



**toro energy**  
AUSTRALIA'S URANIUM

## FAUNA MANAGEMENT PLAN

APRIL 2016



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## 1 INTRODUCTION

Toro Energy Limited (Toro) is proposing to develop the Wiluna Uranium Project (the Project) located approximately 960 km north-east of Perth in the Shire of Wiluna, Western Australia.

This Fauna Management Plan (FMP) has been prepared to monitor and manage impacts from implementation of the Project on fauna (including short-range endemic (SRE) fauna) and fauna habitats.

### 1.1 Environmental Factor

The FMP addresses the following environmental factor determined by the EPA to be relevant to an assessment of the Project:

*To maintain representation, diversity, viability and ecological function at the species, population and community level.*

### 1.2 Purpose and Objective

The Wiluna Uranium Project would involve the progressive clearing of just over 3100 ha of vegetation, including clearing for mine pits, access routes, processing infrastructure, haul roads and all other infrastructure required to facilitate mining. Clearing within government conditions of approval would occur on an as-needed basis, with areas remaining undisturbed for as long as possible. The Project intends to practice progressive rehabilitation, ensuring that once disturbed areas are no longer required, they are returned to an agreed condition. Toro has a goal to return disturbed areas to as close to pre-mining conditions as practicable.

The main potential impacts on fauna would be removal or fragmentation of habitat through land disturbance and vegetation clearance.

The purpose of this FMP is to meet legislative and regulatory requirements and provide a framework for Toro to comply with all environmental obligations over the life of the Project.

### 1.3 Relevant Legislation and Standards

All native fauna in Western Australia are protected under the *Wildlife Conservation Act 1950*. This includes particularly fauna species that are rare, threatened with extinction, or have high conservation value. The Wildlife Conservation (Special Protected Fauna) Notice classifies rare and endangered fauna using four conservation codes or schedules:

- Schedule 1: Fauna which are rare or likely to become extinct and are declared to be fauna in need of special protection;
- Schedule 2: Fauna which are presumed to be extinct and are declared to be fauna in need of special protection;
- Schedule 3: Birds which are subject to international agreements and conventions relating to the protection of migratory birds and birds in danger of extinction, which are declared to be fauna in need of special protection; and
- Schedule 4: Fauna that are in need of special protection, for reasons other than those reasons mentioned in Schedules 1, 2 or 3.

In addition to the above schedules, the Department of Parks and Wildlife (DPaW) maintains a supplementary list of Priority Fauna. Priority Fauna are species that have been identified as requiring further survey and evaluation of their conservation status before deciding whether to list them as Scheduled Fauna.

The EPA Position Statement No. 3 outlines the use of terrestrial biological surveys as an element of biodiversity protection in Western Australia (EPA, 2002). Proponents are expected to undertake field surveys that meet the standards, requirements and protocols as determined and published by the EPA. Based on the guidance provided in Position Statement No. 3, Toro has undertaken Level 2 biological surveys for assessment of the impacts of the Proposal. This has included desktop studies, a reconnaissance survey and comprehensive fauna surveys to assess conservation values in a local and regional context. Further detail on the requirements for fauna surveys is provided in EPA Guidance Statement No. 56 (EPA, 2004b) and Technical Guide on Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA and DEC, 2010).

The EPA also provides guidance on the rehabilitation of terrestrial ecosystems (EPA, 2006).

Fauna species of national conservation significance are listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Migratory wader species are also protected under the EPBC Act. The national list of migratory species consists of those species listed under the following international conventions:

- Japan-Australia Migratory Bird Agreement (JAMBA);
- China-Australia Migratory Bird Agreement (CAMBA); and
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Under the EPBC Act, a proposal which is likely to have a significant impact on threatened species, populations or ecological communities, or migratory species must be referred to the federal DoE for a decision by the Minister for Environment as to whether the action is a 'controlled action'. A significant impact is determined through application of Significant Impact Criteria (DEWHA, 2009).

## 2 PROPONENT STUDIES AND INVESTIGATIONS

### 2.1 Millipede and Ore Haul Road

As Millipede is a geological extension of the Centipede ore body, information obtained during Toro's previous assessment of fauna values at Centipede was used to augment a desk top review of information about terrestrial fauna at Millipede (Ecologia, 2014b – Appendix 10.3).

The haul road from Lake Maitland to the proposed processing plant location adjacent to the Millipede tenements has also been studied. This commenced with a search of the various databases to identify the conservation significant fauna recorded within a 100 km radius of the haul road. The results of eight previous fauna surveys conducted within 100 km of the haul road were also reviewed (Ecologia, 2015b – Appendix 10.4). The results of this background research are presented in Table 1 to Table 3.

**Table 1: Fauna Databases Searched to Determine the Potential Vertebrate Fauna Assemblage**

Database	Custodian	Search Details
NatureMap (which incorporates the results of the DPaW Threatened Fauna Database)	DPaW	40 km radius around the centre of the study area.
		Coordinate: 51 J: 270185 E, 7010593 N
		Date accessed: 07/07/14
Species Profile and Threats (SPRAT) Database (DoE Protected Matters Report)	Department of Environment (DoE)	100 km radius around the centre of the study area.
		Coordinate: 51 J: 270185 E, 7010593 N
		Date accessed: 07/07/14
Birdata	BirdLife Australia	Records within one square decimal degree (100 m <sup>2</sup> ).
		Coordinate: 51 J: 270185 E, 7010593 N
		Date accessed: 07/07/14

**Table 2: Previous Biological Survey Reports Within 100 km of the Study Area**

Survey Report and Author	Distance to Study Area (km)	Comments	Date(s) undertaken
Ecologia internal database	63	Single-phase Level 2 survey	N/A
Lake Way Baseline Terrestrial Fauna Survey (Outback Ecology, 2008a – Appendix 10.21)	0-30	Single-phase Level 2 survey	May and December 2007
Lake Way Baseline Fauna Studies (Outback Ecology, 2002) Unpublished report for Wiluna Gold Mine.	0-30	Level 1 survey	2–7 October 2002

Survey Report and Author	Distance to Study Area (km)	Comments	Date(s) undertaken
Lake Maitland Infrastructure Areas Baseline Terrestrial Fauna Surveys (Outback Ecology, 2011b – Appendix 10.18)	70	Level 1 survey	14–21 October 2009
Terrestrial Fauna Habitat Assessment - Borefield, Accommodation Camp and Access Route (Outback Ecology, 2011b – Appendix 10.18)	70	Level 1 survey	2–6 August 2010
Wiluna Uranium Terrestrial Fauna Habitat Assessment (Outback Ecology, 2011c – Appendix 10.52)	4	Single-phase Level 2 survey	17–20 May 2011
Lake Maitland Baseline Terrestrial Fauna Survey (Outback Ecology, 2009a – Appendix 10.16)	70	Two-phase Level 2 survey	Reconnaissance survey – 22–25 January 2007
Systematic fauna surveys – 7–16 May 2007			

**Table 3: Number of Species Recorded During Previous Surveys and Database Searches – Millipede**

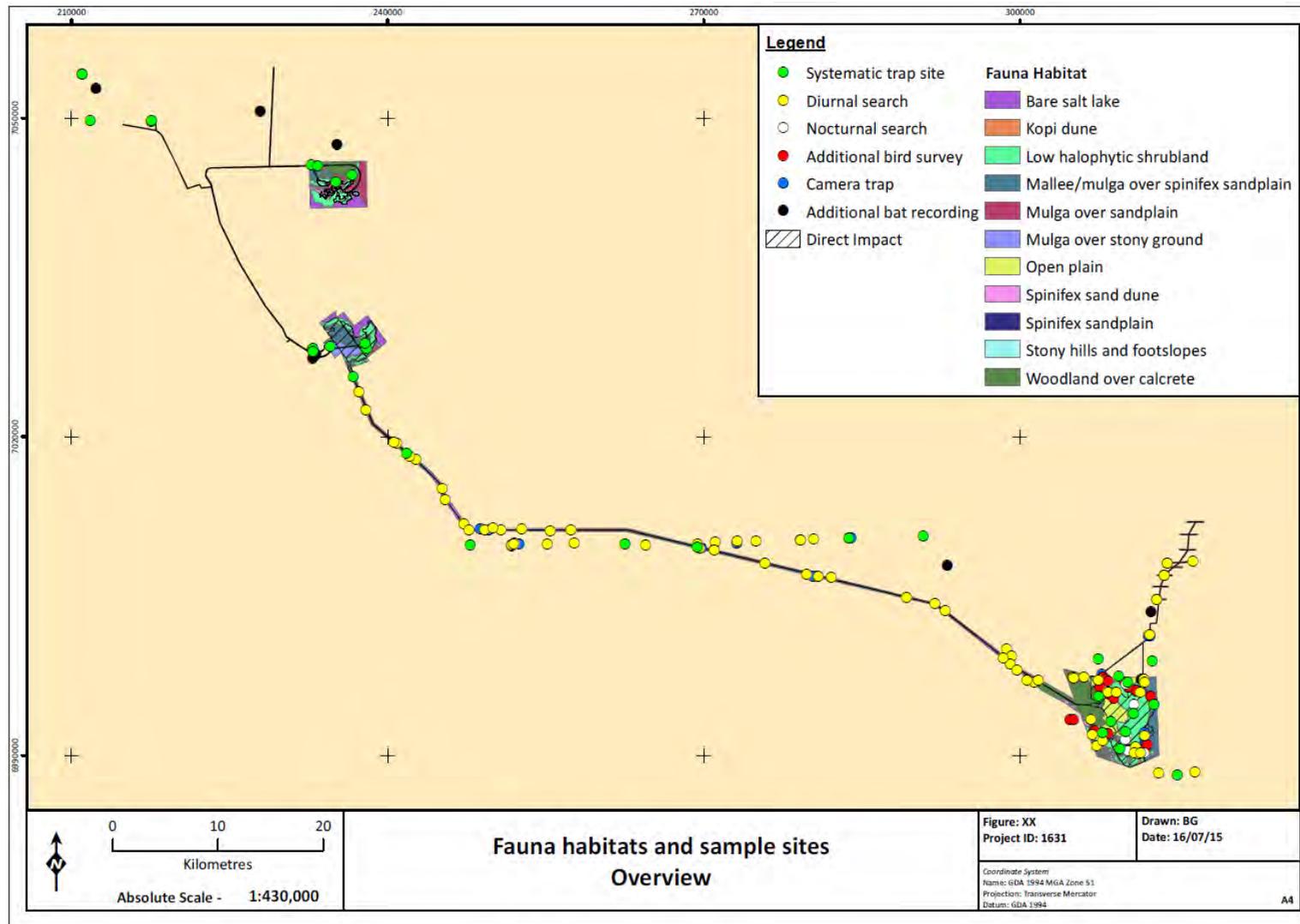
Source/Report	Mammals (Native/ Introduced)	Birds (Native/ Introduced)	Reptiles	Amphibians
Ecologia internal database	15/5	74/0	34	4
Lake Way Baseline Terrestrial Fauna Survey (Outback Ecology, 2008a – Appendix 10.21)	13/7	53/0	30	-
Lake Way Baseline Fauna Studies (Outback Ecology, 2002) Unpublished report for Wiluna Gold Mine.	0/1	21/0	9	1
Lake Maitland Infrastructure Areas Baseline Terrestrial Fauna Surveys (Outback Ecology, 2011b – Appendix 10.18)	5/5	30/0	9	-
Terrestrial Fauna Habitat Assessment - Borefield, Accommodation Camp and Access Route (Outback Ecology, 2011b – Appendix 10.18)	7/4	4/0	1	-
Wiluna Uranium Terrestrial Fauna Habitat Assessment (Outback Ecology, 2011c – Appendix 10.52)	12/8	45/0	34	-
Lake Maitland Baseline Terrestrial Fauna Survey (Outback Ecology, 2009a – Appendix 10.16)	17/7	60/0	38	-
NatureMap	23/1	77/0	55	6
SPRAT Database	3/7	6/1	1	-
Birdata	n/a	121/0	n/a	n/a
Individual Species Total	34/11	133/1	77	8

To supplement this existing information, a Level 1 reconnaissance survey was conducted in winter (6–10 June 2014) and a Level 2 vertebrate fauna assessment was conducted in spring (6–17 October 2014) (Ecologia, 2015b – Appendix 10.4) for the haul road alignment between the proposed location of the processing plant and Lake Maitland. The survey timing was determined in compliance with EPA guidelines (EPA, 2004a; EPA and DEC, 2010).

Habitat types previously described by Outback Ecology at Lake Way (Outback Ecology, 2008a – Appendix 10.21) and Lake Maitland (Outback Ecology, 2009a – Appendix 10.16) were reviewed for relevance to the haul road study area, and interpreted for survey site selection. Locations of access tracks, land systems and the abundance of habitat types were also taken into consideration. Survey sites were selected to provide a good geographic spread and to be representative of the habitat types in the study area. Therefore, dominant habitat types were sampled by a larger number of trapping sites than less represented habitat types.

Systematic trapping sites were installed in the Carnegie (one site), Bullimore (four sites), Ararak (one site) and Rainbow (one site) land systems. In addition to systematic surveys, opportunistic searches were undertaken, targeting habitats or land systems less accessible or less represented within the study area (Ecologia, 2015b – Appendix 10.4). The locations of the investigation sites are presented in Figure 1. It shows the locations of all surveys of fauna habitats, including those for mining at Centipede and Lake Way, as well as at Millipede and Lake Maitland.

Figure 1: Locations of fauna habitat surveys for the Wiluna Uranium Project, Including its Extension



## 2.2 Lake Maitland

Between 2009 and 2010, two vertebrate fauna assessments were undertaken at Lake Maitland:

- Lake Maitland Baseline Terrestrial Fauna Survey (Outback Ecology, 2009a – Appendix 10.16); and
- Lake Maitland Infrastructure Areas Baseline Terrestrial Fauna Surveys (Outback Ecology, 2011b – Appendix 10.18).

These assessments comprised one initial field reconnaissance survey, two Level 1 field and habitat assessment surveys and one Level 2 field survey and habitat assessment (Table 4).

In 2015, Engenium undertook a further Level 2 terrestrial fauna and targeted reptile search (Appendix 10.8) across the Project area to meet current EPA requirements (Table 4). The number of species identified is shown in Table 5.

**Table 4: Summary of Survey Types and Timing**

Survey Report and Author	Distance to Study Area (km)	Comments	Dates Undertaken
Lake Maitland Baseline Terrestrial Fauna Survey (Outback Ecology, 2009a – Appendix 10.16))	N/A	Desktop assessment	N/A
	0	Field reconnaissance survey	22–25 January 2007
	0	Level 2 field survey and habitat assessment	7–16 May 2007
		Level 2 field survey and habitat assessment	7–13 December 2007
Lake Maitland Infrastructure Areas Baseline Terrestrial Fauna Surveys (Outback Ecology, 2011a – Appendix 10.18)	N/A	Desktop assessment	N/A
	0	Level 1 field survey and habitat assessment	14–21 October 2009; 2-6 August 2010
Lake Maitland Level 2 Vertebrate Fauna and Targeted Reptile Survey (Engenium, 2015 – Appendix 10.8).	0	Level 2 Assessment	17–27 March 2015

**Table 5: Number of Species Recorded During Previous Surveys and Database Searches – Lake Maitland**

Source/Report	Mammals (Native/ Introduced)	Birds (Native/ Introduced)	Reptiles	Amphibians
Engenium internal database	17/3	73/0	35	4
Lake Maitland to Millipede Haul Road Vertebrate Fauna and Fauna Habitat Assessment (Ecologia Environment, 2015b – Appendix 10.4)	14/5	56/0	35	1
Lake Maitland Infrastructure Areas Baseline Terrestrial Fauna Survey (Outback Ecology, 2011b – Appendix 10.18)	7/5	30/0	10	0

Source/Report	Mammals (Native/ Introduced)	Birds (Native/ Introduced)	Reptiles	Amphibians
Lake Way Baseline Terrestrial Fauna Survey (Outback Ecology, 2008a – Appendix 10.21)	13/7	53/0	30	1
Wiluna Uranium Terrestrial Fauna Habitat Assessment (Outback Ecology, 2011c – Appendix 10.52)	12/8	45/0	34	-
Lake Maitland Baseline Terrestrial Fauna Survey (Outback Ecology, 2009a – Appendix 10.16)	17/7	60/0	38	-
NatureMap	23/1	77/0	55	6
SPRAT Database	3/7	6/1	1	-
Birdata	n/a	121/0	n/a	n/a
<b>Individual Species Total</b>	<b>34/11</b>	<b>133/1</b>	<b>77</b>	<b>8</b>

### 2.3 Outcomes of Surveys

Both Millipede and Lake Maitland are within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia comprising the northern part of the Yilgarn Craton and encompassing the transitional zone between the eucalypt dominated environs of south-western Australia and the mulga/spinifex dominated areas of Central Australia.

Surveys of terrestrial vertebrate fauna species at Millipede and the surrounding area have recorded 31 mammals (20 native), 75 reptiles, 105 birds and five amphibians. Surveys for terrestrial invertebrates (short-range endemics (SRE)) have collected specimens of mygalomorph spiders, centipede, scorpions, molluscs and pseudoscorpions.

At Lake Maitland, 28 mammal species (19 native and nine introduced), 68 bird species and 46 reptile species have been recorded in surveys. No amphibians were recorded. Across the Lake Maitland deposit, 21 species of SRE have been identified.

### 3 ROLES AND RESPONSIBILITIES

The roles and responsibilities for this FMP are outlined in Table 6.

**Table 6: Roles and Responsibilities**

Position	Responsibility
Environmental Manager	Implementation and maintenance of the plan.
	Undertakes assessment and review of the effectiveness of this management plan.
Environmental Superintendent	Formulate and implement fauna surveys, monitoring programs and liaise with stakeholders regarding feral animal control and fire management.
	Ensure all staff are aware of their obligations in relation to this plan.
	Deliver fauna education and induction awareness training to field personnel.
	Maintain site records of surveys and implement monitoring programs.
Operation Managers and Site Supervisors	Ensure the plan is being adhered to by all staff and contractors.
	Participate in compliance audits and inspections.
All Toro personnel, contractors and visitors	Minimise impacts on native fauna from construction and mining activities.
	Report all incidents involving significant species.

## 4 ENVIRONMENTAL MANAGEMENT

### 4.1 Overview of Potential Impacts

Potential adverse direct and indirect impacts from the Project may include:

- Direct:
  - Habitat removal, loss and/or modification (including altered fire regimes);
  - Deliberate interference with animals (e.g. collecting, shooting, hunting); and
  - Interaction with vehicles.
- Indirect:
  - Noise and vibration;
  - Light;
  - Dust;
  - Radionuclide concentration increase beyond natural background levels;
  - Introduced fauna; and
  - Putrescible waste (e.g. food scraps) from accommodation camp and other facilities.

### 4.2 Clearing and Ground Disturbance

The Project would involve clearing of native vegetation for the construction of key infrastructure, such as the processing plant, mine pits and haul roads. The potential impacts on fauna of this clearing and construction may include:

- Fragmentation of habitat;
- Loss of habitat;
- Loss of individuals during the clearing; and
- Loss of individuals through collisions with vehicles.

No permanent water source is present within the Project area. Dewatering of mining pits may involve the creation of artificial water bodies via pumping of groundwater from the pits to evaporation ponds. Additional artificial water bodies including process water dams and turkey's nests may also be created as part of the Project. These may present a minor entrapment risk for vertebrate mammal species such as kangaroos (e.g. *Macropus robustus*, *M. rufus*) (Outback Ecology Services, 2010).

### 4.3 Deliberate Interference with Animals

Deliberate interference with animals includes shooting, fauna collection (including eggs, skins and feathers) or deliberate disturbance. Management strategies, policies and procedures would be implemented by Toro to ensure avoidance of deliberate interference with animals. Hunting by Traditional Owners occurs in the area (Niche Environmental Service, 2011b), e.g. kangaroo and goanna. Access to the Project area would be restricted at various times and locations for safety reasons. Deliberate interference is therefore not considered to represent a major impact to local faunal populations.

### 4.4 Interactions with Vehicles

Vehicle collisions typically only involve individual animals and are considered unlikely to have any lasting impact on a population.

## 4.5 Noise and Vibration

The development of the Project would generate noise and substantial vibration due to machinery, the operation of the processing plant, power plant, heavy and light vehicles, and the general presence of people. General responses to noise across a wide variety of animal species range from interruptions in feeding and resting behaviour to complete abandonment of an area. Noise may lead to reduced population densities in small mammals, nest failure and decreased population densities in birds (Slabbekoorn and Ripmeester, 2008) and abandoning of roost sites and a reduced hunting efficiency in bats due to disturbance of their echolocation system. Constant levels of noise also interfere with species communication. This is known as acoustic interference (Parris and Schneider, 2009). Species that may be especially at risk of disturbed communication are those that use calls to communicate over larger distances such as the Bush Stone-curlew, which is a listed Priority 4 species (Outback Ecology Services, 2010).

The results of a noise assessment show that the noise from the proposed mine and processing plant is predicted to achieve compliance with the *Environmental Protection (Noise) Regulations 1997* at all noise sensitive premises (Lloyd George Acoustics, 2011).

## 4.6 Light

The Project would result in an increase in exposure of fauna to artificial light. Artificial light from mining activities may have detrimental effects on resident bird, mammal and reptile species, as it may interfere with biological and behavioural activities that are governed by the length of day or photoperiod, including reproduction, dormancy, foraging and migration (Bradshaw and Holzapfel, 2007; Le Corre et al., 2002). Light pollution has also been shown to interfere with timing of songbird choruses, potentially leading to reduction in breeding success or survival (Miller, 2006; Outback Ecology Services, 2010). Unmanaged or poorly designed light sources may therefore have a negative impact on animals but, with management, it is considered unlikely that they would have any lasting impact on populations.

## 4.7 Dust

Impacts to fauna species from dust are indirect, through potential impacts to their habitat and vegetation. It is considered unlikely that dust impacts would have any lasting impact on a population.

## 4.8 Introduced Fauna

Introduced fauna cause fundamental changes to ecosystems, and have led to the decline and extinction of many species in Australia (Abbott, 2002; Ford et al., 2001; Short and Smith, 1994). Additionally, predation of native fauna by the fox and feral cat is listed as a key threatening process under the EPBC Act.

A number of introduced species exist throughout the Project area including cattle (*Bos taurus*) camels (*Camelus dromedaries*), dogs (*Canis lupus dingo*), cats (*Felis catus*), rabbits (*Oryctolagus cuniculus*) and mice (*Mus musculus*). The introduction of these species has the potential to impact indigenous fauna by:

- Destroying habitat through over grazing and soil erosion;
- Direct competition for scarce resources; and
- Direct predation by introduced carnivorous species.

Introduced predators can proliferate as a result of mining projects, particularly if a high standard of housekeeping is not maintained. Introduced predator populations can increase if waste disposal sites are not correctly maintained, as these can become a readily available food source. This can lead to an increase in predators and may result in an increase in predation on native species.

As these introduced species have been present for a considerable time, it is not considered that they will have a major impact on native populations within the Project area.

#### 4.9 Fire

Altered fire regimes caused by the Project have the potential to be detrimental to local fauna populations. Inappropriate or altered fire regimes have been identified as one of the main contributing factors in relation to the decline of some species (Maxwell et al., 1996). Fires cause habitat destruction and species with relatively poor powers of dispersal, such as SRE invertebrate fauna, are more likely to be directly impacted by fire.

#### 4.10 Hydrocarbon and Chemical Spills

Hydrocarbons and other chemicals, namely processing reagents, would be frequently used on site. The accidental spillage of these chemicals may impact fauna by:

- Contaminating water and food sources; and
- Killing local vegetation and destroying habitat.

#### 4.11 Waste Management

The incorrect disposal of wastes may lead to an increase in the number of introduced species. The correct storage and disposal of waste would be implemented to ensure introduced species may not use wastes as a food source that encourages increased populations.

#### 4.12 Pregnant Liquor Solution and Other Evaporation Ponds

The Wiluna region is generally hot and dry and offers excellent potential to solar concentrate processing solutions or to evaporate excess water. These ponds would represent the only permanent water bodies in the region and could attract birds. The potential issues these ponds present to fauna are:

- Death from the injection of pregnant liquor solution;
- Entrapment in ponds; and
- Exposure to increased levels of uranium.

## 5 ENVIRONMENTAL OBJECTIVES TARGETS AND INDICATORS

A series of management objectives, targets and indicators has been developed to manage potential and direct impacts to fauna species in relation to the Project:

- Objectives – What Toro aims to achieve.
- Targets – Defined objective levels.
- Indicators – Measures which, are either quantitative or qualitative, to determine whether the objectives have been met.

Table 7 shows the environmental performance indications for fauna management.

**Table 7: Environmental Performance Indicators**

Objectives	Targets	Indicators
Reduce habitat clearing	Minimise potential impacts to fauna habitat	No vegetation clearing outside of authorised areas
Minimise detrimental impacts of fires to fauna	Zero incident reports of fauna deaths/injuries from fire	Incident reports and personnel observations as tracked by the Environmental Management System
No deliberate interference with animals by Toro staff or contractors	Zero incident reports of fauna interference	Incident reports and personnel observations as tracked by the Environmental Management System
Minimise potential fauna and vehicle interactions	Zero incident reports of fauna to vehicle interactions	Incident reports and personnel observations as tracked by the Environmental Management System
Minimise fauna egress to evaporation pond	Zero incident reports of fauna accessing evaporation pond	Incident reports, safety audits, environmental inspections and personnel observations as tracked by the Environmental Management System
Minimise potential impacts to fauna from noise	No observable impact on fauna species during construction and operation	Incident reports, safety audits, environmental inspections and personnel observations as tracked by the Environmental Management System
Light spillage to be minimised	No observable impact on fauna breeding behaviour	Incident reports, safety audits, environmental inspections and personnel observations as tracked by the Environmental Management System
Minimise potential impacts from dust	No observable impact on fauna species during construction and operation	Incident reports, safety audits, environmental inspections and personnel observations as tracked by the Environmental Management System
No net increase in radionuclide concentration in local fauna	No net increase in radionuclide concentration in local fauna	Results of laboratory analysis
	No introduction of new weeds into the Project area	No introduction of new weeds into the Project area

Objectives	Targets	Indicators
Reduce impacts from introduced flora from Toro operations	No further spread of weeds within the Project area	No further spread of weeds within the Project area
Reduce impacts from introduced fauna as a result of Toro operations	No introduction of new introduced animal species into the Project area	Personnel observations as tracked by the Environmental Management System
	Management of introduced animal species within the Project area	
Minimise potential impacts to fauna from waste generated onsite	No observable impact on fauna species during construction and operation	Incident reports, safety audits, environmental inspections and personnel observations as tracked by the Environmental Management System

## 6 ENVIRONMENTAL MANAGEMENT STRATEGIES AND ACTIONS

Detailed fauna management documentation would be developed on an as-required basis for the construction and operational phases of the Project. Documentation relevant to decommissioning would be developed during the operational phase. Documentation would include specific policies and standard operating procedures, and would be developed in collaboration with relevant government agencies, including the Department of Parks and Wildlife.

The environmental management strategies for the plan are outlined in Table 8.

**Table 8: Environmental Management Aspects and Strategies**

Objective	Management Action	Reporting Mechanisms	Corrective Actions
Reduce Habitat Clearing	<ul style="list-style-type: none"> <li>All significant fauna habitat features to be identified, mapped and demarcated on site</li> <li>Clearing of significant fauna habitat features to be avoided or minimised</li> <li>No off-road driving unless in case of an emergency or permitted by the Environmental Officer</li> <li>No unauthorised clearing of vegetation (as per Toro vegetation clearing procedure)</li> <li>Retention of mature/large trees where practicable</li> <li>Progressive clearing of vegetation to allow fauna to disperse to other suitable areas</li> <li>Retention of fauna burrows where possible</li> <li>Standard operating procedures</li> <li>Undertake progressive rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Management System database</li> <li>Incident reports</li> <li>Inspections and audits</li> </ul>	<ul style="list-style-type: none"> <li>Review of Vegetation Clearing and Soil Management Strategy; contractor compliance; inductions; and standard operating procedures</li> <li>Implementation of findings from review/reports</li> </ul>
Minimise Detrimental Impacts of Fires to Fauna	<ul style="list-style-type: none"> <li>Standard operating procedures (e.g. no campfires, no unauthorised fires)</li> <li>Employee/contractor inductions</li> <li>Design standards</li> <li>Fire Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>Incident reports</li> <li>Inspections and audits</li> <li>Environmental Management System database</li> <li>People (e.g. visual observations)</li> </ul>	<ul style="list-style-type: none"> <li>Review of fauna management and fire management plans</li> <li>Review induction process</li> <li>Implementation of findings from reviews</li> </ul>

Objective	Management Action	Reporting Mechanisms	Corrective Actions
No Deliberate Interference With Animals by Toro Staff or Contractors	<ul style="list-style-type: none"> <li>Employee/contractor inductions</li> <li>Standard operating procedures</li> </ul>	<ul style="list-style-type: none"> <li>Incident reports</li> <li>Inspections and audits</li> <li>People (e.g. visual observations)</li> <li>Environmental Management System database</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of findings from incident reports, audits and inspections</li> <li>Any incidents that result in the injury or death of conservation significant species would be reported to the DPaW and DER</li> <li>Specimens should be retained (i.e. stored in a freezer) for further examination by DPaW or the WA Museum.</li> </ul>
Minimise Potential Fauna and Vehicle Interactions	<ul style="list-style-type: none"> <li>Employee/contractor inductions</li> <li>Speed limits to be observed by all vehicles within the project area</li> <li>Designated vehicle traffic routes</li> <li>Fences may be required in strategic areas where fauna are known to cross major transport routes</li> </ul>	<ul style="list-style-type: none"> <li>Incident reports</li> <li>Inspections and audits</li> <li>People (e.g. visual observations)</li> <li>Environmental Management System database</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of findings from incident reports, audits and inspections</li> <li>Any incidents that result in the injury or death of conservation significant species should be reported to the DER and DPaW</li> <li>Specimens should be retained (i.e. stored in a freezer) for further examination by DPaW, DER or the WA Museum.</li> </ul>
Minimise Fauna ingress to Evaporation Pond	<ul style="list-style-type: none"> <li>Scaring devices</li> <li>Fauna egress points</li> <li>Potential construction of fences/netting</li> </ul>	<ul style="list-style-type: none"> <li>Inspections and audits</li> <li>People (i.e. visual observations)</li> <li>Incident reports</li> <li>Environmental Management System database</li> </ul>	<ul style="list-style-type: none"> <li>Review of Fauna Management Plan</li> <li>Implementation of findings from reviews and reports</li> </ul>
Minimise Noise Levels	<ul style="list-style-type: none"> <li>All vehicles, plant and machinery to be operated within appropriate noise standards and relevant guidelines</li> <li>All vehicles, plant and machinery to be maintained and regularly serviced</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Management System database</li> <li>People (e.g. visual observations)</li> <li>Inspections and audits</li> <li>Incident reports</li> </ul>	<ul style="list-style-type: none"> <li>Review of Fauna Management Plan</li> <li>Review of maintenance routines</li> <li>Implementation of findings from review</li> <li>Repair damaged or failed components (vehicle; machinery; plant)</li> </ul>
Light Spillage to Be Minimised	<ul style="list-style-type: none"> <li>Design standards</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Management System database</li> </ul>	<ul style="list-style-type: none"> <li>Review of Fauna Management Plan</li> <li>Implementation of findings from reviews</li> </ul>

Objective	Management Action	Reporting Mechanisms	Corrective Actions
		<ul style="list-style-type: none"> <li>• People (i.e. visual observations)</li> <li>• Inspections and audits</li> <li>• Incident reports</li> </ul>	
Minimise Potential Impacts From Dust	<ul style="list-style-type: none"> <li>• Standard operating procedures</li> <li>• No unauthorised clearing of vegetation (as per Toro vegetation clearing procedure)</li> <li>• Progressive clearing of vegetation to allow fauna to disperse to other suitable areas</li> </ul>	<ul style="list-style-type: none"> <li>• Inspections and audits</li> <li>• Environmental Management System database</li> <li>• People (e.g. visual observations)</li> </ul>	<ul style="list-style-type: none"> <li>• Review of Dust and Vegetation Clearing Management Plans</li> <li>• Implementation of findings from reviews</li> </ul>
No Net Increase in Radionuclide Concentration in Local Fauna	<ul style="list-style-type: none"> <li>• Design standards</li> <li>• Standard operating procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Laboratory analysis</li> <li>• Inspections and audits</li> <li>• Incident reports</li> </ul>	<ul style="list-style-type: none"> <li>• Review of Radiation Management Plan</li> <li>• Implementation of findings from reviews</li> </ul>
Reduce Impacts From Introduced Flora From Toro Operations	<ul style="list-style-type: none"> <li>• Employee/contractor inductions</li> <li>• Contractor management (pre-cleaning of vehicles and machinery)</li> <li>• Designated wash-down area</li> <li>• Standard operating procedures</li> <li>• Weed Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Management System database</li> <li>• People (e.g. visual observations)</li> <li>• Inspections and audits</li> <li>• Incident reports</li> </ul>	<ul style="list-style-type: none"> <li>• Review of Weed Management Plan; contractor compliance; inductions; and standard operating procedures</li> <li>• Implementation of findings from review</li> </ul>
Reduce Impacts From Introduced Fauna From Toro Operations	<ul style="list-style-type: none"> <li>• No pets to be permitted on site</li> <li>• Feeding of any animal on site is to be prohibited</li> <li>• Introduced animal management procedures</li> <li>• Putrescible waste to be managed appropriately</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Management System database</li> <li>• People (e.g. visual observations)</li> <li>• Inspections and audits</li> <li>• Incident reports</li> </ul>	<ul style="list-style-type: none"> <li>• Review of introduced animal management procedures; contractor compliance; inductions; and standard operating procedures</li> <li>• Implementation of findings from review (for example, may include active control of feral animals)</li> </ul>
Minimise Potential Impacts to Fauna from Waste Generated on Site	<ul style="list-style-type: none"> <li>• Putrescible waste to be managed appropriately</li> <li>• General waste (e.g. aluminium cans, glass bottles) disposed of appropriately</li> <li>• Waste Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Management System database</li> <li>• People (e.g. visual observations)</li> <li>• Inspections and audits</li> <li>• Incident reports</li> </ul>	<ul style="list-style-type: none"> <li>• Review of Waste Management Plan; contractor compliance; inductions; and standard operating procedures</li> <li>• Implementation of findings from review</li> </ul>

## 6.1 Monitoring, Management Prompts and Management Actions

The majority of the environmental management objectives of the Project will involve the avoidance or mitigation of relevant potential impacts as a result of Toro's implementation of overarching Environmental Management Strategies (Table 8; each Strategy consists of management actions, reporting mechanisms and corrective actions). The environmental management objectives that Toro considers appropriately covered by these overarching Strategies comprise:

- Reduce of habitat clearing;
- Minimise detrimental impacts of fires to fauna;
- Minimise noise levels;
- Light spillage to be minimised;
- Minimise potential impacts from dust;
- No net increase in radionuclide concentration in local fauna;
- Reduce impacts from introduced flora from Toro operations; and
- Minimise potential impacts to fauna from waste generated on site.

For a subset of the environmental management objectives of the Project, Toro has determined that environmental outcomes will be further improved if the implementation of the relevant overarching Environmental Management Strategies (Table 8) is supplemented by the adoption of additional monitoring tasks, with associated management prompts and management actions that must take place if a prompt arises (Table 9). The environmental management objectives that Toro will prescribe monitoring tasks, management prompts and management actions for, in addition to those actions required by the Environmental Management Strategies, comprise:

- No deliberate interference with fauna by Toro staff or contractors;
- Minimise potential fauna and vehicle interactions;
- Minimise fauna ingress to evaporation pond; and
- Reduce impacts from introduced fauna from Toro operations.

**Table 9: Monitoring, Management Prompts and Management Actions for a Subset of the Environmental Management Objectives**

Objective and Monitoring Task	Management Prompts	Management Actions
<b>Deliberate interference with fauna by Toro staff or contractors – general vertebrate fauna</b> This will be monitored by way of mandatory incident reporting	Any incident involving interference with vertebrate fauna by Toro staff or contractors, except when required and authorised by the Environmental Management Plan (or other authority)	1. Report in Environmental Management Database
		2. Report in Annual Environmental Report
		3. Initiate staff awareness campaign with respect to legal and company expectations of working around fauna
		4. Review induction policies and procedures with respect to staff awareness of fauna, update if necessary
		As above, plus:

Objective and Monitoring Task	Management Prompts	Management Actions
<p><b>Deliberate interference with fauna by Toro staff or contractors – conservation significant vertebrate fauna</b></p> <p>This will be monitored by way of mandatory incident reporting</p>	<p>Any incident involving interference with conservation significant vertebrate fauna by Toro staff or contractors, except when required and authorised by the Environmental Management Plan (or other authority)</p>	<ol style="list-style-type: none"> <li>1. Conduct a documented investigation into the incident, its root causes and outcomes</li> <li>2. Depending on the outcome of the investigation, consider disciplinary action in line with Toro and government policy</li> <li>3. Report to the Department of Parks and Wildlife</li> <li>4. Report to the Department of Environmental Regulation</li> <li>5. In the event of deceased fauna, retain (freeze) usable specimens for analysis by DPaW or WAM</li> <li>6. Initiate staff awareness campaign with respect to identification of conservation significant fauna on site</li> </ol>
<p><b>Frequency of fauna-vehicle interactions – general vertebrate fauna</b></p> <p>This will be monitored by way of mandatory incident reporting and their review by Toro Environment personnel on a quarterly basis</p>	<p>Up to one vehicle strike per month, on average, during any quarterly review period</p>	<ol style="list-style-type: none"> <li>1. Report in Environmental Management Database</li> <li>2. Report in Annual Environmental Report</li> </ol>
	<p>More than one vehicle strike per month, on average, during any quarterly review period</p>	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>1. Initiate fauna vehicle strike awareness campaign among site personnel and contractors</li> <li>2. Review site driving policies (for example night driving) and adjust if necessary</li> <li>3. Review appropriateness of site speed limits and adjust if necessary</li> </ol>
	<p>More than one vehicle strike per month, on average, sustained over more than one quarterly review period</p>	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>1. Investigate possible ecological reasons for increased vehicle strikes</li> <li>2. Review and adjust trigger levels in light of this, if necessary</li> <li>3. In the absence of ecological reasons, review appropriateness of transport routes in different fauna habitats and modify if necessary</li> <li>4. Review management strategies in fauna management plan with objective of identifying new</li> </ol>

Objective and Monitoring Task	Management Prompts	Management Actions
		strategies to reduce vehicle strike frequency
<p><b>Frequency of fauna-vehicle interactions – conservation significant vertebrate fauna</b></p> <p>This will be monitored by way of mandatory incident reporting.</p>	Any vehicle strike involving a conservation significant vertebrate fauna species	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>1. Retain (freeze) usable specimens for analysis by DPaW or WAM</li> <li>2. Report to Department of Parks and Wildlife</li> <li>3. Report to Department of Environmental Regulation</li> <li>4. Involve the Department of Parks and Wildlife in any review of the fauna management plan</li> </ol>
<p><b>Fauna ingress to evaporation pond – general vertebrate fauna</b></p> <p>This will be monitored by way of scheduled inspections (Toro Environment and Safety personnel) and mandatory incident reporting (all Toro personnel and contractors).</p>	Any initial detection of vertebrate fauna in pond	<ol style="list-style-type: none"> <li>1. Remove and release healthy fauna in appropriate habitat; remove stranded or injured fauna to care of a Wildlife Carer; remove deceased fauna and dispose of appropriately.</li> <li>2. Report in Environmental Management Database</li> <li>3. Report in Annual Environmental Report</li> <li>4. Immediately inspect all fauna egress points and adjust/improve if necessary</li> </ol>
	Any subsequent detection of vertebrate fauna in pond (over a reasonable time scale)	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>1. Consider installation of scaring devices (if appropriate)</li> </ol>
	Any ongoing detection of vertebrate fauna in pond (over a reasonable time scale)	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>2. Consider installation of netting and/or fencing (if appropriate)</li> <li>3. Review fauna management plan and revise management actions if necessary</li> </ol>
<p><b>Fauna ingress to evaporation pond – conservation significant vertebrate fauna</b></p> <p>This will be monitored by way of scheduled inspections (Toro Environment and Safety personnel) and mandatory incident reporting (all Toro personnel and contractors).</p>	Any initial detection of conservation significant vertebrate fauna in pond	<p>As above, plus:</p> <ol style="list-style-type: none"> <li>1. If deceased, remove fauna and retain (freeze) usable specimens for analysis by DPaW or WAM.</li> <li>2. Report to Department of Parks and Wildlife</li> <li>3. Report to Department of Environmental Regulation</li> </ol>

Objective and Monitoring Task	Management Prompts	Management Actions
		4. Involve the Department of Parks and Wildlife in any review of the fauna management plan
<p><b>Impacts from introduced fauna from Toro operations</b></p> <p>This will be monitored by way of scheduled inspections and biannual, low-intensity sampling (e.g. camera trapping, scat analysis, track analysis, vehicle-based transects) in locations where introduced fauna may congregate as a result of Toro operations (e.g. feral cats around putrescible waste sites, feral camels around water points).</p>	<p>An increase in the relative abundance of detectable, introduced species over two consecutive monitoring periods (if able to be quantitatively determined with confidence)</p> <p>Or</p> <p>An increase determined to be potentially significant by an independent expert, e.g. ecological consultant, researcher or Department of Parks and Wildlife, based on a qualitative assessment of the available data.</p>	<p>1. Report in Environmental Management Database</p> <p>2. Report in Annual Environmental Report</p> <p>3. Investigate possible ecological reasons for increased presence of introduced fauna</p> <p>4. In the absence of ecological reasons, review the Environmental Management Plan and other relevant plans, with the objective of strengthening the actions used to discourage the presence of introduced species (e.g. improved biosecurity procedures, improved waste control and improved isolation of water points).</p> <p>5. Consider implementation of a formal, quantitative monitoring programme designed to detect fine-scale changes in the abundance of introduced fauna</p> <p>6. Consider implementation of a feral animal control programme, including the participation of traditional owner groups and other stakeholders</p>

## 6.2 Reporting

The Annual Environment Report would provide detailed information on the effectiveness and implementation of this FMP. In addition, the report would provide details on the status of conservation significant fauna recorded within the Project area.

## 6.3 Review and Revision

This FMP would be reviewed following pre-clearance surveys, then every two years thereafter. In the event that conservation significant species were identified within the Project area prior to the completion of any review period, the FMP would be immediately revised.

## 7 REFERENCES