



EcOz

**Environmental
Services**

Appendix I

Pest & Weed Management Plan



Sherwin Iron (NT) Pty Ltd

Sherwin Creek Iron Ore Project

Environmental Impact Statement



2013





Pest and Weed Management Plan: Sherwin Creek Iron Ore Project

Prepared for: Sherwin Iron (NT) Pty Ltd

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Executive Summary

Sherwin Iron (NT) Pty Ltd (Sherwin) is proposing to develop an iron ore mine in the Roper River region of the Northern Territory. The project is titled the Sherwin Creek Iron Ore Project.

One of the risks from the project to the region's biodiversity is the potential for pest and weed introduction and spread. Consequently, this Pest and Weed Management Plan (PWMP) has been developed.

A search of the NT Infonet Database and a recent ecological survey identified 37 weed species and 15 introduced animals recorded in the Gulf Falls and Uplands Bioregion in which the project area lies. Four tramp ant species that have been recorded in the Northern Territory are also potential pests in the project area. This PWMP establishes the objectives, management requirements and management actions to mitigate and manage the potential impacts that could arise from the introduction and increase in abundance of pest and weed species within the project area.

This plan has been prepared with the view to achieve the following specific long-term objectives:

- Ensure no new weed or pest species become established
- Ensure the abundance and extent of existing weed species is reduced.

To achieve these objectives this PWMP identifies control options, procedures, responsibilities and reporting frameworks. Sherwin has committed to a pre-mine construction weed survey to produce a detailed map of weed infestations to aid in weed management planning.

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1 Introduction

Sherwin Iron (NT) Pty Ltd (Sherwin) is seeking approval to mine at the Sherwin Creek Iron Ore Project (the project). One of the risks from the project to the region's biodiversity is the potential for pest and weed introduction and spread. Consequently, this Pest and Weed Management Plan (PWMP) has been developed.

1.1 Project overview

The Sherwin Creek Iron Ore Project area (MLA29584) within EL24101 (Figure 1) is located approximately 540 km south-south-east of Darwin. It is accessed via the Stuart Highway south to Mataranka and then approximately 150 kms east along the Roper Highway towards Roper Bar and the Gulf of Carpentaria. EL24101 is located entirely within the Urapunga (SD53-10) 1:250,000 map sheet.

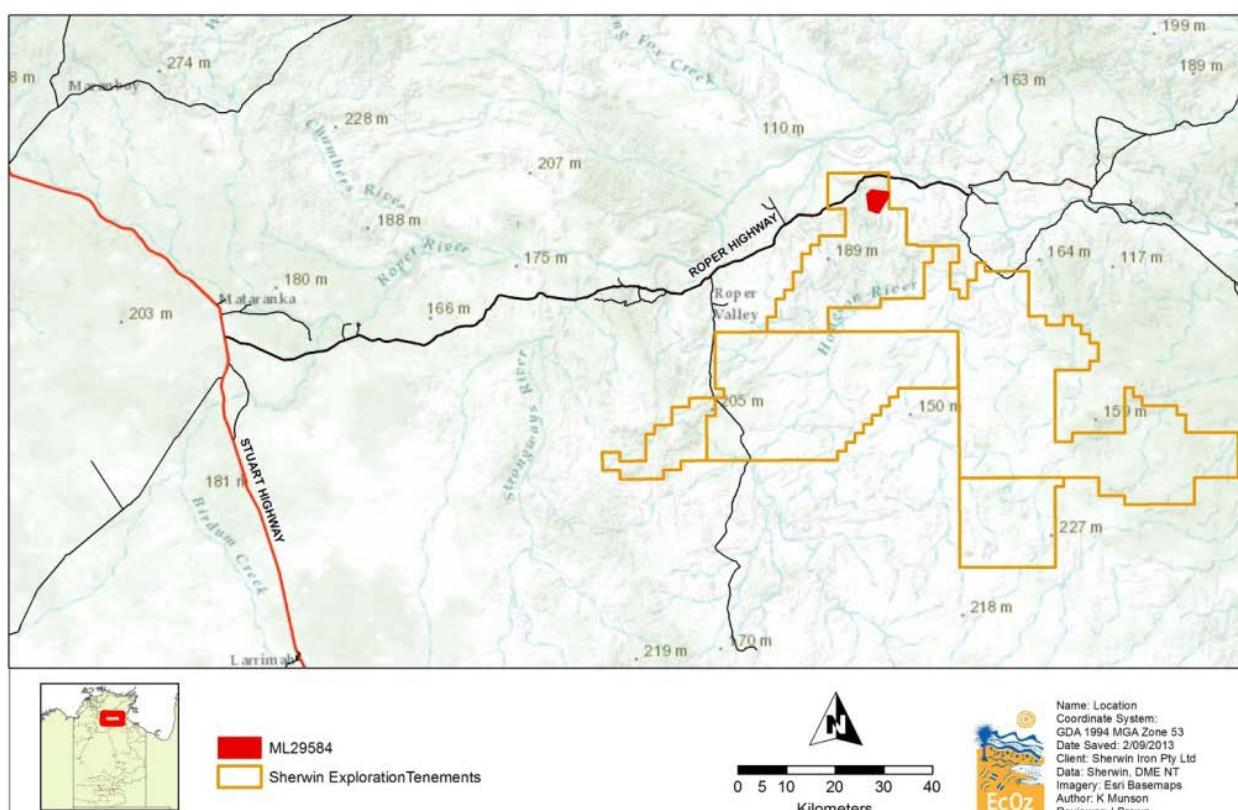


Figure 1. Map of location of the Sherwin Creek Iron Ore Project

The project will involve the development of:

- Open pits to mine direct shipping ore (DSO) at Deposit C
- Infrastructure (workshops, office, laydown, magazine, drainage, others)
- An area for DSO stockpile at the mine (ROM)
- Sub-grade stockpile area and waste dump area
- Haul road between pit and stockpiles
- Service roads within the project
- Accommodation village
- Water management and water storage infrastructure
- Haul road to the Roper Highway
- Stockpile at the Port of Darwin

The proposed layout of the mining infrastructure and disturbance within the lease areas of the project are presented in Figure 2.

The DSO is located at shallow depths and the mining pit design will evolve as mining activities progress along the deposit. The deposit is expected to be mined in sections so that as much as practicable the top soils and rock wastes can be returned to the depleted pits and progressive rehabilitation can occur.

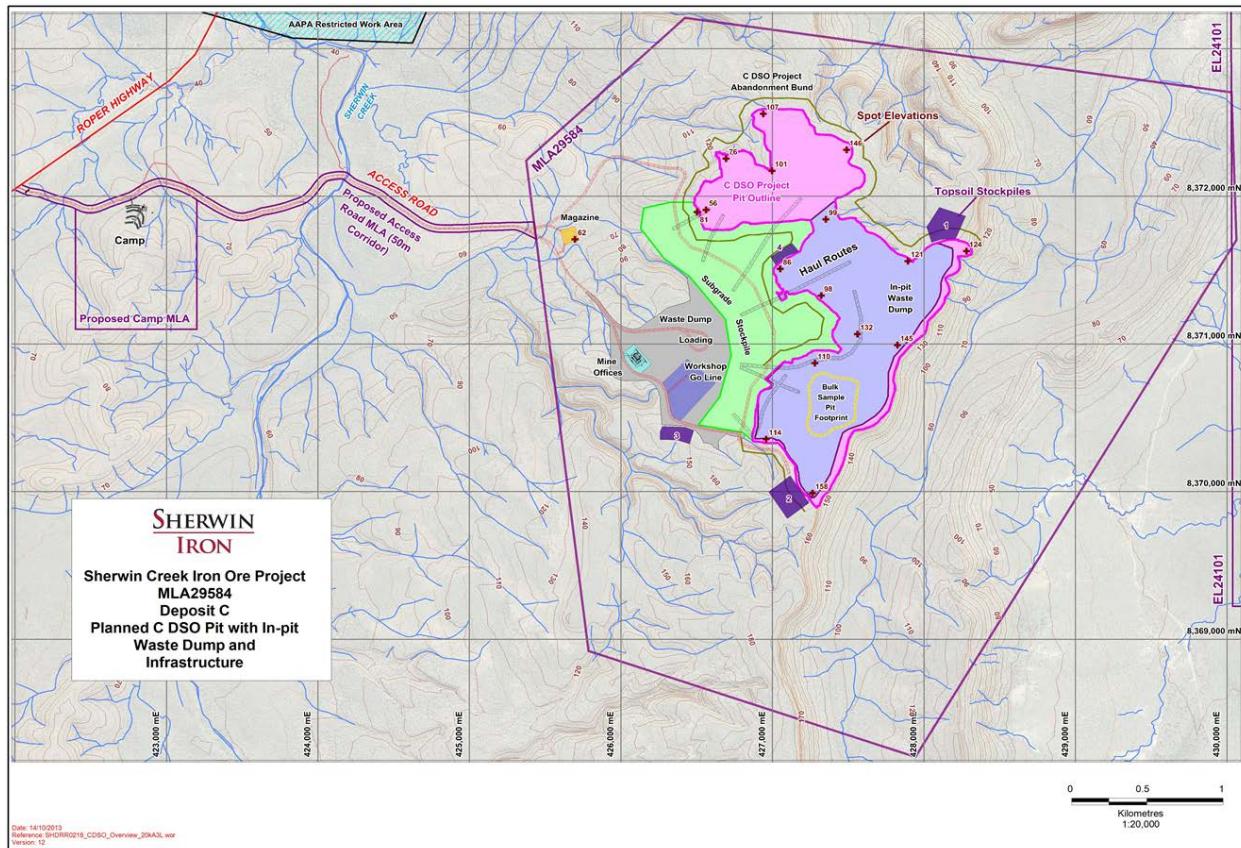


Figure 2. Layout of the mining disturbance areas – Deposit C

1.2 Overview of pest and weed issues

A weed can be described as any plant growing in a place it is unwanted. Plants may be unwanted because they have a negative impact on environmental, cultural, social or economic values placed on the land. Disturbance to the environment (such as clearing) creates ideal conditions for weed growth, whilst movement of machinery, vehicles, equipment and people has the potential to introduce and spread weed species.

In Australia the control of weeds is the legislative responsibility of state and territory government. This plan focuses on plant species that have been declared weeds in the jurisdiction of the Northern Territory under the *Weeds Management Act 2001 (WM Act)*. Under the WM Act the responsibility for weed management lies with land managers/owners.

Similar to a weed, a pest can be defined as any animal inhabiting an area where it is not wanted. These animals may compromise biodiversity by processes such as resource competition, predation, poisoning and disease and may also cause land degradation, for example by promoting soil erosion, stream turbidity and the spread of weeds.

Both pests and weeds require appropriate management actions to reduce their impact on the economy, the environment, human health and amenity.

1.3 Report scope

This report addresses all key pest and weed management planning requirements described in the EIS guidelines. Specifically, this report provides detail on -

- Occurrence of weed species, including Weeds of National Significance (WoNS), which occur on or near the project area, or have potential to infest project sites
- Reporting of pest species on or near the project area
- Impacts associated with the invasive/exotic species introduction and increase in abundance
- Mitigation measures
- Evaluation of management efficacy.

2 Relevant legislation, policies and strategies

In Australia the control of weeds is the legislative responsibility of state and territory government. Therefore this plan focuses on plant species that have been declared weeds in the jurisdiction of the Northern Territory under the *Weeds Management Act 2001 (WM Act)*. There are three classes of weeds under the act:

- Class A - To be eradicated - Reasonable effort must be made to eradicate the plant within the NT
- Class B - Growth and spread to be controlled - Reasonable attempts must be made to contain the growth and prevent the movement of the plant
- Class C - Not to be introduced to the Territory.

Under the *WM Act* the responsibility for weed management lies with land managers/owners.

Some of the weeds declared under the *WM Act* are also considered Weeds of National Significance (WoNS). These weeds have been identified by Australian governments based on their invasiveness, potential for spread and environmental, social and economic impacts. A list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

The following legislation, policies and strategies are relevant to this work:

Commonwealth

- *Environment Protection and Biodiversity Conservation Act 1999*
- Revised National Weeds Strategy 1999
- *Agricultural and Veterinary Chemicals Code Act 1994*.

Northern Territory Legislation and Strategy

- *Weeds Management Act 2001*
- *Waste Management and Pollution Control Act 1998*
- Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory
- Waste Management Guidelines for Small Communities in the Northern Territory.

3 Existing and potential weeds and pests

3.1 Weeds

The study area is the Gulf Fall and Uplands Bioregion within which the project area lies. The Interim Biogeographic Regionalisation for Australia (IBRA) divides Australia into units of broadly similar landform, geology and biodiversity (Baker et al. 2005). The Gulf Fall and Uplands Bioregion is the second largest in the Northern Territory stretching from the Arnhem Land Plateau into western Queensland. It covers some 111 783 km² of land. The bioregion comprises undulating terrain with scattered low, steep rocky hills. The most extensive vegetation in the bioregion is woodland dominated by Darwin Stringybark, *Eucalyptus tetrodonta*, and Variable-barked Bloodwood, *Corymbia dichromophloia*, with Spinifex understorey and woodland dominated by Northern Box, *Eucalyptus tectifica*, with a tussock grass understorey.

Only weeds declared under the WM Act and WoNS and found within the Gulf Fall and Uplands Bioregion were considered in this study. In order to determine which weed species have the potential to occur in the project area, a desktop based review of NT Flora Atlas records, Northern Territory Natural Resource Management (NT NRM) Infonet and EPBC Protected Matters search tool were used.

Baseline flora surveys were conducted between 2011 and 2013 and reported within Appendix H2 of the EIS. Weeds found during the field surveys are also considered here.

The following weeds were found:

- 12 declared Class A weeds – to be eradicated.
- 22 declared Class B weeds – growth and spread to be controlled
- A further one species is declared Class C – not to be introduced to the Northern Territory (note all Class A and B weeds are also Class C)
- Eight of the above species are also WoNS.

Table 1 provides the list of all declared weeds recorded in the bioregion. Other introduced plants not currently declared under the WM Act are included in another section of the EIS document (Appendix H2 - Flora of the Sherwin Iron Leases).

Table 1. Weeds of the survey area

Species name	Common name	WoNS
Declared Weed Class A- to be eradicated		
<i>Barleria prionitis</i>	Porcupine Flower	Alert
<i>Cryptostegia madagascariensis</i>	Rubber Vine	-
<i>Dalbergia sissoo</i>	Himalayan Raintree	-
<i>Datura ferox</i>	Fierce Thornapple	-
<i>Echium plantagineum</i>	Paterson's Curse	-
<i>Jatropha gossypiifolia</i>	Bellyache Bush	X
<i>Martynia annua</i>	Devil's Claw	-
<i>Mimosa pigra</i>	Mimosa, Giant sensitive Tree	X
<i>Parthenium hysterophorus</i>	Parthenium Weed	X
<i>Prosopis pallida</i>	Mesquite	X

Species name	Common name	WoNS
<i>Vachellia nilotica</i>	Prickly Acacia	X
<i>Ziziphus mauritiana</i>	Chinese Apple	-
Declared Weed Class B- growth and spread to be controlled		
<i>Acanthospermum hispidum</i>	Star Burr	-
<i>Alternanthera pungens</i>	Khaki Weed	-
<i>Cenchrus echinatus</i>	Mossman River Grass	-
<i>Cenchrus polystachios</i>	Mission Grass	-
<i>Hyptis suaveolens</i>	Hyptis	-
<i>Lantana camara</i>	Common lantana	X
<i>Parkinsonia aculeata</i>	Parkinsonia	X
<i>Pennisetum polystachion</i>	Mission Grass	-
<i>Senna alata</i>	Candle Bush	-
<i>Senna obtusifolia</i>	Sicklepod	-
<i>Senna occidentalis</i>	Coffee Senna	-
<i>Sida acuta</i>	Spinyhead Sida	-
<i>Sida cordifolia</i>	Flannel Weed	-
<i>Sida rhombifolia</i>	Paddy's Lucerne	-
<i>Stachytarpheta cayennensis</i>	Cayenne Snakeweed	-
<i>Stachytarpheta jamaicensis</i>	Jamaican Snakeweed	-
<i>Stachytarpheta mutabilis</i>	Pink Snakeweed	-
<i>Tamarix aphylla</i>	Athel Pine	X
<i>Themeda quadrivalvis</i>	Grader Grass	-
<i>Tribulus cistoides</i>	Beach Caltrop	-
<i>Tribulus terrestris</i>	Caltrop	-
<i>Xanthium occidentale</i>	Noogoora Burr	-
Declared Weeds Class C - not to be introduced to the Northern Territory		
<i>Datura leichhardtii</i>	Native Thornapple	-

3.2 Pest animals

In order to determine pest species that may occur in the project area a database search was undertaken using the NT NRM InfoNet: This website is maintained by Charles Darwin University in collaboration with NT Department of Lands, Planning and the Environment and holds a complete set of environment data obtained from a range of sources. A search was conducted for pest animals in the Bioregion within which the project area lies.

Baseline fauna surveys were conducted at Deposit C by EcOz in July 2011 and May 2012 and involved three field days of trapping and active searching across 10 survey sites, consistent with the Northern Territory

Survey Methods for Flora and Fauna Surveys Used for Standard Biodiversity Unit Survey Sites (2008). These data are also considered here.

The database search and field survey provided a list of 15 feral animals for the region (Table 2).

Table 2. Pest animals of the project area

Species Name	Common Name	NT NRM InfoNet	EcOz survey
Amphibian			
<i>Rhinella marina</i>	Cane Toad	X	X
Reptile			
<i>Hemidactylus frenatus</i>	Asian House Gecko	X	
Birds			
<i>Columba livia</i>	Rock Dove	X	
<i>Passer domesticus</i>	House Sparrow	X	
Mammal			
<i>Bos taurus</i>	Cattle	X	X
<i>Bos javanicus</i>	Banteng	X	
<i>Bubalus bubalis</i>	Swamp Buffalo	X	
<i>Canis lupus</i>	Domestic Dog/ Dingo	X	
<i>Capra hircus</i>	Goat	X	
<i>Equus asinus</i>	Donkey		X
<i>Equus caballus</i>	Horse	X	
<i>Felis catus</i>	Cat	X	
<i>Mus musculus</i>	House Mouse	X	
<i>Rattus rattus</i>	Black Rat	X	
<i>Sus scrofa</i>	Pig	X	X

Field surveys recorded the presence of three pest species (Cane Toads, Cattle and Pigs) and a forth, Donkeys, were record in the region. As Mount McMinn is a pastoral lease, Cattle are more correctly considered domestic stock rather than feral animals. The remaining mammals are all considered likely to occur in the area. Asian House Geckos are closely linked to human habitation and are likely to arrive once the project develops. Asian House Geckos are not considered to spread beyond areas of human influence and are unlikely to become an environmental pest (Vanderduys & Kutt 2013).

Tramp ant species also have the potential to be pests of this area. Currently the Federal Department of the Environment (DoE – formally SEWPAC) recognises six species as a national priority for management (CoA 2006), of which three occur in the Northern Territory:

- Yellow Crazy Ant (*Anoplolepis gracilipes*) – localised incursions in north-eastern Arnhem Land
- Tropical Fire Ant (*Solenopsis geminata*) – widespread incursions in Darwin and Katherine regions

- African Big-Headed Ant (*Pheidole megacephala*) – widespread in the Northern Territory, including infestations at Ngukurr.

Another species of tramp ant, Singapore Ant (*Monomorium destructor*), is widespread in the Northern Territory and is estimated to cause in excess of one million dollars damage in the Top End each year to electrical items (CSIRO 2011). All these ants are readily transported.

Other potential pest species not identified in database searches which may be potential pest species are rats, flies and unnatural aggregations of native birds at landfill sites.

4 Risks and priorities

Cooperation and consultation with neighbouring landholders will be essential in assessing risks and setting priorities. Management of pest species is most effective with a co-operative strategic approach.

4.1 Weed risk

Significant ground disturbances associated with mining activities provides an ideal environment for the establishment of weeds. Given that the project area currently has a relatively low density of weeds, vigilant monitoring, hygiene and control will be required to prevent the establishment of new weeds. Weed management will also be important to prevent weed infestation of rehabilitated areas. Impacts of weeds are highlighted in Table 3.

Table 3. Impacts associated with weed infestations

Environmental Impact	Competition with native species for resources Toxicity to native animals Reduction of biodiversity Degradation of water quality (with soil erosion and aquatic weeds) Increased risk and impact of fire Unstable soil layer and increased erosion potential Degradation of land conditions Altered ecosystem.
Economic Impact	Cost of survey and control Toxicity to stock Loss of land productivity.
Social Impact	Degradation of recreational values Impact on human health (such as allergic reactions, dermatitis and rhinitis or asthma on contact with the plant or its pollen) Risk to safety Potential for more destructive fires.

4.1.1 Weed priorities

Control efforts should be guided by the potential risks posed by weeds. Identification of areas degraded with weeds is important because these areas can act as foci for weed spread and must be appropriately managed. Weed threats will be prioritised by the species, size of infestation and location. Generally weeds declared as Class A or C weeds (Table 1) will be afforded a higher priority for management than those declared as Class B or environmental weeds. Priorities for weed management have been identified as:

1. Hygiene; the establishment of new Class A weed species is to be prevented. All efforts will be made to ensure that the project areas remains free of infestations of Class A weeds and the introduction of any species listed only as Class C is to be prevented.
2. Prevention of introduction of all other species (Class B and environmental weeds).
3. Management of existing Class B weeds, particularly around nearby areas currently disturbed by pastoral operations or areas disturbed areas by mining.
4. Management of existing environmental weeds, particularly around nearby areas currently disturbed by pastoral operations or areas disturbed areas by mining.

The approach used to manage weeds will be dictated by the type of weed, growth stage, size of infestation, location of the infestation and current land use. When prioritising individual areas of weed infestations, a number of aspects will be taken into consideration, including the following:

- Proximity to roads/tracks - infestations close to tracks get high priority
- Proximity to drainage line/waterway - infestations close to drainage lines more likely to spread
- Phase of invasion - early stages can be controlled more easily, so will get high priority
- Size of infestation - smaller infestations can be controlled more easily, so will get high priority
- Susceptibility to wind dispersal as well as prevailing wind direction - weeds growing in elevated areas or weeds with light seeds more likely to disperse get higher priority
- Proximity to the lease boundary - weeds close to boundaries get higher priority
- Declaration status under the *WM Act* - weeds ranked as Class A or only as Class C under the *WM Act* will get high priority
- Weed status at national level (i.e. all weeds nominated as a WoNS will get high priority).

Identified weed species within this area will be actively managed as per specific controls given in the Weed Management Handbook (NTG 2012) or as recommended by NTG Weeds Officers. Sherwin will contact the Weed Management Branch of Department of Land Resource Management (DLRM) to be advised on the most effective methods for management of specific weeds and ensure the planned strategy aligns with the overall weed strategy for the region.

Regular follow-up is essential to maintain the benefits of control efforts. When planning to undertake management of an infestation, it is imperative to consider whether resources will be available in subsequent years to treat the same areas of infestation.

Keeping vegetation disturbance to the minimum required, and rehabilitation of disturbed areas as soon as practicable, will be a priority as it will reduce the amount of area prone to weed establishment.

4.2 Pest risk

Artificial water sources and unsecured organic waste material may attract some animals to the project area. These animals may already be recognised as feral pests, or they could be native species which due to the availability of resources may become pests.

Tramp ants can be readily transported in containers, soil, plants, timber, machinery and electrical items. Hence the movement of most gear and equipment to this area presents a risk of introducing tramp ants.

4.2.1 Pest priorities

Pest problems are best prevented by minimising access of pest species to artificial water sources and organic waste material. This is more easily achieved for larger vertebrate species.

Smaller vertebrate species (e.g. Rats, Cane Toads) and some invertebrate pests (e.g. Tramp Ants) may need to be the subject of a baiting/trapping programmes if detected or numbers appear to be increasing.

5 Goals, targets and actions

5.1 Weeds

Table 4. Weed management goals, targets and actions

Goal	Target	Action
No new species introduced.	Effective monitoring of weed species.	Annual monitoring and survey.
		Training of selected staff in the identification of weeds.
		Weed notes for species with the potential to be transferred to site will be posted on notice boards around the mine and camp to assist in identification and response.
	Implement effective weed hygiene.	Wash-down facilities installed at key entry/exit locations.
		Vehicles/equipment washed down, inspected, details entered into a register and certified weed free before entry into the project area.
		Purchase of materials from suppliers guaranteeing weed free status.
		All material imported to site inspected.
		No soil imported to site.
		All staff and visitors made aware of the potential to introduce new weeds during inductions.
	Develop strategic and coordinated actions.	Liaison with neighbours and other stakeholders.
Strategic management of existing weeds.	Minimise disturbed area available for weed colonisation.	No unnecessary clearing.
		Boundaries of areas to be cleared are clearly marked.
		Construction activities to be limited to designated areas.
		Rehabilitate disturbed areas as soon as practicable.

Goal	Target	Action
	Project area to remain free of all weeds.	Encourage all field staff to report weed sightings.
		Weed identification information and control handbooks available to all staff.
		Control of weed species using best available techniques.
		Weed notes for any new species transferred to site will be posted on notice boards around the mine and camp to assist in identification and response.
		Weeds shall not be disposed of at landfill – a special composting area for weeds will be established.
		Daily toolbox meetings will be used to raise awareness of weed issues on site.

5.2 Pests

Table 5. Pest management goals, targets and actions

Goal	Target	Action
Strategic management.	Management aligns with regional efforts and conform to best practice.	Liaison with neighbours and other stakeholders.
		Seek advice from Department of Health and DLRM on control and monitoring of vermin.
		Daily toolbox meetings will be used to raise awareness of pest issues on site.
Appropriate disposal of organic wastes.	Regular, well organised waste collection.	Rubbish collected in covered bins and frequently transferred to landfill
	Landfill well sited, fenced, organised and managed.	Landfill located in an area which will cause minimal impact to surrounding environment and mine personnel.
		Fencing erected around landfill.
		Wastes separated and managed by type.
		Baiting and/or trapping of pests as necessary.
	Minimise the attraction of pests to landfill.	Burning of putrescible wastes as necessary.
		Appropriate frequency and thickness of soil cover over landfill.
		Compost organic wastes where possible before disposal.
Exclusion of large vertebrate species from project area.	Project area free of stock and large feral animals.	Erect and maintain exclusion fencing around project area.
		Cattle grids installed.
No introduction of new species.	No tramp ants transported into the project area.	Training of staff in the identification of tramp ants.
		All material imported to site inspected.
		No soil imported to site.

6 Monitoring and review

6.1 Monitoring and records

6.1.1 Weeds

Annual weed surveys will be performed by a suitably experienced person to identify any new weed species and to assess the effectiveness of any weed management activities. These surveys will be performed at the end of the wet season, when access permits. A report summarising the findings of the survey and any response/controls implemented will be included as part of the annual Mining Management Plan (MMP) update.

Areas of focus for weed surveys will include:

- Watercourses, particularly after floods – Stream crossings, creek lines
- Access tracks & haul roads – Local access tracks and associated sedimentation ponds designed to collect the runoff sediments (including any sort of contamination)
- Mine area and associated sedimentation ponds – Areas of land affected by clearing and earthmoving operations for the establishment of pits, storage areas, ancillary infrastructure and local access
- Boundaries with adjacent lands and along fence-lines
- Wash-down bays – Wash-down bays, sumps and any areas collecting drainage from these areas.

Any new outbreak will be reported to the DLRM Weeds Branch and advice will be taken from them to manage identified weeds.

A weed management database will be maintained to keep records of each outbreak and document the control measures used, effort (e.g. hours, herbicide volumes) and success of these.

6.1.2 Pests

No monitoring of large vertebrate pests will be conducted over the wider project area, but Sherwin staff will respond to any obvious increase in feral animal numbers. Exclusion fencing around the project area will be inspected each year and whenever any large vertebrate pests are detected on site. However, pest numbers at the landfill will be regularly monitored and any changes in pest occurrence as a consequence of changed management practices recorded.

Sherwin staff will investigate and respond to any problem ant infestations. The probable source of the infestation will be identified and measures adopted to ensure there is no reoccurrence.

6.2 Reporting

In accordance with Department of Mines and Energy (DME) requirements, the Mining Management Plan is updated annually and will include a summary of weed surveys/inspections undertaken, issues encountered (e.g. new species/infestations) and management activities undertaken during the preceding 12 month reporting period. Additionally, this Pest and Weed Management Plan will be reviewed annually to monitor the effectiveness of the implemented management strategies and updated where applicable.

Any weed species found within the mine and camp areas will be reported to the Weeds Management Branch (DLRM) and appropriate action will be implemented to control or eradicate the species.

7 Education and training

The key to successful pest and weed management is awareness, rapid detection, and response. To assist in this, adequate education and training needs to be provided. It will be the responsibility of the Project Manager to identify training and competency requirements for personnel under their control, and for ensuring that personnel have the requisite competencies, skills and training to carry out their assigned tasks. He/she will also be responsible for ensuring training records are maintained.

7.1 Induction

All personnel will be inducted by Sherwin prior to commencing work, which will include the following information:

- The goal of ensuring the project is weed free
- Vehicle and equipment and personal hygiene protocols and wash-down procedures
- Requirements for operation of vehicles and equipment, including the need to keep to cleared tracks and nominated routes
- Reporting procedure if weeds or pests are encountered.

7.2 Weeds

7.2.1 Weed identification

Early detection and treatment/eradication is the most cost-effective measure against the threat of widespread weed invasion. Once weeds become established, it is very expensive and sometimes virtually impossible to eradicate them. It is important to detect and control weeds early in their life-cycle, before they produce seed.

Correct weed identification is an essential first step in developing a suitable strategy for weed control. All personnel, particularly field staff will be encouraged to report any incidental sightings to the Environmental Manager. A weed identification hand-book will be provided to field staff. Photographs of weed species known to be problematic in the area will be posted on noticeboards to assist employees with the identification of potential outbreaks around the project area. A training program will also be arranged to assist the field staff with the identification of high risk weeds and the immediate actions that they should undertake when they encounter a weed species. A proforma will be developed for field staff to maintain a standardised data collection approach and this will be updated as required.

Where suspected weeds cannot be identified, they will be collected for identification by a suitably experienced botanist and/or staff from the DLRM Weeds Branch. A whole specimen, including roots where possible, will be collected and sealed in a plastic bag to avoid the spread of seeds. A proforma will be filled at the plant collection site, with details including the date, location and collector's details. When it is not possible to get a specimen to an expert within 24 hours, the plant will be pressed. Alternatively, photographs of the living plant will be used to help botanists identify the plant.

7.2.2 Integrated control

Training will be given to selected field staff such that they are able to undertake the variety of control methods suitable for the weed species present.

ChemCert training will be essential for herbicide applications. Training is also necessary for mechanical operations (which may include slashing or burning), and also for possible biological control of weeds. This may include some basic husbandry techniques for the maintenance of biological control agents for *Sida acuta*, which has already been recorded from Deposit C.

7.3 Pests

7.3.1 Pest identification

Large vertebrate pest and stock species are known to most people and do not require any training in identification. However differentiating Cane Toads from native frogs, or introduced from native rodents is less obvious. Sherwin will ensure that selected field staff will be able to identify these animals.

Ants are also difficult to identify. All personnel on site will be encouraged to report any unusual ant colonies or ants that have become a nuisance. A number of selected field staff will receive some instruction on ant identification and preservation of specimens for expert identification.

7.3.2 Control techniques

Control techniques for pest animals are varied depending on the animal. Baiting and trapping techniques are different for dogs, pigs, rats and ants. Specific training to conduct these activities will be determined as the need arises.

8 Responsibilities

Table 6 lists the roles and responsibilities of the personnel responsible for the management of weeds and pest animals within the project area.

Table 6. Weed management roles and responsibilities

Position	Responsibility
Project Manager	<p>Ensure that all declared weeds and pest animals are identified and controlled as required by regulations</p> <p>Ensure that this Pest and Weed Management Plan is implemented</p> <p>Provide access to training for personnel.</p>
Environmental Manager	<p>Ensure that all personnel are aware of and adhere to these procedures</p> <p>Ensure vehicles are inspected for seed and soil when entering site</p> <p>Implement wash-down procedures</p> <p>Maintain wash-down logs</p> <p>Inspect individual component of waste treatment facility before directing treated material to other component</p> <p>Ensure staff and/or contractors have appropriate skills in pest and weed identification</p> <p>Maintain and act upon Weed Control Register</p> <p>Ensure regular surveys to identify noxious pest and weeds are performed, and undertake any control programs required.</p>
Employees and Contractors	<p>Report any suspected occurrence of noxious weeds and feral animals to field manager</p> <p>Wash all vehicles and equipment before entering or leaving site, in accordance with wash-down procedures.</p>

9 Acronyms

CSIRO	Commonwealth Scientific and Industrial Research organisation
DLRM	Northern Territory Department of Land and Resource Management
DME	Department of Mines and Energy
DSEWPAC	Commonwealth Department of Sustainability, Environment, Water, Populations and Communities
DSO	Direct Shipping Ore
EIS	Environmental Impact Statement
EL	Exploration Lease
IBRA	Interim Biogeographic Regionalisation for Australia
ML	Mining Lease
MMP	Mine Management Plan
NT NRM	Northern Territory Natural Resource Management
WM Act	Weed Management Act
WoNS	Weed of National Significance
PWMP	Pest and Weed Management Plan

10 References

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