit Areas**

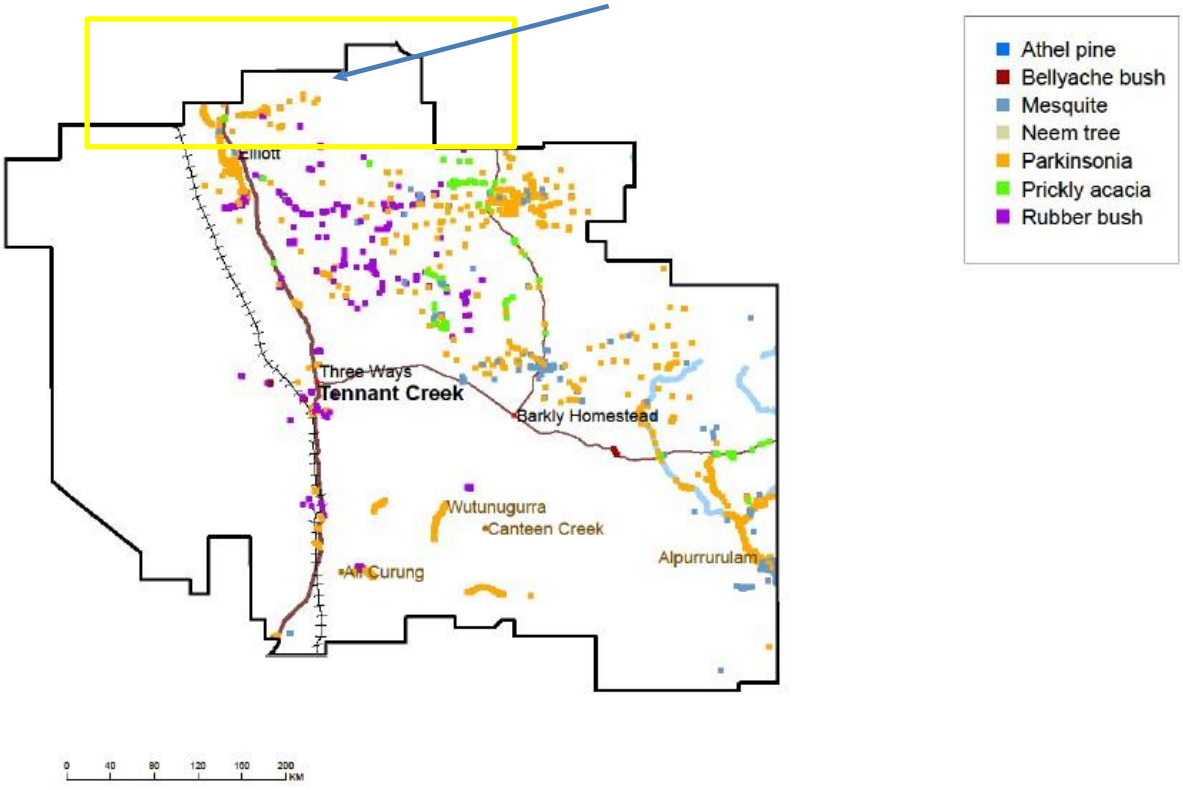



**Figure 3 Barkly RWMP mapped priority weed locations**

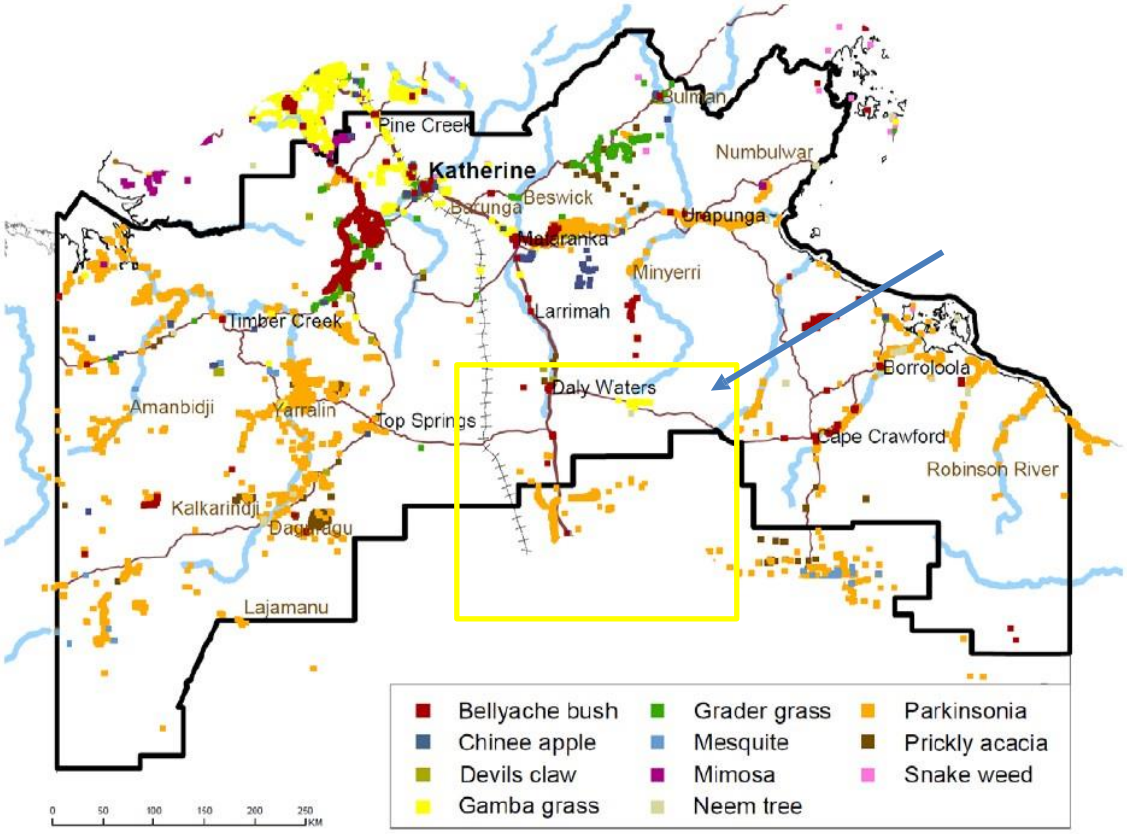



**Figure 4 Katherine RWMP mapped priority weeds**

## NT listed weeds known of likely to occur within the Permit Area

| Scientific Name | Common Name | Status | Data Source |
|---|---|---|---|
| **Priority Weed Species** | | | |
| *Acacia nilotica* | Prickly Acacia | Class A, WoNS | Mapped in the exploration lease within the Katherine RWMP |
| *Andropogon gayanus* | Gamba Grass | Class A WoNS | Confirmed within exploration lease. High potential introduction through sourcing of equipment from Katherine and Darwin area. |
| *Calotropis procera* | Rubber Bush | Class B and C | Mapped in the exploration lease within the Barkly RWMP |
| *Hyptis suaveolens* | Hyptis | Class B and C | Confirmed within exploration lease during previous weed surveys |
| *Jatropha gossypiifolia* | Bellyache Bush | Class A, WoNS | Mapped in the exploration lease within the Katherine RWMP. Potential introduction through sourcing of equipment from Katherine area. |
| *Parkinsonia aculeata* | Parkinsonia | Class B and C, WONS | Confirmed within exploration lease during previous weed surveys and Mapped in the exploration lease within the Katherine RWMP. Potential introduction through sourcing of equipment from Katherine area. |
| *Prosopis pallida* | Mesquite | Class A and C, WONS | Mapped in the area surrounding exploration lease within the Katherine and Barkly RWMP |
| *Themeda quadrivalvis* | Grader Grass | Class B and C, WoNs | Confirmed within the exploration lease and mapped in the area within the Katherine RWMP. High potential introduction through sourcing of equipment from Katherine area. |
| *Parthenium hysterophorus* | Parthenium | Class A and Class C, WoNS | Confirmed by DENR to occur within the exploration lease. Potential introduction through equipment sourced from QLD. |
| **Alert Species under RWMP** | | | |
| *Cenchrus setaceum* | Fountain grass | Class B and C | Alert Species within the Barkly Region |
| *Cryptostegia grandiflora* | Rubber vine | Class A and C, WONS | Alert Species within the Barkly and Katherine RWMP |
| Chromolaena odorata | Siam Weed | Class C | Alert Species Katherine RWMP |

| Scientific Name | Common Name | Status | Data Source |
|---|---|---|---|
| **Other species potentially found in region** | | | |
| *Alternanthera pungens* | Khaki Weed | Class B and C | DLRM databases (DLRM *et al* 2018) |
| *Azadirachta indica* | Neem | Class B and C | Weed Management Branch – Mapping data |
| *Cenchrus ciliaris* | Buffel Grass | Not declared in NT | DOTEE Protected Matters Report |
| *Cenchrus echinatus* | Mossman River Grass | Class B and C | DLRM databases (DLRM *et al* 2018) |
| *Datura ferox* | Fierce Thornapple | Class A and C | DLRM databases (DLRM *et al* 2018) |
| *Sida acuta* | Spinyhead sida | Class B and C | Weed Management Branch – Mapping data |
| *Sida cordifolia* | Flannel Weed | Class B and C | Weed Management Branch – Mapping data<br>DLRM databases (DLRM *et al* 2018) |
| *Sida rhombifolia* | Paddy's Lucerne | Class B and C | DLRM databases (DLRM *et al* 2018) |
| *Xanthium occidentale* | Noogoora Burr | Class B and C | Weed Management Branch – Mapping data<br>DLRM databases (DLRM *et al* 2018) |

## 15.2 Weed Introduction and Spread Risks

As part of the development of the EMP for this project, MPK has undertaken a preliminary assessment of the risk of introducing or spreading weeds in the project area that MPC Kinetic have utilised as a primary reference. This assessment and the corresponding proposed mitigation measures and management objectives are presented in table below. Due to the low abundance of weeds within the proposed project area, management controls will primarily focus on preventing the introduction of weed species through appropriate equipment sourcing cleaning and inspection.

MPC Kinetic will ensure weed management is managed accordingly in conjunction with NT-2050-15-MP016 Beetaloo – Weed Management Plan

| **Environmental Values** | Maintain the integrity of significant ecosystems and agricultural productivity | | |
|---|---|---|---|
| **Management Objectives** | Avoid the introduction of weeds<br>Avoid the spread of existing weeds | | |
| **Measures Criteria** | No introduction or spread of declared weeds resulting from MPC/OE's activities. | | |
| **Activity** | **Potential Risks** | | **Management Controls** |
| | **Introduction of new weeds** | **Spread of existing weeds** | |
| Vehicle and equipment movements | Vehicles and equipment sourced from other locations infested with weed species not found in or around Project Area | Traversing of weed infested areas with machinery | - Code of Practice for Petroleum Activities in the Northern Territory Part A- Surface Activities.<br>- Activities will adhere to the guidelines within the NT Weed Management Handbook.<br>- Weed management and control measures to be implemented in alignment with existing landholder biosecurity requirements.<br>- All equipment will have certified equipment wash-down completed prior to entry to the field. Wash-down would occur at Contractors deport or a commercial wash facility prior to mobilisation in a manner that prevents pollution of the surrounding environment.<br>- Machinery to be preferentially sourced locally, with machinery sourced from surrounding areas or Queensland being the 2nd and 3rd preferred option respectively.<br>- Weeds will be actively controlled in cleared/ hardstand areas.<br>- Major equipment moves will be planned from weed-free areas to infested areas and not the other way around.<br>- Ensuring all material imported to or between sites is free of weeds. |

| | | | |
|---|---|---|---|
| Construction of access tracks and monitoring bore pads | Importing materials from areas where weeds are present and creating opportunities for weed species to colonise disturbed areas | Traversing of weed infested areas and creating opportunities for weed species to colonise disturbed areas | - Code of Practice for Petroleum Activities in the Northern Territory Part A- Surface Activities.<br>- Activities will adhere to the guidelines within the NT Weed Management Handbook.<br>- Weed management and control measures to be implemented in alignment with existing landholder biosecurity requirements.<br>- All equipment will have certified equipment wash-down completed prior to entry to the field.<br>- Ensure field staff, contractors and machinery operators are familiar with hygiene protocols and weed identification.<br>Machinery to be preferentially sourced locally, with machinery sourced from surrounding areas or Queensland being the 2nd and 3rd preferred option respectively.<br>- Weeds will be actively controlled in cleared/ hardstand areas.<br>- Stabilise disturbed areas. |

| **Environmental Values** | Maintain the integrity of significant ecosystems and agricultural productivity | | |
|---|---|---|---|
| **Management Objectives** | Avoid the introduction of weeds<br>Avoid the spread of existing weeds | | |
| **Measures Criteria** | No introduction or spread of declared weeds resulting from MPC/OE activities. | | |
| **Activity** | **Potential Risks** | | **Management Controls** |
| | **Introduction of new weeds** | **Spread of existing weeds** | |
| Drilling, stimulation and well testing | Introduction of weed species not found in or around EP area. | Traversing of weed infested areas with machinery | - Code of Practice for Petroleum Activities in the Northern Territory Part A- Surface Activities.<br>- Activities will adhere to the guidelines within the NT Weed Management Handbook.<br>- Weed management and control measures to be implemented in alignment with existing landholder biosecurity requirements.<br>- All equipment will have certified equipment wash-down completed prior to entry to the field. Wash-down would occur at Contractors deport or a commercial wash facility prior to mobilisation in a manner that prevents pollution of the surrounding environment.<br>- Ensure field staff, contractors and machinery operators are familiar with hygiene protocols and weed identification.<br>- Weeds will be actively controlled in cleared/ hardstand areas.<br>- Major equipment moves will be planned from weed-free areas to infested areas and not the other way around.<br>- Drilling and stimulation equipment will be restricted to cleared lease areas.<br>- Ensuring all material imported to or between sites is free of weeds. |

| | | | |
|---|---|---|---|
| Operational/ site management | Personnel unable to identify weeds or unaware of weed species present in areas where machinery and equipment is sourced from | Existing weed distribution not known due to: insufficient survey effort, surveys conducted at wrong time of year, surveyors not familiar with / unable to identify declared weed species | - Code of Practice for Petroleum Activities in the Northern Territory Part A- Surface Activities.<br>- Staff members responsible for preventing, identifying and managing weeds to be appropriately trained.<br>- Weed desktop and field-based surveys to be provided to identify existing weed areas.<br>- Pre-and post wet (February to May) inspections and periodic audits will be conducted to identify and report weed outbreaks. |

| **Environmental Values** | Maintain the integrity of significant ecosystems and agricultural productivity | | |
|---|---|---|---|
| **Management Objectives** | Avoid the introduction of weeds<br>Avoid the spread of existing weeds | | |
| **Measures Criteria** | No introduction or spread of declared weeds resulting from MPC/ OE activities. | | |
| **Activity** | **Potential Risks** | | **Management Controls** |
| | **Introduction of new weeds** | **Spread of existing weeds** | |
| Operational/ site management | Insufficient management control to prevent the introduction of weeds | Insufficient management control to prevent the spread of weeds | - Staff members responsible for preventing, identifying and managing weeds to be appropriately trained.<br>- Ensure field staff, contractors and machinery operators are familiar with hygiene protocols and weed identification (Weed identification posters and the NTG Weed Deck will be made available)<br>- Weeds will be actively controlled in cleared/ hardstand areas.<br>- Weed management and control measures to be implemented in alignment with existing landholder biosecurity requirements.<br>- New activities will be planned to address prevention of weed or non-indigenous plant spread. |

## 15.3 Statutory Weed Management Plans

As a contractor (MPCK) to the client (Origin Energy), MPC Kinetic will ensure adherence and compliance to NT-2050-15-MP016 Beetaloo – Weed Management Plan.

No statutory weeds have been identified during surveys of the Project Area, however the following plans apply to species that have been found/ could be potential found in the broader region.:

- Weed Management Plan for Athel pine (*Tamarix aphylla*)
- Weed Management Plan for Mesquite (*Prosopis* spp.)
- Weed Management Plan for Prickly Acacia (*Acacia nilotica*)
- Weed Management Plan for Bellyache Bush (*Jatropha gossypiifolia*)
- Weed Management Plan for Neem (*Azadirachta indica*)
- Weed Management Plan for Gamba Grass (*Andropogon gayanus*)
- Weed Management Plan for Grader Grass (*Themeda quadrivalvis*).

The weed management plans detail the legislated obligations of all land owners, land managers and land users in the Northern Territory to eradicate or manage and avoid further spread of the weed species. Conducting land management practices in accordance with the weed management plans will secure compliance with the requirements of the Act (Department of Land Resource Management 2015).

## 15.4 Annual Action Plan

An action plan for each of the weed species identified in the Project Area has been provided and implemented by the Operating Client for the scope of nominated work and is presented in Table below.

This section will be updated if new weed species are discovered over the life of the program to ensure that statutory requirements with relation to declaration status and relevant weed management plans are addressed accordingly.

**Annual Weed Management Action Plan**

| **Management objective** | - Avoid the introduction of weeds<br>- Avoid the spread of existing weeds | | | |
|---|---|---|---|---|
| **Weed species** | **Survey time/s** | **Treatment time/s** | **Control options** | **Where located** |
| Hyptis<br>*Hyptis suaveolens* | 6 monthly- pre-and post wet season | - Preferred Dec – Mar<br>- Also Nov and April | Refer to section 7.1. of OE WMP | Beetaloo access track<br>Access track to Velkerri 98-E1-1 site |
| Parkinsonia<br>*Parkinsonia aculeata* | 6 monthly- pre-and post wet season | - Preferred Mar – May<br>- Also all year round | Refer to section 7.2. of OE WMP | Beetaloo access track |
| Rubber Bush<br>*Calotropis procera* | 6 monthly- pre-and post wet season | - Preferred October – March<br>- April - July | Refer to section 7.3. of OE WMP | Close proximity to the Beetaloo access track |

**Hyptis (*Hyptis suaveolens*) treatment options**

- Table 5 includes herbicide and non-chemical treatment options for Hyptis *(Hyptis suaveolens) (*Northern Territory Government 2015).

**Table 5 Hyptis *(Hyptis suaveolens)* treatment options**

| **Weed Species** | Hyptis *(Hyptis suaveolens)* | | |
|---|---|---|---|
| **Control Methods** | **Chemical and concentration** | **Rates** | **Weed growth stage, method and comments** |
| Herbicides | **2, 4-D amine 625 g/L**<br>Various trade names | 320 mL / 100 L | **Seedling or adult (individuals or infestation):**<br>Foliar spray - apply when actively growing. |
| | **Glyphosate 360 g/L**<br>Various trade names and formulations | 15 mL / 1 L | **Seedling or adult (individuals or infestation):**<br>Foliar spray - apply when actively growing. |
| Non-chemical applications | - Manually remove all plant material; slash to encourage competition from desirable species. | | |

- Source: Northern Territory Weed Management Handbook (Northern Territory Government 2015).

## Parkinsonia (*Parkinsonia aculeata*) treatment options

- Table 6 includes herbicide and non-chemical treatment options for Parkinsonia *(Parkinsonia aculeata) (*Northern Territory Government 2015).

**Table 6 Parkinsonia *(Parkinsonia aculeata)* treatment options**

| **Weed Species** | Parkinsonia *(Parkinsonia aculeata)* | | |
|---|---|---|---|
| **Control Methods** | **Chemical and concentration** | **Rate** | **Weed growth stage, method and comments** |
| Herbicides | **Aminopyralid 8 g/L + Triclopyr 300 g/L + Picloram 100 g/L**<br>Grazon™ Extra | 350 mL / 100 L<br>or<br>3 L / ha | **Seedling (individuals and infestation)**<br>Foliar spray – avoid spraying if plants are stressed or bearing pods – Uptake Spraying Oil required<br>Foliar spray – plants up to 2 m or 2 years old - Uptake Spraying Oil required. |
| | **Triclopyr 240 g/L + Picloram 120 g/L**<br>Access™ | 1 L / 60 L (diesel)<br>1 L / 60 L (diesel) | **Seedling or adult (individuals or infestation)**<br>Basal bark < 5 cm stem diameter<br>Cut stump > 5 cm stem diameter |
| | **Tebuthiuron 200 g/kg** | 1.5 g / m2 | **Seedling or adult (individuals or infestation)**<br>Granulated herbicide - ground applied<br>Do not use within 30 m of desirable trees or apply to continuous area > 0.5 ha.<br>Do not use if fire is eminent.<br>Apply when there is soil moisture or prior to rain. |
| Non-chemical applications | - Blade-ploughing, stick-raking, bulldozing and chaining can be effective if the root layer is removed from the soil.<br>- Cultivation of pasture or native vegetation after mechanical control will help to prevent re-sprouting and seedling establishment.<br>- Fire destroys seed in the soil surface and can be used as a follow-up to remove seedlings after other control efforts.<br>- Fire may also be used to manage mature trees. Hand grubbing for single plants or small outbreaks, ensure removal of the root system.<br>- Biocontrol options are available with Uu establishing slowly in some areas. | | |

- Source: Northern Territory Weed Management Handbook (Northern Territory Government 2015).

## Rubber bush (*Calotropis procera*) treatment options

- Table 7 includes herbicide and non-chemical treatment options for Rubber bush *(Calotropis procera) (*Northern Territory Government 2015).

**Table 7 Rubber bush *(Calotropis procera)* treatment options**

| **Weed Species** | Rubber bush *(Calotropis procera)* | | |
|---|---|---|---|
| **Control Methods** | **Chemical and concentration** | **Rate** | **Weed growth stage, method and comments** |
| Herbicides | **Triclopyr 300 g/L + Picloram 100 g/L**<br>**Conqueror®**<br><br>**+ Aminopyralid 8 g/L**<br>Grazon™ Extra | 750 mL / 100 L (water)<br><br>500-750mL / 100 L (water) | **Seedling (individuals or infestation):**<br>Foliar spray. Check label for recommended adjuvant product. More effective on plants <2m as thorough coverage on all leaves is required |
| | **Triclopyr 240 g/L + Picloram 120 g/L**<br>Access™ | <br>1 L / 60 L (diesel)<br>1 L / 10 L (diesel)<br>1 L / 60 L (diesel) | **Adult (individuals and infestation):**<br>Basal bark < 5cm stem diameter. Spray all stems. Spray to point of runoff.<br>Thin Line up to 5cm stem diameter.<br>Cut stump > 5cm stem diameter. |
| | **Tebuthiuron (200g/kg)**<br>Graslan<br>Pending registration. Please check with Weed Management Branch for status confirmation. | 1.5-2g/m2 | **Seedling or adult:**<br>Application to black clay soils in conjunction with seasonal rainfall. Spread granules according to density of the infestation. |
| | **Fluroxypyr (333g/L)**<br>Starane™ Advanced | 3 L / 100 L (diesel) | **Adult:**<br>Cut stump method for plants up to 10cm diameter and 3m high. |
| Non-chemical applications | - This plant is difficult to eradicate as the deep roots survive almost any treatment.<br>- Maintenance of a dense pasture sward will assist in preventing invasion. | | |

- Source: Northern Territory Weed Management Handbook (Northern Territory Government 2015).

## 15.5 Dedicated Weed Officer

As per NT legislative requirements, there must be a dedicated Weed Officer for each gas field. MPC Kinetic will liaise and report to the Dedicated Weed Officer as nominated by the operating client.

The Weed Officer must have relevant skills and experience and availability to successfully manage weed related issues for the project, including:

- Knowledge of the biology/ecology of local weeds.
- Knowledge of relevant weed management frameworks including Northern Territory legislation and plans, the EPBC Act.
- Understanding of existing weed management arrangements being undertaken by landholders.
- The Weed Officer is responsible and accountable for delivery of all weed related requirements of the project in accordance with the WMP and the overarching Environmental Management Plan, including:
- Planning and execution of weed monitoring requirements, including baseline weed assessments and ongoing monitoring both during periods of gas related activities as well as during the target identification period of February to May.
- Facilitate training all workers (including contractors) in weed management requirements, with support from the Northern Territory Government Regional Weed Officer - Onshore Shale Gas Development.
- Oversight of implementation of weed control mechanisms including but not limited to wash-downs and proactive weed control programs.
- Ensuring all reporting requirements are met.
- Act as the designated point of contact for and rapidly responding to any weed related complaints and incidents in accordance with the pre-determined strategies in this WMP and additional strategies as required developed in consultation with the Regional Weed Officer - Onshore Shale Gas Development and affected landholders.
- Review and update of WMP's to remain effective in communication with relevant landholders and Regional Weed Officer - Onshore Shale Gas Development in consideration of monitoring results and emerging weed issues for both gas and pastoral operations.

The operating client will appoint a dedicated Weed Officer of the Beetaloo Exploration Activities.

## 16. Cultural Heritage

The following actions shall be undertaken in relation to cultural heritage management on MPC sites or client leases:

- Know the location of any cultural heritage sites in the immediate vicinity of your work site. Take note of any signed cultural heritage areas and do not disturb barriers, signs or areas within established the boundaries.
- Report all finds of cultural significance to the environmental representative immediately. When any new culturally significant sites are identified, work shall stop until a full assessment of the site can be made.
- Cultural heritage issues shall be discussed as part of the MPC Induction process.
- Maps regarding sacred sites and restricted work areas are also applicable and will be provided by the operating client to work crews to ensure awareness of these features if required

# 17. Spill / Release Management and Reporting

This Environmental Management Procedure (EMP) is designed to outline the measures as to how the risks of spills associated with MPC Kinetics's Beetaloo Basin nominated work activities will be managed.

Each facility shall have an *Emergency Response Plan (ERP)* in order to deal immediately and effectively with emergencies that may arise and to minimise injuries, equipment damage, and / or environmental damage as a result of spills / releases.

MPC Kinetic will adhere to the following guidelines throughout the nominated scope of work;

- MPC Kinetic shall comply with the spill management requirements outlined within the Code of Practice for Onshore Petroleum Activities within the NT and Origin's Spill Management Plan (SPMP) NT-2050-15-030 by either ) implementing a NT specific spill management procedure or b) demonstrate how existing spill management procedures align with the legislative requirements.
- As per the code of practice, all chemical storage and high-risk handling areas (such as pipe connection, pumps etc.) shall have secondary containment designed to prevent spills to grade. All secondary containment must consist of an impermeable liner compatible with the chemicals stored.
- Covers shall be used (where practicable) where chemicals are to be stored in the wet season to prevent bunding overflows.
- All chemicals shall be appropriately segregated to prevent dangerous chemical reactions (such as fire, explosions or hazardous fumes. Chemicals shall be segregated with reference to the below segregation toolkit.
- The contractor shall have appropriately sized and type of spill kit bins for routine spill response and earth moving equipment to respond to larger spills (such as a front end loader, bob cat , back hoe etc.) available.
- Key personnel must be trained in the use of the spill kits and how to respond to spills
- The following monitoring and inspection requirements shall be implemented

| Monitoring Program | Frequency | Methodology |
|---|---|---|
| Sump level monitoring (when wastewater is stored onsite) | During operations: Daily | Level visual assessment |
| Chemical storage areas (when chemical stored onsite) | Daily during operations | Visual |
| Tank structural integrity (when wastewater is stored onsite) | Weekly | Visual inspection |

- Inspection reports and maintenance records of secondary containment shall be kept and available for review upon request.

- All plant, equipment and vehicles are to have up to date maintenance schedule and undergo regular inspections. Records are to be kept of all checks and maintenance.
- All scheduled maintenance activities must be undertaken at designated workshop areas. Temporary bonding, drip trays or impermeable matting must be used to prevent spillage from any in field refuelling or maintenance of plant and equipment, or any other activity that could result in spillage of a chemical, fuel, lubricant or other contaminant to soil.
- All spills must be rated and reported in alignment with this EMP.

## 17.1 Spill Failure Scenarios

Potential spill scenarios associated with exploration activities are summarised in Table 3. These scenarios include:

- Spills from chemical and wastewater handling and storage activities onsite
- Spills from chemical and wastewater during transportation (offsite)
- Tank, drilling sump and containment vessel overflows and structural failures

The location of activities is remote Figure 1 illustrates the separation distance from sensitive receptors such as:

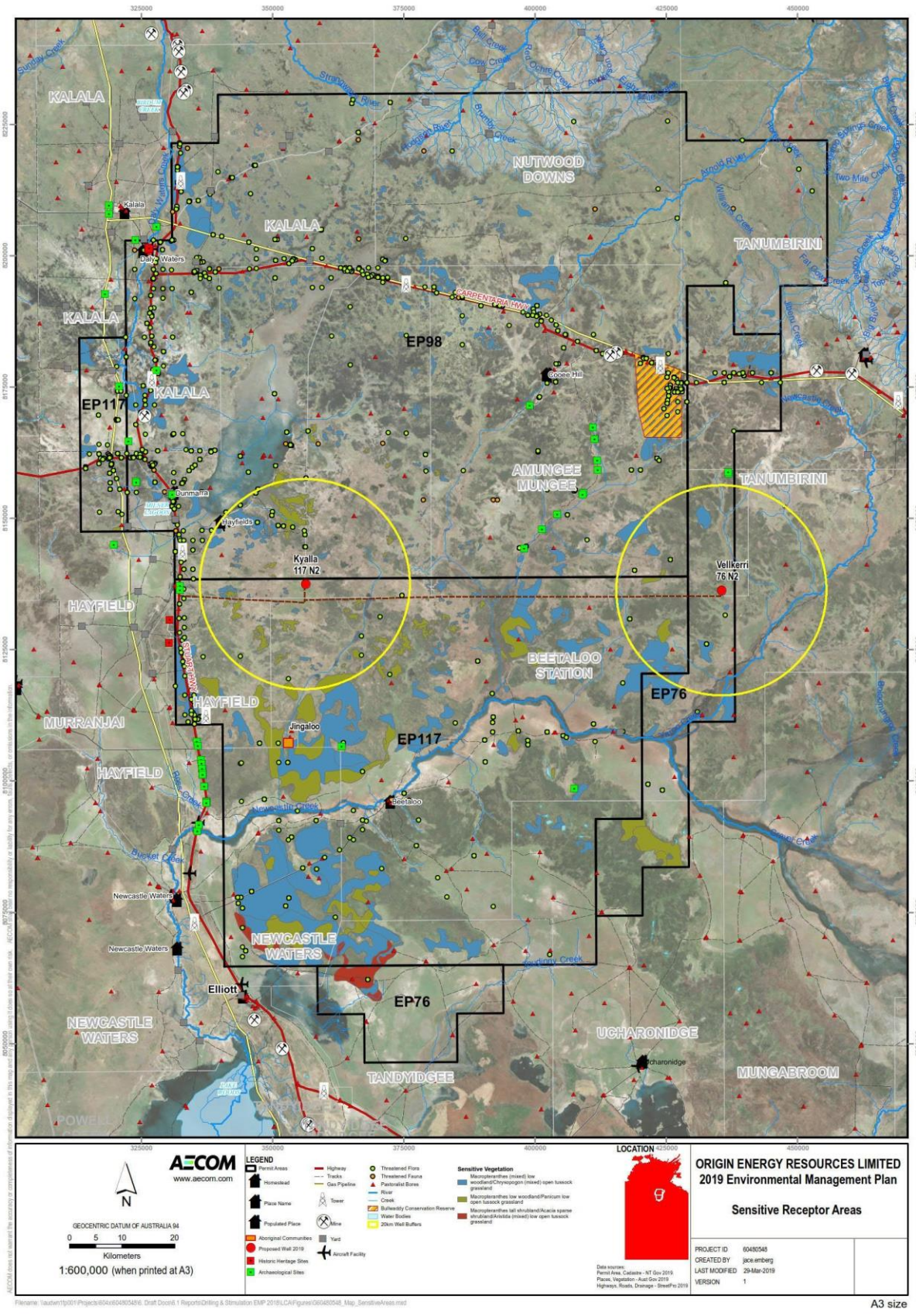
- Watercourses
- Communities
- Homesteads
- Heritage places
- Vegetation communities; and
- Protected areas

## 17.2 Control Measures

As identified within the project scope and the client's Spill Management Plan the following control measures should be adhered to

- Contractors are required to develop spill management plans to comply with the requirements of this plan.
- A Wastewater Management Plan (WWMP) has been developed and implemented governing how wastewater will be managed onsite by the operating client OE.
- All flowback, completion fluids, chemicals, oil and fuel storage will be equipped with secondary containment, as per the codes of practice
- Drilling and flare sumps will be lined, with enough freeboard to manage a 1:1000ARI
- Tanks will be designed, installed and operated as per the WWMP.
- Where flowback is being stored on a lease pad, the lease pad shall be earthen bunded to prevent release to surrounding areas in the case of a catastrophic failure.
- Well sites shall be designed and constructed to prevent spills of hazardous chemicals
- Monitoring will be undertaken in accordance with
- Procedures will be developed by contractors designed to detect, remediate and report any spills. This includes:

- Chemical handling procedures
- Chemical storage and handling Inspection procedures
- Spill prevention, detection and response procedures
- the transport of hydraulic fracturing chemicals and wastewater during the wet season will be avoided, unless it is safe to do.
- Effective spill clean-up material readily available at each work site and on all mobile service trucks or vehicles, where hydrocarbons and chemicals are stored and / or used
- Inspection reports and maintenance records of secondary containment shall be kept and available for review upon request.




**Location of activities and potential receptors**

***Spill Scenario Summary Table***

| Spill Scenario | Activity duration | Mechanisms | Location | Quality | Quantity | Key management controls | Monitoring | Receptors |
|---|---|---|---|---|---|---|---|---|
| Spills from chemical and wastewater handling and storage activities onsite | •Drilling – 45 days<br>•Stimulation- 30 days<br>•Well testing- 12 months | •Container rupture<br>•Spill during chemical handling and mixing | •Chemicals storage area<br>• Drilling rig<br>•Stimulation spread<br>•Drilling sumps<br>•Flowback storage tanks<br>•well testing equipment | •Saline drilling fluids Saline flowback<br>•Chemicals listed in appendix A | <1000L<br><1000L<br><100L | •Designated storage areas with appropriate segregation of incompatible chemicals<br>•Secondary containment to be deployed under high risk spill/ leak storage and handling areas<br>•Spill kits available<br>•Routine inspection of chemical stores<br>•Sites are manned during operations<br>•wastewater management plan | Routine inspection of chemical stores, sumps and tanks during operations<br>Tank leak detection | Retained onsite. |
| Loss of containment during transfer onsite (leakage from pipes, hoses, fittings etc) | •Drilling 45 days<br>•Stimulation 30 days<br>•Well testing 12 months | Coupling, valve, hosing and equipment failure, | Chemical mixing and transfer areas on the drill rig, mixing hoppers and wastewater storages. | •Saline drilling fluids and wastewater.<br>•Chemicals listed in Appendix A. | <5000L | •Secondary containment to be deployed under high risk spill/ leak storage and handling areas<br>•Spill kits available<br>•Routine inspection of chemical stores<br>•Sites are manned during operations<br>•Wastewater management plan | Routine inspection of all chemical handling areas, including wastewater transfer points and chemical mixing areas. | Retained onsite. |

| Spill Scenario | Activity duration | Mechanisms | Location | Quality | Quantity | Key management controls | Monitoring | Receptors |
|---|---|---|---|---|---|---|---|---|
| Spills from chemical and wastewater during transportation (offsite) | •Drilling chemical transfer- 1-5 days of bulk chemical transfer generally pre-drilling.<br>•Stimulation chemical transfer 2-3 truckloads of chemicals per week for ~6 weeks<br>•Wastewater disposal over 3 weeks- up to 100 truck movements total over the duration. | •Transport spill<br><br>•Traffic accident (total or partial release) | Offsite along highway | •Various chemicals as listed in Appendix A<br><br>•Saline wastewater. | <1000L for transport spill<br><br><50,000L for total loss of B-triple carrying flowback. | •All transport companies to be appropriately licensed to transport chemicals and waste (Dangerous goods and Waste Management and Pollution control Act) including the requirement to detect and respond to spills.<br>•Wastewater management plan | Performance of contractors to be monitored as a part of transportation contractors. | •Chemical transport between Darwin/ south Australia and Queensland/ and Daly Waters.<br>•Wastewater transportation between Daly Waters and Queensland Via Tennant Creek. |
| Tank, drilling sump and containment vessel overflows and structural failures | •Duration of all activities plus ongoing wastewater storage which may be extended beyond 12 months to allow for ongoing evaporation of fluids. | Overfilling of a sump and Flowback tank<br><br>Structural failure of embankment or tank wall | Sumps and Tanks on lease | Saline wastewater with TDS >50,000mg/l | >10,000L | •Lease pads bunded during the storage of flowback<br>•Enclosed tanks used during wet seasons operations<br>Open tanks with 1:1000ARI freeboard<br>•Tanks constructed to Australian Standards<br>Routine tank and sump inspections | Routine tank and sump level and structural integrity (visual) inspections. | Retained on lease pad within bund. |

## 17.3 Spill Response Management

When a spill occurs, the on-site Supervisor will carry out a rapid assessment to determine the potential hazards and the type and location of emergency assistance required.

This assessment shall include the following:

- Determine the physical (volume and state) and location of the spill
- Determine the appropriate spill category and type of response as per section 8.2.
- Assess the hazard of the material spilled, including any potential hazards associated with chemical mixing (such as oxidizing and reducing agents);
- Determine the safety hazard to immediate response personnel and whether additional resources (such as emergency services or specialized equipment or advice) are required to manage the spill safely;
- Determine spill movement, factors affecting the movement (i.e. impending weather, topography, drainage lines etc.) and spill response priorities as per (people, communities, environmental and cultural heritage).

| Spill PRIORITY | RESPONSE CONSIDERATIONS |
|---|---|
| People and communities | • Evacuate and muster (if deemed necessary).<br>• Account for all people and determine missing persons.<br>• Stop unauthorised access.<br>• Provide a technical resource to the Emergency Services (if required).<br>• Protect community and pastoralists |
| Environment and sacred sites | • For emergencies that are safe to manage, onsite personnel will respond with available resources to limit the extent of the impact to the environment or a protected site.<br>• For larger incidents, or where it is unsafe for onsite personnel to respond, trained people will be mobilised to control and contain the emergency to minimise the impact to the environment or protected site. |
| Regulators | • Notify Regulators as per incident reporting requirements |
| Assets | • Monitor automatic shutdown of the equipment or part thereof, or initiate manual shutdowns where it is safe to do so.<br>• Mobilise Emergency Services to intervene. |
| Reputation | • Notify neighbours (if required). |

## 17.4 Spill Classification

The below provides a summary of the spill classification based upon the volume and location of spill. The hazards of the potential spill to people and the environment should be assessed independently, to ensure incident specific hazards are considered in the spill response.

The spill tiers include:

- **Level 1:** Spills that can be contained within the well site and can be cleaned up without involvement of external organizations. Most Tier 1 spills are likely to be less than 200L and would include diesel spills during fuel transfer, oil spillage during routine maintenance or small wastewater spills during well testing. Clean up time is generally less than 1 day.
- **Level 2:** Spills that have not been completely contained within the site boundary and/or may require additional resources to clean-up. Clean up time is generally less than a week.
- **Level 3 :** Severe spills that cannot be contained by the operator and requires substantial additional resources to manage the spill. Clean up time is generally greater than a week.

**Spill Tier Levels**

| | | Spill (L) | | |
|---|---|---|---|---|
| | | 20-200L | 200-1,000 L | >1,000 L |
| Receiving environment | Bund or contained impervious area | **Not reportable/ notifiable*** | **Not reportable/ notifiable*** | **Level 1** |
| | Compacted or sealed surface *(hardstand, road or work area)*** | **Not reportable/ notifiable*** | **Level 1** | **Level 2** |
| | Permeable surfaces or retention pond/sump (land based) | **Level 1** | **Level 2** | **Level 3** |
| | Waterway and drainage lines | **Level 2** | **Level 2** | **Level 3** |
| | Sensitive ecosystem*** (permanent *creeks and wetland)* | **Level 2** | **Level 3** | **Level 3** |

**Notes:**

** Non-reportable/notifiable spills do not need to be reported as an incident, however, must be recorded in MPCK's INX incident management database. All spill response measures, and management controls outlined in this EMP still apply.*

*** spills of Dangerous goods or wastes offsite may need to be reported under NT Dangerous Goods Act.*

**** Includes high conservation areas, watercourses, wetlands, and sacred sites*

## 17.5 Spill Containment Clean Up Procedures

Generic spill containment clean-up procedures must be developed and implemented for all nominated work scopes undertaken by MPC Kinetic. These procedures shall be adapted (where appropriate) to consider the site and chemical specific hazards associated with each spill event.

The procedures shall consider the following generic spill containment and response procedure:

- Move all people out of harm's way.
- Alert others near-by
- Assess the situation – determine what substances are involved, the potential receptors (people and the environment) and if additional support is required.
- The substance must be known prior to taking any action (refer to MSDS).
- If applicable; remove any possible risk escalating factors (e.g. ignition hazards in case of flammable/combustible spills); approach from up-wind to reduce fume risks, isolate the spill source (close containment valve, similar). Ensure appropriate controls requirements are met –e.g. PPE, first aid support, etc. - prior to conducting spill clean-up.
- If it is safe to do so; stop the source of the leak (if possible) and contain the spill using onsite equipment to prevent from leaving site or entering a waterway or sensitive feature
- A spill clean-up kit is available for small combustible liquids spills.
- Recover free liquid and contaminated material as soon as practicable to mitigate infiltration. Material recovery should consider the benefit of recovery versus the additional impact that recovery of all contaminated material could cause as per the National Environment Protection (Assessment of Site Contamination) Measure
- Store contaminated material in a manner to minimize the risk of additional contamination.
- Prevent people, livestock and wildlife access to hazardous material through fencing or other barriers.
- For level 2 spills and higher, the Project Manager shall be notified as soon as it is safe to do so, but within 24 hours.
- Supervisor to ensure Project Manager has been notified to ensure appropriate external (DPIR/DENR) incident reporting requirements are actioned in accordance with the impact of the spill.
- Upon rectification of a reportable/notifiable spill, an incident investigation shall be completed as per the Petroleum (Environment) Regulations. This shall include the root cause of the incident, actions taken to mitigate the impact and ongoing monitoring and maintenance required to ensure the site is stable and non- polluting.

## 17.6 Contaminated Material Disposal

In the event of any spill occurrence MPC Kinetic shall ensure the following

- During a spill clean-up, the storage of contaminated material must be undertaken in a manner that minimizes additional contamination
- Offsite disposal must be undertaken in accordance with the NT Waste Management and Pollution control Act.
- All listed waste transportation shall be undertaken by licensed contractors, be tracked and disposed of at approved waste management facilities.

## 17.7 Reporting Requirements

MPC requirements are that all Environmental Incidents that impact or have an imminent likelihood of impacting the air, land or water are **Reportable**.

Employees shall report all spills / releases to their immediate supervisors.

## 18. Record Keeping

- The HSET Department shall maintain a central environmental filing system that contains records of third-party environmental audits, environmental infractions, and notices of violations or orders from regulators. The files shall also contain all correspondence relating to remedial actions and / or the correction of environmental deficiencies identified through the above noted audits or by regulators.
- The following records shall be kept:
    - Copies of contracts, licenses, and certifications for waste disposal carriers, firms and recyclers being utilised.
    - Copies of environmental permits and licenses for the site.
    - Copies of shipping and / or transport manifests for all wastes that are sent for disposal.
    - Copies of bills of lading for all waste streams (hazardous and non-hazardous) leaving the site.
    - Environmental inspection and audit reports including external audits / inspections.
    - Spill / release reports.
    - Waste minimisation plans including records of performance against targets.
    - Copies of storage tank registrations as required by regulators (above and below ground).
    - Copies of relevant local / regional environmental regulations.
    - Copies of all correspondence with environmental regulators including statutory notices, corrective actions, etc.

# Appendix A – Schedule 2 – Activities that require approval or license – Northern Territory

***Part 1 – Activities that require environment protection approval***

1. Constructing, installing or carrying out works in relation to premises for disposing of waste by burial, other than:

(a) domestic waste generated by a domestic residence and disposed of on the land on which the premises are situated;

(b) domestic waste from temporary construction camps;

(c) waste generated by pastoral activities that is disposed of on the land on which the pastoral activities are carried out;

(d) waste rock, rubble and other inert materials used for the purpose of reclaiming land; and

(e) waste of a prescribed class.

2. Constructing, installing or carrying out works in relation to premises, other than sewage treatment plants, for the storage, re-cycling, treatment or disposal of listed wastes on a commercial or fee for service basis.

3. Constructing, installing or carrying out works in relation to premises for processing hydrocarbons so as to produce, store and/or despatch liquefied natural gas or methanol, where:

(a) the premises are designed to produce more than 500,000 tonnes annually of liquefied natural gas and/or methanol; and

(b) no lease, licence or permit under the Petroleum Act 1984 or the Petroleum (Submerged lands) Act 1981 relates to the land on which the premises are or will be situated.

***Part 2 – Activities that require licence***

1. Operating premises for the disposal of waste by burial that service, or are designed to service, the waste disposal requirements of more than 1 000 persons.

2. Collecting, transporting, storing, re-cycling, treating or disposing of a listed waste on a commercial or fee for service basis, other than in or for the purpose of a sewage treatment plant.

3. Operating premises, other than a sewage treatment plant, associated with collecting, transporting, storing, re-cycling, treating or disposing of a listed waste on a commercial or fee for service basis.

5. Operating premises for processing hydrocarbons so as to produce, store and/or despatch liquefied natural gas or methanol, where:

(a) the premises are designed to produce more than 500,000 tonnes annually of liquefied natural gas and/or methanol; and

(b) no lease, licence or permit under the Petroleum Act 1984 or the Petroleum (Submerged lands) Act 1981 relates to the land on which the premises are situated.