Appendix E – Conservation Significant Flora and Native Vegetation, Conservation Significant Fauna, and Weed and Hygiene Management Plans (Talison Lithium Pty Ltd)





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Executive Summary

This Conservation Significant Flora Management Plan (the Plan) has been submitted to support environmental referrals under the Environmental Protection Act 1986 (EP Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) for the Greenbushes Lithium Mine Expansion, which will be developed by Talison Lithium Pty Ltd (Talison). Table 1 presents the purpose of the Plan in the context of Western Australian Environmental Protection Authority (EPA) objectives.

Table 1: Outline of the Plan

Detail	Description	
Proponent Name	Talison Lithium Pty Ltd (Talison)	
Project	Greenbushes Lithium Mine Expansion	
Management Plan Purpose	This Plan is submitted to support referrals under the EP Act and the EPBC Act. • The purpose of this Plan is to maintain representation, diversity, viability and ecological function at the species, population and community level.	
Key environmental factor	Native Flora and Vegetation and Threatened Flora	
Objective	To control impacts, including but not limited to weeds, unauthorised access, increased fire risk and litter, changes to surface water regimes, to flora and vegetation, including but not limited to the: • Pink Spider Orchid (Caladenia harringtoniae)	
	Flora and Vegetation: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.	
	To provide a framework for managing and mitigating the potential impacts to vegetation from clearing activities arising from the mining operations and related infrastructure.	

This Plan is designed to be adaptive and will be continually updated over the Greenbushes Lithium life of mine, estimated to be approximately 20 years. Updates will be driven by increasing knowledge of conservation significant species and the adaptive management and effectiveness of the management measures being implemented. With current and continued consultation will all relevant government departments (as needed) this Plan will be updated and revised.



Project description

The proposed expansion of the Greenbushes mine site will increase the production of spodumene ore and lithium mineral concentrate from the Greenbushes deposit. The Greenbushes Lithium Mine is located at the current operations; immediately south of the Greenbushes townsite, approximately 250 km south of Perth, and 80 km south east of Bunbury in Western Australia (WA) (Figure 1).

Talison is proposing to expand the existing Talison Greenbushes Lithium Mine within Talison tenements M1/03, M1/06, M1/07, M1/08, M1/09, M1/16, G01/1, G01/2 (see Figure 2). The proposed expansion includes an expanded open pit, extension of the existing waste rock landform, construction of two additional processing plants and crusher (Chemical Grade Plant #3 and #4), expansion of an existing ROM, a new Mine Services Area, new explosive magazine and batching facility, construction of a new tailings storage facility (TSF 4), and establishment of linear supporting infrastructure for the expansion including pipelines/power supply/access roads from South West Highway. The mining rate will also increase from 3.5 Million bench cubic metres per annum (Mbcmpa) to approximately 16 Mbcmpa, which will require additional mining fleet and blasting activity. The ore processing rate will increase from 4.7 Mtpa to 9.5 Mtpa. Lithium mineral concentrate production will increase from 1.2 Mtpa to 2.3 Mtpa. The proposed expansion will require 350 ha of native vegetation clearing outside existing approval areas. (See Figure 2).

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Conservation Significant Flora and Native Vegetation Plan



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Figure 1: Location of the Project





Relevant Legislation

Legislation directly relevant to the management of conservation significant flora in Western Australia is provided in Table 2.

Table 2: Relevant Legislation

Legislation	Application
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	Assesses the conservation significance of fauna species and forms the framework for significant species protection at the Federal level.
Conservation and Land Management Act 1984 (WA) (CALM Act)	Provides for the vesting or reservation of land for conservation purposes, and the ability to enter into agreements with private. It establishes several statutory bodies including the Conservation Commission of Western Australia.
Conservation and Land Management Amendment Act 2000 (WA)	Allowed the creation of Forest Products Commission ("FPC") to take over the functions of DEC/ CALM under the CALM Act. The FPC promotes the sustainable management and development of Western Australia's forest and wood products industry using native forest, plantation and sandalwood products on land owned or leased by the State.
Conservation and Land Management Regulations 2002 (WA)	Establishes restrictions applicable to activities undertaken within State forests and timbers reserves of Western Australia.
Environmental Protection Act 1986 (WA) (EP Act)	The Act provides for an environmental impact assessment process undertaken by the EPA and sets out requirements for the prevention, control and abatement of pollution and environmental harm and for the conservation, preservation, protection, enhancement and management of the environment.
Agriculture and Related Resources Protection Act 1976	Provides for the management, control and prevention of certain plants and animals, for the prohibition and regulation of the introduction and spread of certain plants and of the introduction, spread and keeping of certain animals, for the protection of agriculture and related resources generally, and for incidental and other purposes.
Wildlife Conservation Act 1950 (WA) (WC Act)	State process which assesses the conservation significance of fauna species and forms the framework for significant species protection.
Regional Forest Agreement (South West Region)	The WA RFA is a 20-year agreement between the State and Commonwealth governments on the use and management of the forests of Western Australia's southwest. The WA RFA was signed on 4 May 1999 and expires in 2019.
State Forest Access Act 1946	Set outs acts and regulation for State forest areas of Western Australia.
Environmental Protection Act (Clearing of Native Vegetation) Regulations 2004	Set out provisions regulating the clearing of native vegetation.

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Figure 2: Talison Tenements

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Figure 3: Proposed Disturbance Areas

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Roles and Responsibility

Accountability for fulfilling the requirements of this Plan is dependent on the stage of project development (construction, operations, decommissioning, rehabilitation and closure). Irrespective of whether construction activities are undertaken by external contractor or internal personnel, the designated Project Manager will be accountable for ensuring the requirements of The Plan are met. Responsibility may be delegated to the Manager EHS&T or other personnel. During operational stages, the Manager EHS&T is accountable for ensuring the requirements of the Plan are met. Responsibility for specific tasks may be delegated. Where responsibilities are delegated, this must be clearly recorded and communicated. Table 3 attributes specific management actions to the appropriate personnel.

Table 3: Roles & Responsibilities

Position	Responsibility	
Environmental Team	To formulate the Plan and provide guidance in the approach to fulfilling commitments of the Plan.	
	To implement and report on fauna monitoring and assessment work and audit conformance of activities against the management actions of the Plan.	
Manager Environment	To maintain site records of surveys and arrange monitoring programs as required. To document any direct observations into the Conservation Significant Flora database. To provide site staff with the tools and resources required to meet Talison objectives	
	To provide technical support and advice to site staff.	
Employees, contractors and visitors	To reduce any impacts on flora resulting from the construction and operation of the project. To report sightings, vehicle strikes or any encounters with recognisable conservation significant flora species.	
Construction Manager/ Operations Manger	To ensure Talison conditions, commitments and policies are followed on-site.	
General Manager Operations	To provide site staff with the tools and resources required to meet Talison's objectives. Ensure overall compliance to The Plan.	

1. Rationale

The section includes a summary of the proposed Greenbushes Lithium Mine Expansion and its main aspects. A summary of flora, vegetation and dieback surveys under taken, as well as an outline of any assumptions and uncertainties, the management approach to be used, and the reasoning behind the approaches taken.

1.1. Proposal

The Greenbushes Lithium Mine (the Mine) is an existing mining operation owned and operated by Talison Lithium Australia Pty Ltd (Talison). Talison currently mines and processes spodumene ore at the Greenbushes Lithium Mine to produce a lithium mineral concentrate at approximately 6% Lithium Oxide (Li2O).

The proposed expansion will require the current approved operational boundary (Active Mining Area) to be extended to the south, with a smaller extension to the north, increasing the current (approved) area of 1,591 hectare (ha) to 1,989 ha, i.e. an increase of 398 ha.

The expansion activities require 350 ha of native vegetation clearing within State Forest 20 (within Talison tenements). Of the 350 ha, approximately 193 ha is Jarrah/Marri forest over Banksia, and the remaining 157 ha is Jarrah/Marri forest. Onshore Environmental conducted flora surveys within the Mine Development Envelope (MDE) area and found there were no state or federal listed Threatened Flora (T)



present. A previous detailed (Level 2) flora and vegetation survey of the wider Greenbushes mining lease areas found that one plant gazetted as Threatened (Declared Rare) and EPBC Act listed. The Pink Spider Orchid (Caladenia harringtoniae) is located approximately 500 m outside the southwest sector of the MDE.

1.2. Key Environmental Factors

The key potential impacts to conservation significant flora arising from Talison's activities are presented in Table 4. Direct impacts on flora are likely to be associated with direct loss of individuals, habitat loss, alteration or fragmentation, introduction of feral predators, new invasive species/ infestations, introduction or spread of the pathogen *Phytophthora cinnamomi*, and altered fire regimes.

Table 4	4. Potential	Environmental	Impacts
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Potential Environmental Impacts	Details
Clearing activities	Direct loss of plants, population or native vegetation from unauthorised clearing.
Altered fire regimes	Due to the increased activity (people and machinery movements) in the area, there is an increased risk of accidental fire.
Introduction of feral predators	Introduced predators (e.g. cats, foxes, wild pigs) are recognised as a threat to the survival of a number of conservation significant species. Mining activities can contribute to an increase in these feral predator populations through an increase in available food and water.
Loss of individuals or populations	Direct mortality to conservation significant species.
Increased threat of introduced species (weeds)	Introduced species often grow faster than native vegetation and successfully compete for available nutrients, water, space and sunlight reduce natural diversity by smothering native plants or preventing them from growing back after clearing, fire or other disturbance. They often compete out native vegetation.
Change in surface water flows	Alteration in surface water flows could impact conservation significant flora species and native vegetation, resulting in population loss and/or vegetation decline.
Introduction of plant pathogens (Phytophthora cinnamomi)	Increase in plant pathogens may increase tree deaths, plant death and population loss.
Dust impacts to native vegetation	Loss of native vegetation from dust/contaminant deposition. Air quality modelling has shown that generally dust will be well below limits using standard industry control practices (e.g. water trucks on haul roads).

1.3. Condition Requirements

There are no specific conditions relating to native vegetation or conservation significant flora that apply to the Project. This Plan is submitted with the environmental referrals in order to satisfy the EPA and the Department of the Environment and Energy (DoEE) that Talison has taken into consideration the environmental objectives set for conservation significant flora, specifically:

• Pink Spider Orchid (Caladenia harringtoniae).

Talison are committed to implementing the Greenbushes Lithium Mine Expansion in a manner that meets these objectives. The purpose of this plan is to manage the potential impacts on flora and native vegetation listed under Section 178 of the EPBC Act, resulting from the proposed expansion. In addition, the Plan provides guidelines on conservation significant flora and native vegetation monitoring that may be utilised to determine the level of impact on flora and native vegetation species within and bounding Talison's operations. The Plan addresses management issues relevant to Caladenia harringtoniae, which occurs within close proximity to the MDE. It also aims to minimise impacts on remnant native vegetation within the MDE and native vegetation immediately surrounding the site or "zone of indirect impact".

1.4. Rationale and Approach

1.4.1. Survey

Onshore Environmental was engaged to conduct a Level 2 flora and vegetation survey over Talison's Greenbushes mining tenements in Spring 2011 (10,060 ha). This survey was the first broad scale assessment of all the Greenbushes mining leases and has been referred to by Talison as a baseline for environmental approvals, impact assessment and closure planning. The study included a review of previous survey work completed within, and immediately adjacent to the Greenbushes mining leases (Onshore Environmental 2012).

A review of the initial flora survey was completed in February 2018 by Onshore Environmental (Onshore Environmental 2018a) to evaluate against criteria established within the most recent EPA technical guidelines for flora and vegetation surveys (EPA 2016).

In July 2018 Onshore Environmental completed a first season detailed flora and vegetation survey of remnant native vegetation occurring within the MDE. The most recent intensive survey produced fine-scale vegetation type mapping for the MDE. A follow-up spring assessment (second season) will commence in late September 2018.

Table 5: Surveys and Studies

Date	Survey Type	Details
September 2011	Level 2 flora and vegetation survey - Onshore Environmental 2012	Broad scale assessment of all the Greenbushes Mine leases and has been referred to by Talison as a baseline for environmental approvals, impact assessment and closure planning.
February 2018	Review of the September 2011 detailed flora and vegetation survey of the MDE – Onshore Environmental 2018a	Review of the 2011 survey assess its adherence to the most recent technical guidelines for flora and vegetation surveys (EPA 2016h), and address any updates required significance and disturbance mapping.
July 2018	First Season Detailed Flora and Vegetation Survey - Environmental 2018b	A first season detailed flora and vegetation survey of remnant native vegetation within the mine development envelope.
2018 – Prior	See Weed and Hygiene Management Plan ENV9008	Outline of all the dieback surveys, and current status of Dieback on the Site

1.4.2. Study Findings

Onshore in the Level 2 (detailed) flora and vegetation survey of the ten Talison mining leases formally assessed 26 quadrants. During this survey "one plant taxon gazetted as Threatened pursuant to subsection (2) of section 23F of the WC Act and listed as Vulnerable under the EPBC Act, was recorded; Caladenia harringtoniae. Caladenia harringtoniae was recorded as 26 plants from an unincised drainage line / dampland in the south-west sector of the area surveyed. One Priority 3 flora taxon was also recorded; Tetratheca parvifolia. Tetratheca parvifolia was recorded from two locations within the north-west sector of the area." (Onshore 2018).

The 2018 survey recorded 231 plant taxa (including varieties and subspecies) from 56 families and 138 genera within the MDE. Species representation was greatest among the Fabaceae, Cyperaceae, Proteaceae, Myrtaceae and Poaceae families. The most speciose genus was Acacia (18 taxa), followed by Leucopogon, Hibbertia and Lomandra (6 taxa each) (Onshore Environmental 2018). A total of 86 introduced flora species were recorded within the Talison Greenbushes mining leases. during the Onshore



Environmental 2011 survey. Three of those recorded are Declared Plants under the Biosecurity and Agricultural Management Act 2007 (BAM Act) (Onshore Environmental 2012).

1.4.3. Key Assumptions and Uncertainties

The key assumptions and uncertainties within this management plan include:

- Maps of the mine footprint are accurate for identifying potential vegetation clearance activities;
- Information from National and State databases used to identify potentially occurring species are accurate;
- Instances of fire will be short-lived with quick emergency response teams on hand and able to be controlled, and not likely to replicate natural fire regimes; and
- Vegetation surveys identified and mapped all native vegetation, including annual species.

Key Assumption	Action
Vegetation surveys identified all native vegetation and annual species	Undertake vegetation surveys prior to any land clearance to confirm that no previously unidentified vegetation is present and to confirm the expected native vegetation. Ensure flora surveys are completed during peak flowering periods – spring.
Mine map accuracy	Review mine map and GIS database prior to any vegetation clearance to identify any modifications made between the maps used in the vegetation surveys and the final implementation of mine activities.
External vegetation database assumptions	Undertake spot checks for presence of plant species identified in vegetation reports as potentially occurring.
Fire response	Verify expected outcomes through vegetation survey and make appropriate management adjustments to fire protection management program if required.
Dust management plan in place is adequate to mitigate dust impacts on surrounding native vegetation	Verify expected outcomes through native vegetation health monitoring and survey and make appropriate management adjustments to dust suppression regime if impacts or vegetation health detected.
Phytophthora cinnamoni (dieback) management plan in place is adequate to mitigate Phytophthora cinnamoni (dieback) in uninfested areas impacts on surrounding native vegetation	Verify expected outcomes through native vegetation health monitoring and survey, and make appropriate management adjustments to dieback management plan and regime if impacts or changes to vegetation health are detected.

Table 6: Key Assumptions and Uncertainties

1.4.4. Management Approach

The management approach has been informed by best practice and recent experience on mine and construction projects in Western Australia. The hierarchical approach taken focuses on avoiding ecologically sensitive areas where possible, by utilising disturbed or cleared areas.

The management approach taken in this management plan is risk-based and developed around the mitigation hierarchy of avoid, minimise, rehabilitate and offset to ensure impacts to the Pink Spider Orchid (*Caladenia harringtoniae*) and wider native vegetation areas have been avoided or reduced to as low as reasonably practicable.

Management actions detailed in this Plan have been specifically designed to ensure the proposed expansion meets its environmental objectives for the key environmental factors. Risks and management actions were identified and prioritised using information gained from baseline surveys and other regional and local information. The Plan aims to minimise the duration, intensity and/or extent of impacts on flora and vegetation during clearing, pre-mining and construction activities. However, any significant unavoidable residual impacts will be offset.



1.4.5. Rationale for Choice of Management Targets

The management approach is informed by results from previous flora and vegetation surveys, with the proposed expansion parameters aimed at minimising direct impact. The proposed expansion parameters include utilising existing disturbed areas and undertaking progressive rehabilitation where possible. The mitigation measures have been designed for the expected approximate 20-year life of mine, and as such, the plan may require revision and adaptation throughout the course of the mine life.

The rationale for the choice of management targets is described below.

• Management Target 1:

No unauthorised or accidental clearing of significant flora (individuals or populations), or native vegetation.

• Management Target 2:

No indirect impact to conservation significant flora and native vegetation immediately surrounding the MDE. Indirect impacts may include edge effects, increased dispersal of weeds, dust or changes to hydrological processes.

• Management Target 3:

Ensure no direct mine impact within the proximity of the population of the Pink Spider Orchid (Caladenia harringtoniae).



2. EMP provisions

This portion of the Plan describes the measures that will implement to ensure the protection of conservation significant flora within, and surrounding, the MDE. Outlined are specific measures to mitigate and manage potential risks and ensure the protection of:

• Pink Spider Orchid (Caladenia harringtoniae).

Management actions may be necessary in the event that monitoring indicates a change in vegetation health outside of the "zone of indirect impact", potentially caused by the proposed expansion. Indirect impacts may include edge effects, increased dispersal of weeds, dust and/or changes to surface water flows.

2.1. Objectives of the Plan

The objectives of the Plan include providing:

- An overarching framework for all conservation significant species in the MDE;
- An effective conservation species management plan with consideration of main stakeholders;
- Information on the likely extent of direct and indirect impacts to conservation significant flora and because of the project, including updated information collected during ongoing flora and vegetation surveys and application of adaptive management during the life of mine, rehabilitation and closure phases;
- A monitoring program to be implemented during all phases of the project to asses the effectiveness of the mitigation measures and inform an adaptive management approach; and
- Commitment to maximise the ongoing protection and long-term conservation of significant flora species within the Project area and surrounding areas that may subject to edge effects.

2.2. Management Objectives and Targets

Table 6: Management Objectives and Targets

Project Management Objectives	Management targets
Minimise the potential for clearing to cause damage	Minimise any requirement to clear significant flora individuals or
or death to individuals or populations	populations.
	No unauthorised or accidental clearing of significant flora
	individuals or populations.
Minimise the risk of dust impacting flora &	Minimal death or decline in health due to dust and a reduction in
vegetation	the plant and vegetations photosynthetic abilities.
Minimise the risk to flora from unauthorised off	Minimal damage or death attributable to off-road driving.
track driving	
Minimise requirements for clearing which causes	No clearing outside approved clearing areas. Progressive
fragmentation	rehabilitation undertaken where possible.
No net increase in fire	No fires attributable to mining, clearing, construction or associated
frequency	activities.
	Firefighting equipment will be located on site and emergency
	personnel will be trained in fire response Lightning protection
	equipment will be installed as part of project design where
	necessary.
	Vehicles will not be permitted to leave access tracks or cleared
	areas unless approved.
	A Hot Work Permit system has been developed and implemented.
	I dilson will work with the idnaholders, community, and DBCA to
	undertake prescribed burns and install and maintain firebreaks if
	required so that potential environmental damage from extreme
	and out of control wildfires is minimised and intrastructure and the
Minimize the increase in fearly and the shared area	community are protected throughout the life of the project.
Minimise the increase in terdi species abundance	Limit the waste and water sources not available to teral animals
(e.g. Figs) in particular herbivores especially risk to	especially nerbivores.
rink Spider Orchid	The manual line and the manual second s
	Inere will be no net increase in teral species abundance.
Minimise impacts to native vegetation within the	Limit change in vegetation condition for areas surrounding the MDE
ADE	France la sensitiva de expected under normal seasonal variation.
MDE)	Ensure baseline monitoring data for reference sites has been
	recorded to allow determination of any vegetation decline that
	may be attributable to the project / mining impacts.
	Limit change in infroduced species (weed) composition and ground
	cover (by comparison with baseline data) attributable to the
	project / mining impacts.

NB: Management targets related to weeds and Dieback are identified in the Weed and Hygiene Management Plan

2.3. Management actions to be implemented to achieve the environmental objective

Management and mitigation measures have been developed to reduce the risk of potential impacts on native vegetation. The ongoing implementation of site-specific management and mitigation measures will ensure that impacts to conservation signification flora and native vegetation are minimised. Where the hierarchy of avoid, minimise, rehabilitate is unable to be achieved, a suitable offset will be provided.

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Table 7: Management Actions Conservation Significant Flora and Native Vegetation

Conservation Significant Flora and Native Vegetation Plan

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
Minimise the potential for clearing to cause damage or death to individuals or populations	Minimal unauthorised or accidental clearing of conservation significant flora individuals or populations	 Avoid accidental clearing of native vegetation and the Pink Spider Orchid (<i>Caladenia harringtoniae</i>) through the stringent use of the implemented internal clearing permit procedure and ground disturbance procedure. These procedures have been successfully implemented, and include flagging of clearing areas by surveyors, supervision of clearing by a suitably qualified environmental professional, and reporting of over- clearing). <u>NV - PR - 5003 - Clearing Disturbance Criteria and Permit</u> Complete further comprehensive pre-clearance flora surveys to validate known locations of <i>Caladenia harringtoniae</i>. Where <i>Caladenia harringtoniae</i>) has been recorded the following actions will be undertaken: It will be avoided as far as practicable. For any plants located within the MDE, a 50 m buffer will be demarcated and signed as Threatened Flora Exclusion Zones, with physical barriers installed in areas of high risk. Plants and populations will be recorded in the Conservation Significant Flora Register.	All Phases	Manager Environment	Ground disturbance register Internal clearing permits Survey data/GIS Database Annual Environmental Report Incident reports for over-clearing
Minimise impacts to native vegetation within the "zone of indirect impacts" (i.e. directly outside the MDE)	Baseline monitoring data for reference sites has been recorded to allow determination of any vegetation decline that may be attributable to the project / mining impacts. Change in vegetation condition for areas surrounding the MDE is within normal seasonal variation. Introduced species (weed) composition and ground cover does not increase areas surrounding the MDE.	Dust will be managed through the adherence to the Dust Management Plan and use of suppression techniques to limit the risk and impact on native vegetation. Ongoing training and awareness regarding dust and impacts will be delivered to all site personnel including employees, contractors and visitors via inductions and ESIS updates. A formal vegetation monitoring program will be implemented to assess vegetation health in native vegetation surrounding the MDE, with a focus on important receptors such as the Caladenia harringtoniae population.	All phases	Manager Environment	Vegetation Health Monitoring Report GIS Data/ NDVI-NDRE Imagery Annual Environmental Report

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SITE MANAGEMENT PLAN **ENVIRONMENT ENV9007**

Table 7: Management Actions Conservation Significant Flora and Native Vegetation

Conservation Significant Flora and Native Vegetation Plan

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
Minimise the risk to flora from unauthorised off track driving.	Minimal damage to significant flora due to off track driving	Traffic management procedures are in place on the Talison site and will continue to be enforced by site personnel. Procedures include keeping to built tracks and mine roads unless authorised, no driving off road, and personnel must adhere to assigned speed limits.	All phases	Manager Environment	Survey data/GIS Database Annual Environmental Report Incident report for flora damage/deaths
Minimise requirements for clearing which results in habitat loss and fragmentation	No clearing outside approved clearing boundaries. Progressive rehabilitation to be undertaken.	Any areas that are cleared that do not need to remain cleared, will be rehabilitated as soon as practicable. This will be undertaken in conjunction with the <i>Talison Rehabilitation Strategy</i> . Internal ground disturbance and clearing strategy developed (includes flagging of clearing areas by surveyors, supervision of clearing by a suitably qualified environmental professional, reporting of over-clearing). Progressive land clearing with the amount of active disturbance minimised. Progressive rehabilitation in accordance with the Mine Closure Plan. Completion criteria will incorporate fauna and habitat restoration objectives. ENV - PR - 5003 - Clearing Disturbance Criteria and Permit ENV7000 - Rehabilitation Timeline	All mine site actives	Manager Environment	Ground disturbance register Internal clearing permits Survey data Annual Environmental Report Incident reports for over-clearing
No increase in fire frequency or intensity.	No fires attributed to mining and associated activities.	Avoid increasing fire frequency through maintenance of fire breaks implementing fire management procedures (e.g. Hot Work Permit system, fire-fighting training, Emergency Response Plan). Firefighting equipment will be located on site, in machinery and vehicles. SAF2011 - Hot Work SAF2065 - Site Risk Management MIN1012 - Treating Tyre Fires Lightning protection equipment will be installed as part of project design where necessary. Talison will work with DBCA DFES and local volunteer fir brigades to undertake prescribed burns. Talison will contribute to fire management in the region. ERT2002 - Response to Fire (Surface) MIN1033 - Working Offsite, Remote Areas Staff training and awareness to include information on the prevention and management of fires.	All phases	Manager Environment	GIS / Mapping Incident Reporting

NB: Management targets related to weeds and Dieback are identified in the Weed and Hygiene Management Plan



2.4 Monitoring

The following monitoring will be undertaken for the Plan:

- 1. Prior to commencement of clearing activities:
 - a. A survey will be undertaken across the site footprint including targeted searches aimed at ensuring the ephemeral and annual flora component (seasonal) is adequately assessed to accurately locate and delineate any Threatened Flora population boundaries to further advise the previous surveys of the MDE.
 - b. A baseline survey of reference sites for native vegetation and threatened species within remaining areas (not to be cleared) and the "zone of indirect impacts" to be established. Parameters to be recorded for monitoring purposes include:
 - i. Species richness;
 - ii. Foliage cover;
 - iii. Plant health (including evidence of decline or disease for indicator species); and
 - iv. Vegetation condition.
- 2. During Active Operations (Clearing, Mining, Construction)
 - a. Monitoring differential change in species richness, foliage cover, plant health (of indicator species) and vegetation condition at baseline and reference sites. Baseline transects to be established in Spring and surveys undertaken biannually (Autumn & Spring) to quantify the extent of normal seasonal variation. Assessment methods to include ground-based survey and multispectral analysis (NDRE/NDVI). Regime of monitoring to be managed adaptively dependant on quantitative assessment of results and any required mitigation measures.
 - Monitoring of clearing through the ground disturbance register through the combination of survey data, and aerial photography, GIS database with the company GIS and implemented ground disturbance system.
 - c. Continued monitoring of the existing feral species populations in particular the herbivore populations. Best practice techniques have been developed following consultation with DBCA. The information will also guide and adapt the feral control programs implemented in the Project area.
 - d. Monitoring of rehabilitation progress criteria defined in the Mine Closure Plan. Where there is evidence of management targets not being met, or a trigger value being breached including the unauthorised clearing native vegetation management measures will be reviewed to ensure further impacts do not occur.

2.5 Reporting

The Management Plan sets out the reporting requirements relating to the implementation of the plan which includes:

- Preparation of an Annual Environmental Report (AER) to be submitted to the appropriate regulatory authorities. The AER will include monitoring results and trends as compared to trigger and threshold criteria.
- Provision of data (annually) from monitoring programs to DBCA and DoEE.
- In the event that the management target is exceeded (or not met), the relevant authority will be notified within 7 days of identification of the exceedance, including threshold contingency actions which have been implemented due the exceedance of threshold criteria.

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3 Adaptive Management and Review of the Management Plan

This plan has defined the purpose in section 1.2 and outlined specific management and mitigation measures to address the issue related to conservation significant flora (Section 2), and introduced monitoring and evaluation of these measures (Section 3). The management approach for the Threatened Flora at the mine site will be adaptive. The Plan will be formally reviewed annually by a suitably qualified experienced person. In addition to annual review, the Plan will be reviewed if:

- New information is learned from monitoring, or monitoring indicates that management targets are not being achieved; and
- New information becomes available about the conservation code, for instance a change in conservation status.

Talison implement adaptive management to respond to any issues identified in implementation of management measures, monitoring and evaluation against the management targets, to more effectively meet the environmental objective of the plan. Environmental management is undertaken in accordance with an Environmental Management System (EMS) developed to meet the requirements of ISO14001, relevant legislation and regulations and Australian Standards and other requirements. The EMS is certified to ISO14001 and the integrated management system is certified to ISO 9001. Environmental measurement and monitoring is undertaken in accordance with the relevant environmental work procedures by Environmental Officers on site and the results recorded in accordance with the Filing Register.

Environmental Work Procedures have been developed to ensure that statutory monitoring requirements are met and to ensure that monitoring is undertaken in a controlled manner. Analysis and evaluation of the monitoring and measurement data is conducted and communicated in accordance with procedure ENV5001 Environmental Statutory Reporting.

Potential adaptive management actions include:

- A. Conservation significant flora deaths:
 - Investigate cause;
 - Review management procedures
 - Assess the effectiveness of training on management of flora and native vegetation and amend training method if required and implement more training; and
 - Review feral animal control program and increase frequency if required.
- B. Over clearing:
 - Investigate cause;
 - Review and revise ground disturbance procedure and clearing procedure;
 - Assess the effectiveness of training on management clearing controls and ground disturbance and amend training method if required and implement more training; and
 - Investigate clearing geo-fencing controls if required.



4 Stakeholder Consultation

Talison consulted with stakeholders while developing this plan, consistent with the EPA's expectations to align the plan with the principles of environmental impact assessment. This section provides a summary of the consultation that occurred. The comments raised during consultations with stakeholders were considered in preparing the plan. A summary of the consultation and Talison response is included in Table 10.

Table 10: Stakeholder Consultation

Date	Organisation	Summary of consultation	Talison Response to Comments /Concerns
17/8/18	EPA	Letter requesting additional information and management with respect to supply of additional information and actions to manage and mitigate impacts on flora & fauna.	Talison has considered this and has within the Plan included suitable procedures to manage appropriately.
17/8/18	EPA	Letter requesting additional information regarding mitigation measures for the introduction and/or spread of weeds and <i>Phytophthora cinnamoni</i> (Dieback).	Talison has considered this and has within the Plan to ensure suitable procedures are in place to manage appropriately.
23/8/18	DoEE	Pink Spider Orchid (Caladenia harringtoniae). Further information on whether the proposed action (clearing, increased mining operations, tailings storage etc.) has the potential to result in significant changes to the water tables or runoff quality over time that may impact on the long-term viability of the population known to occur within 500 m of the proposed action.	Talison has considered this within the Plan and has suitable procedures in place to manage appropriately.



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Executive Summary

This Weed and Hygiene Management Plan (the Plan) is submitted to support the environmental referrals under the Environmental Protection Act 1986 (EP Act) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth) for the Greenbushes Lithium Mine Expansion, which will be developed by Talison Lithium Pty Ltd (Talison). Table 1 presents the purpose of the Plan in the context of the Western Australian Environmental Protection Authority (EPA) objectives.

Table 1: Outline of the Plan

Detail	Description
Proponent Name	Talison Lithium Pty Ltd (Talison)
Project	Greenbushes Lithium Mine Expansion
Management Plan Purpose	This Management Plan has been developed to support referrals under the EP Act and the EPBC Act. The purpose of the Plan is to provide a framework to ensure that impacts of weeds on the environment attributable to the Greenbushes Lithium Mine Expansion are minimised. Weeds pose a serious threat to Australia's natural ecosystems and agricultural industries. Talison is committed to:
Key environmental factors	Flora and Vegetation: To protect flora and vegetation so that biological diversity and ecological Integrity are maintained. Terrestrial Environmental Quality: To maintain the quality of land and soils so that environmental values are protected. Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity is maintained. Inland Waters: To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Objective	The objectives the Plan are to describe the key strategies to be adopted by Talison during all phases of the Project pertaining to weeds and Dieback management.

This Plan is designed to be adaptive and will be updated as increased knowledge of weeds and hygiene practices improves. Therefore, adaptive management and effectiveness of the management measures being implemented improves over the Greenbushes Lithium life of mine, which is expected to be approximately 20 years. With current and continued consultation will all relevant government departments as needed this Plan will be updated and revised.

Project description

The Greenbushes Lithium Mine Expansion will increase the production of spodumene ore and lithium mineral concentrate from the Greenbushes deposit. The Greenbushes Lithium Mine is located at the current operations immediately south of the Greenbushes townsite, approximately 250 km south of Perth and 80 km south east of Bunbury in Western Australia (WA) (Figure 1).

Talison Lithium Pty Ltd



GREENBUSHES OPERATIONS

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9008**

Weed and Hygiene Management Plan



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Figure 1: Location of the Project



Talison is proposing to expand the existing Greenbushes Lithium Mine within tenements M1/03, M1/06, M1/07, M1/08, M1/09, M1/16, G01/1, G01/2 (see Figure 2). The proposed expansion includes an expanded open pit, extension of the existing waste rock landform, construction of two additional processing plants and crusher (Chemical Grade Plant #3 and #4), Tailing Retreatment Plant, expansion of an existing ROM, a new Mine Services Area, new explosive magazine and batching facility, construction of a new tailings storage facility (TSF 4), and establishment of linear supporting infrastructure for the expansion including pipelines/power supply/access roads from South West Highway. The mining rate will also increase from 3.5 Million bench cubic metres per annum (Mbcmpa) to approximately 16 Mbcmpa, which will require additional mining fleet and blasting activity. The ore processing rate will increase from 4.7 Million tonnes per annum (Mtpa) to 9.5 Mtpa. Lithium mineral concentrate production will increase from 1.2 Mtpa to 2.3 Mtpa. The proposed expansion will require 350 ha of native vegetation clearing outside existing approval areas. (See Figure 2).

Relevant Legislation

Legislation directly relevant to the management of weeds and hygiene in Western Australia is provided in Table 2.

Table 2: Relevant Legislation

Legislation	Application
Environment Protection and Biodiversity	Assesses the conservation significance of fauna species and forms the
Conservation Act 1999(EPBC Act)	framework for significant species protection at the Federal level.
(Commonwealth)	
Conservation and Land Management Act	Provides for the vesting or reservation of land for conservation purposes, and
1984 (WA) (CALM Act)	the ability to enter into agreements with private landholders. It establishes
	Australia
Conservation and Land Management	Allowed the creation of Forest Products Commission ("FPC") to take over the
Amendment Act 2000 (WA)	functions of DEC/ CALM under the CALM Act. The FPC promotes the
	sustainable management and development of Western Australia's forest and
	wood products industry using native forest, plantation and sandalwood
	products on land owned or leased by the State.
Conservation and Land Management	Establishes restrictions applicable to activities undertaken within State forests
Regulations 2002 (WA)	and timbers reserves of Western Australia.
Environmental Protection Act 1986	The Act provides for an environmental impact assessment process undertaken
(WA)	by the EPA and sets out requirements for the prevention, control and
	abatement of pollution and environmental narm and for the conservation,
Biosecurity and Agriculture	Provides for the management control and prevention of certain plants and
Management Act 2007 (WA) (BAM	animals, for the prohibition and regulation of the introduction and spread of
Act)	certain plants and of the introduction, spread and keeping of certain animals,
,	for the protection of agriculture and related resources generally, and for
	incidental and other purposes.
Biodiversity Conservation Act 2016	State process which assesses the conservation significance of fauna species and
(WA)	forms the framework for significant species protection.
Regional Forest Agreement (South	The WA RFA is a 20-year agreement between the State and Commonwealth
West Region)	governments on the use and management of the forests of Western Australia's
State Forest Assess Ast 1046	south-west. The WA RFA was signed on 4 May 1999 and expires in 2019.
State Forest Access Act 1940	Set outs and regulation for state forest areas of vyestern Australia
Cloaring of Nativo Vogotation	sets out provisions regulating the clearing of native vegetation.
Regulations 2004	
Soil and Land Concernation Act 1945	Deals with the conservation of soil and land resources and with the
Son and Land Conservation ACT 1945	mitigation of the offects of erosion

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Talison Lithium Pty Ltd GREENBUSHES OPERATIONS

SITE MANAGEMENT PLAN

ENVIRONMENT ENV9008

Figure 2: Talison Tenements

Weed and Hygiene Management Plan



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SITE MANAGEMENT PLAN

ENVIRONMENT ENV9008

Figure 3: Proposed Disturbance Areas

Weed and Hygiene Management Plan



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Roles and Responsibility

Accountability for fulfilling the requirements of this Plan is dependent on the stage of project development (construction, operations, decommissioning, rehabilitation and closure). Irrespective of whether construction activities are undertaken by external contractor or internal personnel, the designated Manager Environment will be accountable for ensuring the requirements of this Plan are met. Responsibility may be delegated to the Environmental team or other personnel. During operational stages, the Manager Environment is accountable for ensuring the requirements of the Plan are met. Responsibility for specific tasks may be delegated. Where responsibilities are delegated, this must be clearly recorded and communicated. Table 3 attributes specific management actions to the appropriate personnel.

Table 3: Roles & Responsibilities

Position	Responsibility
Environmental Team	To formulate the Weed and Hygiene Management Plan and provide guidance in the approach to fulfilling commitments of the Plan.
Environmental Team	To implement and report on weed and hygiene monitoring and assessment work and audit conformance of activities against the management actions of the Plan.
Manager Environment	To maintain site records of surveys and arrange monitoring programs as required. To provide site staff with the tools and resources required to meet Talison objectives. To provide technical support and advice to site staff.
Construction Manager / Operational Managers	To ensure Talison conditions, commitments and policies are followed on-site.
Employees, contractors and visitors	To reduce any impacts on the environment resulting from the construction and operation of the project. To report sightings of weeds on or around the site and ensure weed management and hygiene procedures are followed.
General Manager Operations	To provide site staff with the tools and resources required to meet Talison's objectives. Ensure overall compliance to The Plan.

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1. Rationale

The section includes a summary of the proposed Greenbushes Lithium Mine Expansion and its main aspects. Also included is a summary of weed and hygiene surveys undertaken, the main findings, an outline of any assumptions and uncertainties, and the management actions to be implemented and reasoning behind these actions.

1.1 Proposal

The Greenbushes Lithium Mine (the Mine) is an existing mining operation owned and operated by Talison Lithium Australia Pty Ltd (Talison). Talison currently mines and processes spodumene ore at the Greenbushes Lithium Mine to produce a lithium mineral concentrate at approximately 6% Lithium Oxide (Li2O).

The proposed expansion of the Mine will require current approved operational boundary (Active Mining Area) to be extended to the south, with a smaller extension to the north, increasing the current (approved) area of 1,591 ha to a 1,989 ha area, i.e. an increase of 398 ha.

The Mine expansion includes the following development (See Figure 3):

- Developing an expanded open pit;
- Establishment of two additional chemical grade processing plants (CGP'S), a crusher and centralised ROM;
- Establishment of a new Mine Services Area and explosives storage and handling infrastructure;
- Expansion of the existing Floyds Waste Rock Landform;
- Construction of an additional TSF4; and
- Establishment of additional linear infrastructure corridors (Bypass Road, powerline, pipeline and road corridors).

The proposed expansion of 398 ha will require the clearing of 350 ha of native vegetation clearing within State Forest 20 (within Talison tenements). Of the 350 ha, approximately 193 ha is comprised of Jarrah/Marri forest over Banksia, and the remainder being 157 ha is Jarrah/Marri forest fauna habitats. The clearing of 350 ha has the potential to spread weeds within the Mine Development Envelope (MDE).



1.2 Key Environmental Factors

The key potential impacts arising from the introduction and spread of weeds in MDE are presented in Table 4.

Table 4: Potential Environmental Impacts

Potential Environmental Impacts	Details
Destruction of habitat – terrestrial and aquatic	Through prevention of seedling recruitment and resource competition, weeds can invade and damage native habitat, rendering it less valuable to indigenous fauna
Alteration of hydrological cycle	Weeds can clog water courses, causing erosion and alterations to streamflow. Weeds can reduce light and oxygen to aquatic flora and fauna.
Clearing activities	During clearing activities weed can be spread to un-infested areas through lack of adherence to hygiene procedures.
Change to soil nutrient status	Weeds can both remove nutrients from soil over time essential to the effective functioning of the natural ecosystem, as well as add unwanted nutrients to soil through shedding foliage or emitting chemicals.
Reduced biological diversity	Throughout-competing native plants for light, moisture and space, weeds can reduce the biological diversity of an area. Also the spread of Dieback to un-infested areas can cause reduced biological diversity of an area.
Loss of individuals or populations	Direct mortality to conservation significant species by invasion of weed or Dieback spread. This may occur as a result of introduced species to an area or spread of Dieback to un-infested areas.
Cultural heritage	Weeds can impact on the availability of bush tucker and medicine as well as impacting cultural heritage sites.
Introduction of plant pathogens (Phytophthora cinnamomi)	Spread of plant pathogens may increase tree deaths / tree hollow loss (indirect habitat loss). Loss of suitable habitat for indigenous species.

1.3 Condition Requirements

No specific conditions relating to weeds or hygiene currently apply to the Project. Talison currently have working arrangements between the Department of Biodiversity, Conservation and Attraction (DBCA), Parks and Wildlife Serveries for the protection of forest values on the Greenbushes Mining Tenements. The arrangements outline that Talison must undertake to do all that is practicable to protect State Forest areas within their tenements from weeds, feral pests, erosion and bushfire.

This Plan is submitted with the environmental referrals in order to satisfy the Environmental Protection Authority (EPA) and the Department of the Environment and Energy (DoEE) that Talison has taken into consideration the environmental objectives set for weed control/eradication outlining chemical, biological and manual methods of removal and also disease control (for example, prepare and implement Dieback management plan).

Talison are committed to implementing the Greenbushes Lithium Mine Expansion in a manner that meets these objectives. The purpose of this Plan is to manage the potential impacts on the environment that may be listed under Section 178 of the EPBC Act resulting from the Project. In addition, the Plan provides guidelines on monitoring that could be utilised to determine the level of impact on fauna species within Talison's operations. The Plan addresses management issues relevant toto conservation significant flora and fauna species which are considered likely to occur within the MDE.

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1.4 Rationale and Approach

1.4.1 Survey and Study Findings

DBCA registered *Phytophthora cinnamomi* (Dieback) interpreters Biologic were engaged to conduct Dieback surveys over the Greenbushes Study Area. Details of surveys are listed in the table below.

Details of these surveys are outlined in Table 5.

Table 5: Surveys and Studies

Date	Survey Type	Details
Μαγ 2017	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi Survey, project area located within the south east corner of the Greenbushes forest block south of Forest Park Road. Total area assessed was 7.6 ha commencing and completed on the 05 December 2017.
July 2017	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi , Forest Park Avenue, South Western Highway, Wilkes Road, Tourmaline Street, Stanifer Street
July 2017	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi Survey (Protectable Area's) New Zealand Gully, located north of the Greenbushes townsite, totalling 17.2 hectares, Mount Jones Dam, located west of Greenbushes townsite, totalling 11.9 hectares
15 December 2017 - February 2018	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi Survey (Protectable Area's)
July 2017/ September 2017	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi Survey Comprehensive assessments: Southernmost area, West of Maranup Ford Road and Southernmost area, East of Maranup Ford Road. Linear assessments: Powerlines on Eastern boundary and Southern boundary of assessment area.
September 17 / March 2018 /April 2018	Phytophthora cinnamomi	DBCA Phytophthora cinnamomi Survey (Protectable Area's)
2003/2004	Weed Survey Major weeds identified include pampas grass, tagasaste, blackberry, tobacco tree, variegated thistle, watsonia, cape tulip, lupins and annual broad leaf and grass species.	An extensive weed mapping study was carried out during summer 2003-2004. The comprehensive project encompassed almost all disturbed and rehabilitated areas within the mining tenements with the exception of the active mining areas. Major weeds identified include pampas grass, tagasaste, blackberry, tobacco tree, variegated thistle, watsonia, cape tulip, lupins and annual broad leaf and grass species.

1.4.2 Key Assumptions and Uncertainties

Comprehensive weed mapping of the project area has been undertaken. Major weeds identified include pampas grass, tagasaste, blackberry, tobacco tree, variegated thistle, watsonia, cape tulip, lupins and annual broad leaf and grass species. Weeds identified as a major issue on the mine site are identified in Table 6.

Table 6: Major Weeds & Controls

Weed Species	Controls	When
Pampas grass (Cortaderia selloana), Note Bridgetown/Greenbushes shire Pest plant	 Hand weeding in rehab areas. Removing seed heads. Spot spraying of larger plants Selective spraying in rehabilitation areas. (Mix 5 or 6) Knock down on TSF paddocks, along haul roads, pipelines and on pit walls where accessible. (Mix 4) Burn 	 Later Spring & Autumn Early Autumn All year round Summer Summer/Autumn Autumn
Tagasaste (Chamaecytisus palmensis) Note Bridgetown/Greenbushes shire Pest plant	 Hand weeding and cutting in rehab areas. Herbicide applied to stumps Selective spraying in rehabilitation areas. (Mix 5) Knock down on TSF paddocks, along haul roads, pipelines and on pit walls where accessible. (Mix 4) 	 Spring & Autumn Later winter & Spring Summer/Autumn
Tobacco Plant (Nicotiana glauca)	Spot Spraying (Mix 2)	Spring & Autumn
Blackberry, spreads along waterways and creek lines	• Spraying (Mix 1)	• Summer
Tangier Pea (Lathyrus tingitanus) Purple flowers	Selective spray (Mix 7 or 8)Spot spray	WinterSpring
Seasonal and declared weed species: e.g. Narrow Leaf Cotton Bush, Cape Tulip, Patterson's Curse, Bridal Creeper and Variegated Thistle	 Hand weeding Spot spraying (Mix 1 or 2) as required 	 Seasonally as required.

- The complete list of weed species is detailed in Appendix 2 Table of Major Weeds Species, Control and Location is up to date and seen as a comprehensive review of the sites.
- Current methods to control weeds are suitable for controlling weeds within the MDE. The process includes that weeds will be identified and categorised under the CALM Environmental Weed Rating system or according to the Department of Agriculture Declared Weed List. Weed control programmes will target weeds with a high or moderate rating or if they are on the declared list.
- The plan refers to Significant weeds, Significant weeds are defined as:
 - Declared Pests under the BAM Act
 - Weeds of National Significance (WoNS)
- Priority weeds identified categorised under the CALM Environmental Weed Rating system or according to the Department of Agriculture Declared Weed List
- WoNS are species which have been agreed by Australian governments as priority weeds based on their invasiveness, potential for spread and environmental, social and economic impacts (DEE 2017). In Western Australia many WoNS are also Declared Pests under the BAM Act (DAFWA 2017).

1.4.2 Management Approach

This Plan has been developed to meet the EPA's objective for Flora and Vegetation and to ensure indirect impacts on flora and vegetation from the introduction and spread of weeds from the proposed expansion can be managed. Specifically, this Plan aims to:

 Prevent the introduction and/or spread of Declared Pests pursuant to the BAM Act and aggressive weeds;

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- Minimise the spread of existing weeds within the maximum clearing footprint area;
- Ensure that weed control measures are implemented during all phases of mining operations to ensure there is no significant impact of weeds on flora and vegetation; and
- Prevent the spread of Dieback and hygiene control measures are maintained during all phases of the mining operations to ensure there is no significant impact of weeds on flora and vegetation.

The management approach has been informed by best practice and recent experience on mine and construction projects in Western Australia. The hierarchical approach taken focuses on avoiding ecologically sensitive areas where possible by locating on already disturbed areas and using cleared and already disturbed areas of the site. The general approach for managing any potential clearing and ongoing mining operations and ongoing maintenance impacts on flora and vegetation from the proposed expansion is to develop a comprehensive management-based program that identifies:

- management risks
- key management-based targets
- management actions
- monitoring measures

An adaptive risk-based management approach has been developed in order to create a robust management system, that prioritises and manages significant risks using the mitigation hierarchy (i.e. avoid, minimise, manage, rehabilitate and offset). The proposed monitoring and adaptive management approach were informed from risks identified and mitigation proposed in previous versions of the Weed Management Plan.

1.4.3 Rationale for Choice of Management Targets

The management approach in this Plan is informed by results of previous weed and Dieback surveys, and the Project parameters in order to minimise disturbance impact. The Project parameters to minimise the extension of the disturbance footprint considering the 20 year expected mine life by use of existing disturbed areas and progressive rehabilitation. The mitigation measures have been designed for the approximate 20-year life of mine and as such the plan may require revisions and adaptation of the plan through the course of the mine life. Management targets were selected to manage the potential risk of introduced and/or spread of weeds within the MDE and are based on:

- review of available data for the region and the existing site;
- previous management plan and current practices;
- Talison/DBCA working conditions for Dieback;
- the relationship between the Proposal aspects and the EPA environmental factors; and
- industry standards, legislative requirements and best practice procedures.



The rationale for the choice of management targets is described below.

Management Target 1: No new weeds or pests within the MDE due to mining operations

No new introductions or spread of Declared Pests and other significant weeds attributable to the Project.

• Management Target 2: No spread of significant weed species attributable the mining operations (outside MDE)

Minimise the spread of existing significant weeds within the Talison Tenements attributable to Mining operations.

Management Target 3: No spread of Dieback species attributable the mining operations

Minimise the spread of Dieback due to the mining operations



Weed and Hygiene Management Plan

2. EMP provisions

This section of the Plan identifies the provisions that Talison proposes to implement to manage weed and maintain hygiene standards on the site. It identifies the management targets that Talison will use to measure performance and monitoring that will be undertaken in relation to the management targets. It also identifies how Talison will review and revise management actions if the management targets are exceeded.

2.1 Objectives of the Plan

The objectives of the plan include providing:

- An effective weed and hygiene management plan with consideration of main stakeholders;
- A monitoring program to be implemented during all phases of the project to assess the effectiveness of the mitigation measures and inform an adaptive management approach; and
- Commitment to maximise the ongoing protection and long-term conservation of EPBC listed conservation significant species within the Project area.

2.2 Management Objectives and Targets

Table 7: Management Objectives and Targets

Project Management Objectives	Management targets
No new introductions or spread of Significant weeds or Dieback from the Mining operations	No incidents relating to non-compliance with hygiene procedures on site.
No new introductions or spread of Significant weeds or Dieback from the Mining operations	No new outbreaks of significant weed species or Dieback spread attributable to Mining Operations.
No new weeds or pests within the MDE due to mining operations	No clearing outside approved clearing areas. Area of land rehabilitated consistent with Annual Mine Plan.
No spread of significant weed species attributable the mining operations (outside MDE)	Full compliance with the Talison / DBCA working conditions
No spread of Weed or Dieback attributable the mining operations	No incidents relating to no compliance of Protectable areas boundary.
Control Weeds/ minimise weeds	No incidents with non-compliance to the weed management procedures which included the annual spray program implemented to control existing weedy areas.
No spread of Weed or Dieback attributable the mining operations	Compliance vehicle/ machine inspection and records in respect to maintenance and requirement for portable hygiene kit to be carried and be operational
No spread of plant pathogens spread due to mining operations ((Dieback)	No incidents relating to non-compliance with respect to clean on entry points and no access areas



2.3 Management actions to be implemented to achieve the environmental objective

- 2.3.1 Risk-based management actions have been identified and prioritised to achieve the Plan objective table 8. A series of management objectives with respect to mitigating potential environmental impacts has been developed, consistent with Talison's requirements and commitment to effectively managing weeds. These are:
 - Identify the location of target weed species and ensure that regard for weed outbreaks is included in project planning.
 - Control existing infestations or future outbreaks of WONS and Declared Weeds within the MDE.
 - Prevent the introduction and spread of weeds by plant and equipment.

2.3.2 Project Avoidance and Mitigation Measures

For each objective, management actions have been developed to ensure the impacts from Talison's operations are managed, and that appropriate monitoring, reporting and corrective action functions are implemented to support the successful implementation of the management actions.

2.4 Weed Management Techniques

The Weed Control Program combines multiple weed management techniques aimed at reducing weed density. The objective is to manage the weeds using a variety of control measures. In this way weeds are less likely to develop an evasion strategy (e.g. resistance to herbicides). The Plan about NOT relying on only one or two methods of weed control alone, and particularly not relying on herbicides alone. The Weed Control program uses a range of methods of weed control in combination so that all weeds are controlled by at least one component of the weed management system. Ultimately, the aim of Weed Control Program is to prevent weeds setting seeds, or vegetatively reproducing, so that the weed population is reduced over time, reducing weed competition and preserving natural environment.

Talison Greenbushes Operations supports the State Weed Plan and its principles presented below:

- Weed management is an essential component of sustainable natural resource management.
- Prevention, early detection and early intervention are the most cost-effective means of weed management.
- Effective weed management requires a long-term commitment from managers of both private and public land.
- Effective weed management requires a coordinated approach involving all relevant stakeholders.



- Appropriate and effective policy and legal frameworks are required to support the stateside management of weeds.
- A simple and effective priority setting and planning process is required to best utilise available weed management resources.

Best practice weed management follows the systems summarised below:

- Mechanical: Physical removal by mowing, mulching, tilling, prescribed burning, grazing or hand pulling
- Cultural: Enhancement of the native plant community using fertility management or revegetation.
- Biological: Releasing a weed's native natural enemies using insects, grazing animals or disease.
- Chemical: Destroying weeds using herbicides that do not adversely affect the desired plant community e.g. native vegetation.

2.2.1 Control Programme

Weeds will be identified and categorised under the CALM Environmental Weed Rating system or according to the Department of Agriculture Declared Weed List. Weed control programmes will target weeds with a high or moderate rating or if they are on the declared list.

2.2.2 Historical Rehabilitated Areas

Monitor as part of rehabilitation assessment program and control using herbicide or other appropriate method to eradicate.

2.2.3 Active Mining Area

Due to the large disturbed area within the active mining areas a number of weeds have taken a strong hold over the area. This plan therefore has a two-pronged approach.

- a) Traditional control measures: Due to the large exposed area this will include localised spraying or removal techniques combined with broad acre aerial spraying where this is deemed suitable.
- b) Establishment of native or non-evasive species to reduce the potential for weed infestation.

The Environmental Team maintains a spreadsheet of areas and chemical mixes applied for mapping.

Cleaning of vehicles and equipment is undertaken:

- when leaving tracks to access areas of native vegetation
- when leaving areas of Dieback infection
- after completing work at any site where any soil material adheres to vehicle or equipment
- after passing through muddy sites.

2.2.4 Minimising Weed Spread (Vehicle Wash-down Policy)

When vehicles or machinery are driven through a weed-infested area, seeds can become lodged in cracks and crevices including tyre treads, radiators, licence plates and underneath vehicles. There is potential for seeds to then be carried hundreds of kilometres before being dislodged into new areas.

Machinery used around site must be clean prior to leaving site to minimise the chance of spreading weed seeds.



All machinery coming onto site from other areas must be thoroughly cleaned prior to being allowed on site to minimise new weed infestations from other areas.

2.5 Dieback Control Techniques

In area where Dieback status is unknown it is to be assumed that all the native vegetation in the area is at risk and actions are to be taken to avoid spreading infection by the adoption of preventative measures. (See Figure 4 – Current Dieback Status)

Where light adhesion of dirt occurs, blow down using compressed air, brush down using hard brushes, or wash down using high-pressure, low-volume water jets is recommended.

In areas of confirmed infection, stringent washing down must be completed before entering into areas that are known to be free of Dieback or have been declared to be uninterpretable. A vehicle hygiene form (ENV 020) must be summited to the Environment Team to demonstrate that appropriate vehicle hygiene has been followed

The aim of the Dieback management program on site is to reduce the possibility of spreading Dieback infection into uninfected native vegetation, by:

- Being aware the presence or absence of Dieback within the mining tenements, based on existing surveys,
- Understanding the problems caused by Dieback infection, and
- Determining the actions that will assist in the prevention of new infections as a result of mining activities.
- Educating staff on the need for, and the procedures of, Dieback hygiene.
- Preventing vehicles and equipment from carrying any soil or vegetable matter which may be infected with Dieback into or out of the area.
- Washing, brushing, or blowing down of equipment and vehicles when they are used in uncleared native vegetation if there is a possibility of infected material being accidentally transported within or exported from the tenement, and
- Ensuring any soil or root matter removed from vehicles or machinery does not pose a threat to uninfected areas.

Cleaning of vehicles and equipment is to be undertaken to minimise the risk of spreading weeds and Dieback by washing down:

- When leaving mine tracks to access areas of native vegetation
- When leaving areas know to be infected with Dieback.
- After completing work at any site where any soil material adheres to vehicle or equipment
- After passing through muddy sites in forested areas.

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9008**

Weed and Hygiene Management Plan

Figure 4: Current Dieback Status



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Issue No: 1 9/18 Issue Date:

Moving from \downarrow to \rightarrow	Infected	Uninterpretable	Uninfected
Infected	No Clean Required	Clean on entry	Clean on entry
Uninterpretable	No Clean Required	Clean on entry	Clean on entry
Uninfected	No Clean Required	No Clean Required	No Clean Required
Status unknown	Clean Entry & Exit	Clean Entry & Exit	Clean Entry & Exit

Movements requiring cleaning of machinery between areas

Clean on entry: All vehicles and machinery to be cleaned prior to entering area

Clean entry & exit: All vehicles and machinery to be cleaned prior to entering area

No Clean Required: No clean down required

2.5.1 Entry Points into Uninfected Areas

Only one entry point is to be used for entry to uninfected area. Entry points into uninfected areas that are effective in minimizing the human assisted spread of Dieback will be characterised as appropriate by:

- Signage;
- An inspection and clean down point and cleaning equipment, with a sump to collect washdown water; and
- A location for large vehicles and equipment to turnaround and exit the area if on inspection they are not clean or cannot be effectively cleaned in the field. These vehicles should then return to the washdown station inside Gate 2 for thorough cleaning.

The timing of installation of managed entry points is critical in minimising the probability of introducing Dieback into uninfected areas.

2.5.2 Preventing Cross Contamination when accessing infected Areas

Vehicles, machinery, equipment, foot-ware and sample bags can enter uninfected areas when they are clean and be used to carry out a range of activities over time within that area without the need for further cleaning provided they do not come into contact with infected soil.

Cross contamination is being managed by:

- The use of barrier systems that ensure clean equipment within the uninfected area does not come into direct physical contact with infected soil or unclean equipment operating outside the uninfected area;
- The use of demarcation and barrier systems to ensure that vehicles and equipment do not cross inadvertently into infected areas;



- Ensuring that drainage, soil and plant material from the infected areas does not enter the uninfected areas;
- Limiting entry to periods when the soil is not moist enough to be picked up and moved by vehicles and equipment; and
- Soil sample bags should consist of calico and be tied up. All organic material should be removed from the outside of the sample bag prior to removing it from the drill site, and internal procedures will be followed for quarantine and dispatch.

2.5.3 New Track Construction into Uninfected and Infected Areas

Managing disease when building a new track into an uninfected area is a critical element in the longterm protection of the area. Light vehicle and machinery access to new tracks can be provided with appropriate attention to the hygiene requirements, provision of clean-down facilities and signage.

Specifically for Dieback infected areas, the bull-dozer will work from inside the uninfected area towards the boundary of the infected area. Dieback information signs and demarcated boundaries may need to be set in uninfected area.

2.3.4 Clean Down Points

Clean-down points are to be constructed to the following standards:

- The clean-down point will provide a physical separation between the object being cleaned and the effluent being produced;
- The point will provide a physical separation from the object being cleaned and infected soil and plants; and
- The point will provide easy and safe access for both the placement of the object to be cleaned and the operator conducting the clean down.

When placing a clean-down point in the field, the following considerations will be taken into account:

- The site allows the effluent to fall directly onto infected soil or in a construction able to capture the effluent for the later transportation and disposal;
- Any cleaned objects must be allowed to enter the uninfected area without coming into contact with infected materials; and
- The clean down must be situated to allow a turn-around point for vehicles that cannot satisfy the hygiene guidelines.
- Clean down involves brushing down using hard brushes or washing down using high pressure low volume water jets.

2.3.5 Entry into Uninterpretable Areas

Areas that are uninterpretable are to be treated as uninfected areas when entering and infected areas when exiting. Vehicles, machines and equipment must be clean when entering and exiting.

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2.3.6 Education of Employees

Information on Dieback and vehicle hygiene is delivered to employees at the site induction. Updates to information or procedures related to Dieback management are delivered through the site "Toolbox" education system

Task specific hygiene procedures are delivered to targeted employees at the beginning of any works program that may impact on forest areas of the mining tenements

SITE MANAGEMENT PLAN

Weed and Hygiene Management Plan

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Table 8: Management Actions

Weeds & Dieback

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
No new weeds or pests within the MDE due to mining operations	No introduction or spread of Declared Plants or WONS within the MDE	To ensure Declared Plants and aggressive weeds are not being introduced into the MDE the following actions will be used: Visual inspection of MDE for new Declared Plant or aggressive weed infestations (Formal inspection monthly) Visual inspection to be carried out in day to day operations (informal inspection) See ENV8000 Weed Register and Control Programme Procedures: ENV F019 - Weed Spraying Logsheet ENV8003 - Weed Control - Weed Spraying ENV - PR - 8005 - Weed Control - Using the Chainsaw ENV8002 - Weed Control - Mandweeding ENV8002 - Weed Control - Mixing Herbicides 	All Phases	Manager Environment	Internal audits and inspections of areas to be completed monthly GIS Database – Weeds/ pests Annual Environmental Report. Incident reports for weed/hygiene control.
No new introductions or spread of Significant weeds or Dieback from the Mining operations	No incidents relating to non- compliance with respect to clean on entry points and no access areas	To ensure that all vehicles are subject to hygiene management procedures on entering/exiting site and on exiting high risk areas such as Clean on Entry Points Inspection of High risk areas: weekly during active phases until such that this is deemed to be low risk by competent site personnel Requirements and site Procedures outlined <u>ENV8001 - Dieback Work Procedure</u> <u>ENV F020 - Vehicle Hygiene Form</u>	All Phases	Manager Environment	Inspection of Clean on Enrty Points Random inspection of vehicles GIS Databases weeds/Dieback Annual Environmental Report. Incident reports for hygiene management

SITE MANAGEMENT PLAN

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Weed and Hygiene Management Plan

Weeds	&	Dieback

Table 8: Management Actions

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
No new introductions or spread of Significant weeds or pathogens from the Mining operations	No new outbreaks of significant weed species or Dieback spread attributable to Mining Operations.	 Conduct environmental inductions that discuss: significant weeds (Declared Pests, WoNS and priority weeds) recorded and Dieback areas (infested, un-infested and uninterpretable) potentially occurring within the MDE; high risk areas (including mapping of known locations of significant weeds within MDE); and clean-on-entry requirements and wash-down/brush down procedures. Compile maps of known occurrences of significant weeds and Dieback occurrences and amend as required. Maintain a significant weed register for weeds identified within MDE. Register to include for each species: location within MDE details of distribution, abundance, relevant biological information, history of control methods and relative success of control methods, importance of following weed hygiene procedures. Conduct inspections of the proposed clearing areas to identify new weed outbreaks. Review the list of Declared Pests annually and update this Plan and weed register with any relevant changes. Clearly demarcate high risk areas using distinctive markers (flagging tape, signage etc.) Instell traffic control methods such as gates (or suitable equivalent to clearly signal to vehicles to stop for inspection) and significant weed signage at entry/exit locations identified high risk areas and previously uncleared areas. check tyres and machinery exiting restricted areas, including the following measures: check tyres and the underside of vehicles for plant and organic material – clean on exit if required. check tores and machinery involved in clearing for plant and organic material – clean on exit if required. there of the proposed clearing in low risk areas from that area towards high risk ar	Immediately prior to clearing / All Phases	Manager Environment	GIS Databases Weeds/ Dieback Annual Environmental Report. Incident reports for weed/hygiene control. Monitoring report (following consultation with DBCA).

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SITE MANAGEMENT PLAN

Weed and Hygiene Management Plan

ENVIRONMENT ENV9008

Table 8: Management Actions

Weeds & Dieback

Management Objective	Management Taraets	Management Action	Phase	Responsibility	Records and Reports
		 Conduct environmental inductions that discuss: significant weeds and Dieback high risk areas, including mapping clean-on-entry requirements and wash-down/brush down procedures. Maintain the significant weed register and Dieback mapping developed. Ensure all plant and equipment, including vehicles cleaned and inspected prior to entry to the MDE and active mining areas. Inspect vehicles and machinery exiting high risk areas including the following measures:	All Phases	Manger Environment	Dieback and Weed Mapping and internal reporting. GIS Databases Weeds/ Dieback Annual Environmental Report. Incident reports for weed/hygiene control. Monitoring report (following consultation with DBCA). Greencard Training (Onsite).
No new introductions or spread of Significant weeds or pathogens from the Mining operations	No new outbreaks of significant weed species or Dieback spread attributable to Mining Operations.	Facilitate hygiene inspector training for relevant employees and contractors (i.e. Greencard)	All Phases	Manger Environment	Training Logs Greencard Training (Onsite).
No spread of plant pathogens spread due to mining operations (Dieback)	No spread of Dieback to Uninfested and Uninterpretable.	As far as practical, time the clearing phase of the operation to occur during the dry months to reduce the risk of spreading the disease <u>ENV8001 - Dieback Work Procedure</u> <u>ENV F020 - Vehicle Hygiene Form</u>	Pre-mining /construction/Cleari ng	Manger Environment	Dieback Mapping and Internal reporting. Ground disturbance register, survey and GIS database. Annual Environmental Report. Incident Reporting for breach in Dieback management procedures.

SITE MANAGEMENT PLAN

ENVIRONMENT ENV9008

Weed and Hygiene Management Plan

Table 8: Management Actions

Weeds & Dieback

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
No spread of plant pathogens spread due to mining operations (Dieback)	No spread of Dieback to Uninfested and Uninterpretable.	Any construction material e.g. Gravel must be certified Dieback free	All Phases	Manger Environment	Incident Reporting for breach in Dieback management procedures. Annual Environmental Report. Spot check of suppliers and records
No new introductions or spread of Significant weeds or pathogens from the Mining operations	No new outbreaks of significant weed species or Dieback spread attributable to Mining Operations.	 All vehicles and machinery will be clean-on-entry to site. Maintain records of all vehicle and machinery inspections, including the following information: date of inspection vehicle and machinery inspected location of inspection, including work proposed for the vehicle or machinery person conduction inspection and their job role/employer. All records (hard copy and/or electronic) will be available on site and stored at the Greenbushes Site. Restrict access to high risk sites through the installation of perimeter demarcation, clear entry/exit points and signage. Movement of vehicles to be restricted to access roads. Unless authorised Map location of high-risk sites and provide maps, coordinates, weed register and clean on exit instructions for these sites to staff and contractors prior to conducting maintenance activities on Proposal. See: ENV8000 Weed Register and Control Programme Procedures: ENV8003 - Weed Control - Weed Spraying Env PR - 8005 - Weed Control - Using the Chainsaw ENV8001 - Dieback Work Procedure ENV F020 - Vehicle Hygiene Form 	All Phases	Manger Environment	Dieback and Weed Mapping and internal reporting. GIS Databases Weeds/ Dieback Annual Environmental Report. Incident reports for weed/hygiene control. Monitoring report (following consultation with DBCA). Greencard Training (Onsite).
No spread of significant weed species attributable the mining operations (outside MDE)	Full compliance with the Talison / DBCA working conditions	 All vehicles and machinery will be clean-on-entry to site. Maintain records of all vehicle and machinery inspections, including the following information: date of inspection vehicle and machinery inspected 	All Phases	Manger Environment	Dieback and Weed Mapping and internal reporting. GIS Databases Weeds/ Dieback Annual Environmental Report. Incident reports for weed/hygiene control.

SITE MANAGEMENT PLAN

ENVIRONMENT ENV9008

Weed and Hygiene Management Plan

Table 8: Management Actions

Weeds & Dieback

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
		 location of inspection, including work proposed for the vehicle or machinery person conduction inspection and their job role/employer. 			Monitoring report (following consultation with DBCA). Greencard Training (Onsite).
		3. All records (hard copy and/or electronic) will be available on site and stored at the Greenbushes Site.			Talison/DBCA working Arrangements and procedure assessments
		4. Restrict access to high risk sites through the installation of perimeter demarcation, clear entry/exit points and signage.			
		5. Movement of vehicles to be restricted to access roads. Unless authorised			
		6. Map location of high-risk sites and provide maps, coordinates, weed register and clean on exit instructions for these sites to staff and contractors prior to conducting maintenance activities on Project this is to include Protectable areas and diseases areas when working outside the MDE			
		See TLA/DBCA working arrangements			
		TLA/DBCA Working Arrangements			
		Procedures:			
		ENV8001- Dieback Work Procedure ENV F020 - Vehicle Hygiene Form			

2.4 Monitoring

The following monitoring will be undertaken for this Plan:

A. The site, clean on entry (COE) point and documentation will be monitored regularly for compliance with hygiene procedures by the Environmental Team.

Inspections reports will include:

- the condition of the COE point;
- evidence of vehicles or machinery leaving the agreed access route without permission; and
- evidence of inspections not being completed.
- B. Monitoring of vegetation rehabilitation and weed management issues within the MDE.

Inspections:

- Formal inspection to take place monthly
- Informal in day to day actives and as required.

Weeds identified will be logged within a weed register including the following:

- Changes in the extent of weed populations;
- Changes in the cover density of weed populations;
- Any new weed species that may become established;
- Documentation of any unexpected impacts of weed control activities (i.e. damage to native vegetation);
- Changes in the extent and condition of native vegetation; and
- Changes in any conditions that have the potential to impact on site including rehabilitation actives.
- C. Monitoring of fill (e.g. gravel) bought on to site

Inspections

- Imported fill will be certified weed-free / Dieback Free prior to being utilised at the Project, inspections of certifications to occur prior to material being used onsite
- Quarterly weed surveillance monitoring and control of weeds across the Project. The survey is to determine if weed controls have been effective and if additional measures are required.

2.5 Reporting

This Plan sets out the reporting requirements relating to the implementation of the plan which includes:

- Preparation of an Annual Environmental Report (AER) to be submitted to the appropriate regulatory authorities. The AER will include monitoring results and trend;
- In the event that the management target is exceeded (or not met), the relevant authority will be notified within 7 days of identification of the exceedance, including

threshold contingency actions which have been implemented due the exceedance of threshold criteria.

Table 9: Weed and Hygiene Monitoring, Inspection and Reporting Program

Activity	Area	Resources	Responsibility	Frequency	Reports to
Monitoring of vegetation rehabilitation	All	Vegetation Rehabilitation and Weed	Environmental Team	Daily/ Weekly/ as	Manager Environment
management issues		Inspection Checklist		required	
Monitoring of weed infestation	All	Weed Control Procedure	Environmental Team	As required	Manager Environment
Monitoring of Dieback Areas	All	Dieback Control procedure	Environmental Team	Yearly	Manager Environment

3 Adaptive Management and Review

This Plan has defined the purpose in section 1.2, outlined specific management and mitigation measures to address the issue related to weed, Dieback and hygiene measures (Section 2), and introduced monitoring and evaluation of these measures (Section 3). The management approach for the weed and hygiene management at the mine site will be adaptive. The Plan will be formally reviewed annually by a suitably qualified experienced person. In addition to the annual review, the Plan will be reviewed if:

- New information is learned from monitoring, or monitoring indicates that management targets are not being achieved; or
- New information becomes available about the conservation significant fauna species, for instance a change in conservation status.

This Plan will undergo an internal audit to ensure compliance with this plan and assess the effectiveness of management measures contained within the plan. The Manager Environment is responsible for ensuring this audit is undertaken on an annual basis. The Manager Environment is responsible for internal monthly reporting of results of all monitoring and assessments under this Plan, this information will also be included in the Annual Environmental Report.

Talison implement adaptive management to respond to any issues identified in implementation of management measures, monitoring and evaluation against the management targets, to more effectively meet the environmental objective of the plan. Environmental management is undertaken in accordance with an Environmental Management System (EMS) developed to meet the requirements of ISO14001, relevant legislation and regulations and Australian Standards and other requirements. The EMS is certified to ISO14001 and the integrated management system is certified to ISO 9001. Environmental measurement and monitoring is undertaken in accordance with the relevant environmental measurement and monitoring is undertaken in accordance with the relevant environmental work procedures by Environmental Officers on site and the results recorded in accordance with the Filing Register.

Environmental Work Procedures have been developed to ensure that statutory monitoring requirements are met and to ensure that monitoring is undertaken in a controlled manner. Analysis and evaluation of the monitoring and measurement data is conducted and communicated in accordance with procedure ENV5001 Environmental Statutory Reporting.

Potential adaptive management actions include:

- A. An increase of Weed outbreaks/ spreads across the MDE:
 - Investigate cause;
 - Review management and inspection procedures
 - Assess the effectiveness of training on management of fauna and amend training method if required and implement more training;
 - Review weed control program and revise techniques and /or frequency; and
 - Investigate fencing/ signage for high risk areas.
- B. Change in Dieback Status i.e. Un-infested to Infested:
 - Investigate cause;
 - Review and revise as required methods used for locating and marking protected areas;
 - Assess the effectiveness of training on hygiene and Dieback and amend training method if required and implement more training;
 - Increase the monitoring frequency or methods;
 - Investigate use of fencing/ more signage for high risk areas.

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4 Stakeholder Consultation

Talison consulted with stakeholders while developing this plan, consistent with the EPA's expectations to align the plan with the principles of environmental impact assessment. This section provides a summary of the consultation that occurred. The comments raised during consultations with stakeholders were considered in preparing the plan. A summary of the consultation and Talison response is included in Table 10.

Table 10: Stakeholder Consultation

Date	Organisation	Summary of Consultation	Outcome
19/8/18	DoEE	Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts of the proposed action on the Western Ringtail Possum. This information must include, but is not limited to, measures proposed to avoid or mitigate impacts of: (a) feral animals (cat and fox); and (b) introduction and/or spread of weeds and <i>Phytophthora cinnamoni</i> (Dieback).	Talison has considered this and has within the Management Plan and has suitable procedures in place to manage appropriately.
31/8/2018	EPA	Additional Information Required for the Key Environmental Factors, request for further information on Weed and Hygiene management	Weed and Hygiene Management Plan updated



5 References

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Manager Environment

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Executive Summary

This Conservation Significant Fauna Plan (the Plan) has been submitted to support environmental referrals under the *Environmental Protection Act 1986* (EP Act) and *Environment Protection and Biodiversity* Conservation Act 1999 (EPBC Act) for the Greenbushes Lithium Mine Expansion which will be developed by Talison Lithium Pty Ltd (Talison). Table 1 presents the purpose of the Conservation Significant Fauna Management Plan in the context of Western Australian Environmental Protection Authority (EPA) objectives.

Table 1: Outline of the Plan

Detail	Description				
Proponent Name	Talison Lithium Pty Ltd (Talison)				
Project	Greenbushes Lithium Mine Expansion				
Management Plan Purpose	This Management Plan has been developed to support referrals under the EP				
	Act and the EPBC Act.				
	Ine purpose of this Plan is to provide a tramework to ensure that impacts on				
	Expansion Project are minimised, and impacts do not conflict with the EPA				
	objective for terrestrial fauna. Conservation significant fauna potentially				
	impacted by the proposed expansion include but are not limited to:				
	 Carnaby's Black Cockatoo (Calyptorhynchus latirostris), Forest Red- 				
	tailed Black Cockatoo (C. banksii naso) and Baudin's Black Cockatoo				
	(C. baudinii) (together Black Cockatoos));				
	 Chuditch (Dasyurus geoffroii), 				
	 Brush-tailed Phascogale (Phascogale tapoatafa); 				
	 Quenda (Isoodon obesulus); 				
	 Southern Brown Bandicoot (Isoodon obesulus fusciventer); 				
	• Western Brush Wallaby (Macropus Irma); and				
	• Western Ring Tail Possum (Pseudocheirus occidentalis).				
Key environmental factor	Ierrestrial Fauna: Ihese include but are not limited to:				
	 Carnaby's Black Cockatoo (Calyptornynchus latirostris), Forest Rea- tatled Plack Cockatoo (C. hunkaii nave) and Paudin's Plack Cockatoo 				
	failed Black Cockatoo (C. banksii naso) and Baudin's Black Cockatoo				
	C. Dabalini) (logenier black cockaloos));				
	Choliner (Dasyons geomon); Brush-tailed Phascogale (Phascogale tapogtata);				
	 Southern Brown Bandicoot (Isoodon obesulus fusciventer): 				
	• Quenda (Isoodon obesulus):				
	 Western Brush Wallaby (Macropus Irma); and 				
	 Western Ring Tail Possum (Pseudocheirus occidentalis). 				
Objective	Terrestrial Fauna: To maintain the representation, diversity, viability and				
	ecological function at the species, population and community levels.				

The Plan is designed to be adaptive and will be updated as knowledge of threatened species and adaptive management and effectiveness of the management measures being implemented improves over the Greenbushes Lithium life of mine; which is expected to be approximately 20 years. With current and continued consultation will all relevant government departments as needed this management plan will be updated and revised.

Project description

The proposed expansion of the Greenbushes Lithium Mine (the Mine) will increase the production of spodumene ore and lithium mineral concentrate from the Greenbushes deposit. The Mine is located at the current operations immediately south of the Greenbushes townsite, approximately 250 km south of Perth and 80 km south east of Bunbury in Western Australia (WA) (Figure 1).

Talison Lithium Pty Ltd



GREENBUSHES OPERATIONS

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Conservation Significant Fauna Management Plan



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Figure 1: Location of the Project



Talison is proposing to expand the existing Talison Greenbushes Lithium Mine within Talison tenements M1/03, M1/06, M1/07, M1/08, M1/09, M1/16, G01/1, G01/2 (see Figure 2). The proposed expansion includes an expanded open pit, extension of the existing waste rock landform, construction additional processing plants and crusher (Chemical Grade Plant #3 and #4), expansion of an existing ROM, a new Mine Services Area, new explosive magazine and batching facility, construction of a new tailings storage facility (TSF 4), and establishment of linear supporting infrastructure for the expansion including pipelines/power supply/access roads and a possible bypass road for the town of Greenbushes. The mining rate will also increase from 3.5 Million bench cubic metres per annum (Mbcmpa) to approximately 16 Mbcmpa, which will require additional mining fleet and blasting activity. The ore processing rate will increase from 1.2 Mtpa to 2.3 Mtpa. The proposed expansion will require 350 ha of native vegetation clearing outside existing approval areas. (See Figure 2).

Relevant Legislation

Talison employees and contractors are obliged to comply with all relevant Commonwealth and State environmental legislation. Legislation directly relevant to the management of fauna in Western Australia is provided in Table 2.

Table 2: Relevant Legislation

Legislation	Application		
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act)	Assesses the conservation significance of fauna species and forms the framework for significant species protection at the Federal level.		
Conservation and Land Management Act 1984 (WA) (CALM Act)	Provides for the vesting or reservation of land for conservation purposes, and the ability to enter into agreements with private parties. It establishes several statutory bodies including the Conservation Commission of Western Australia.		
Conservation and Land Management Amendment Act 2000 (WA)	Allowed the creation of Forest Products Commission ("FPC") to take over the functions of DEC/ CALM under the CALM Act. The FPC promotes the sustainable management and development of Western Australia's forest and wood products industry using native forest, plantation and sandalwood products on land owned or leased by the State.		
Conservation and Land Management Regulations 2002 (WA)	Establishes restrictions applicable to activities undertaken within State forests and timbers reserves of Western Australia.		
Environmental Protection Act 1986 (WA) (EP Act)	The Act provides for an environmental impact assessment process undertaken by the EPA and sets out requirements for the prevention, control and abatement of pollution and environmental harm and for the conservation, preservation, protection, enhancement and management of the environment.		
Agriculture and Related Resources Protection Act 1976	Provides for the management, control and prevention of certain plants and animals, for the prohibition and regulation of the introduction and spread of certain plants and of the introduction, spread and keeping of certain animals, for the protection of agriculture and related resources generally, and for incidental and other purposes.		
Wildlife Conservation Act 1950 (WA) (WC Act)	State process which assesses the conservation significance of fauna species and forms the framework for significant species protection.		
Regional Forest Agreement (South West Region)	The WA RFA is a 20-year agreement between the State and Commonwealth governments on the use and management of the forests of Western Australia's south-west. The WA RFA was signed on 4 May 1999 and expires in 2019.		
State Forest Access Act 1946	Set outs acts and regulation for State forest areas of Western Australia		
Environmental Protection Act (Clearing of Native Vegetation) Regulations 2004	Set out provisions regulating the clearing of native vegetation.		

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Figure 2: Talison Tenements

Talison Lithium Pty Ltd GREENBUSHES OPERATIONS

Conservation Significant Fauna Management Plan



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Figure 3: Proposed Disturbance Areas

Conservation Significant Fauna Management Plan



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Roles and Responsibility

Accountability for fulfilling the requirements of this Plan is dependent on the stage of project development (construction, operations, decommissioning, rehabilitation and closure). Irrespective of whether construction activities are undertaken by external contractor or internal personnel, the designated Project Manager will be accountable for ensuring the requirements of this Plan are met. Responsibility may be delegated to the Environmental Manager or other personnel. During operational stages, the Manager Environment is accountable for ensuring the requirements of the Plan are met. Responsibility for specific tasks may be delegated. Where responsibilities are delegated, this must be clearly recorded and communicated. Table 3 attributes specific management actions to the appropriate personnel.

Table 3: Roles & Responsibilities

Roles	Responsibility		
Environmental Team	To formulate the Plan and provide guidance in the approach to fulfilling commitments of the Plan.		
Environmental Team	To provide technical support and advice to site staff.		
Manager Environment	To implement and report on fauna monitoring and assessment work and audit conformance of activities against the management actions of the Plan.		
Manager Environment	To maintain site records of surveys and arrange monitoring programs as required. To document any direct observations into the Threatened species database. To provide site staff with the tools and resources required to meet Talison objectives.		
Construction Manager / Operations Manager	To ensure Talison conditions, commitments and policies are followed on-site		
General Manager Operations	To also provide site staff with the tools and resources required to meet Talison's objectives. Ensure overall compliance to The Plan.		
Employees, contractors and visitors	To reduce any impacts on fauna resulting from the construction and operation of the project. To report sightings, vehicle strikes or any encounters with recognisable significant fauna species.		



1. Rationale

The section includes a summary of the proposed Greenbushes Lithium Mine Expansion and its main aspects. Also included is a summary of fauna surveys undertaken, the main findings, an outline of any assumptions and uncertainties, and the management actions to be implemented and reasoning behind these actions.

1.1. Proposal

The Greenbushes Lithium Mine (the Mine) is an existing mining operation owned and operated by Talison Lithium Australia Pty Ltd (Talison). Talison currently mines and processes spodumene ore at the Mine to produce a lithium mineral concentrate at approximately 6% Lithium Oxide (Li2O).

Talison proposes to expand the Mine which will require the current approved operational boundary (Active Mining Area) to be extended to the south, with a smaller extension to the north, increasing the current (approved) area of 1,591 hectares (ha) to a 1,989 ha area, i.e. an increase of 398 ha.

This expansion includes the following development (See Figure 3):

- Developing an expanded open pit;
- Establishment of two additional chemical grade processing plants (CGP'S), a tailings retreatment plant, a crusher and centralised ROM;
- Establishment of a new Mine Services Area and explosives storage and handling infrastructure;
- Expansion of the existing Floyds Waste Rock Landform;
- Construction of an additional TSF4; and
- Establishment of additional linear infrastructure corridors (Bypass Road, powerline, pipeline and road corridors).

The proposed expansion of 398 ha will require the clearing of 350 ha of native vegetation clearing within State Forest 20 (within Talison tenements). Of the 350 ha, approximately 193 ha is comprised of Jarrah/Marri forest over Banksia, and the remainder being 157 ha is Jarrah/Marri forest fauna habitats. The clearing of 350 ha has the potential to directly impact terrestrial fauna through the loss of habitat. The area within this clearing footprint is suitable for foraging, breeding and roosting by three species of black cockatoos, and provides habitat for other conservation significant fauna species including the Chuditch, Wambenger Brush-tailed Phascogale, Quenda, Western Brush Wallaby and although highly unlikely, the Western Ringtail Possum. Vegetation clearing can also potentially lead to fragmentation of fauna habitats.

1.2. Key Environmental Factors

The EPA's objective for protection of terrestrial fauna is to protect terrestrial fauna so that biological diversity and ecological integrity are maintained. Fauna surveys of the Mine Development Envelope (MDE) have confirmed the presence of the following Conservation Significant Fauna:

- Carnaby's Cockatoo (Calyptorhynchus latirostris) Endangered (EPBC Act, WC Act);
- Baudin's Cockatoo (Calyptorhynchus baudinii) Endangered (EPBC Act, WC Act);
- Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) Vulnerable (EPBC Act, WC Act);
- Western Quoll / Chuditch (Dasyurus geoffroii) Vulnerable (EPBC Act and WC Act);
- Wambenger Brush-tailed Phascogale (Phascogale tapoatafa wambenger) Conservation Dependent (WC Act);



- Southern Brown Bandicoot (Isoodon obesulus fusciventer) Priority 4 (DBCA Priority List); and
- Western Brush Wallaby (Notamacropus irma) Priority 4 (DBCA Priority List).

A further species, Western Ringtail Possum (*Pseudocheirus occidentalis*), (Critically Endangered, EPBC Act; Critically Endangered, WC Act), has possibly been recorded in the MDE. The species was potentially recorded via scats although the material cannot be distinguished from those of the Common Brushtail Possum (*Trichosurus vulpecula*).

The key potential impacts to EPBC listed threatened fauna arising from Talison's activities are likely to be associated with direct loss of individuals, habitat loss, alteration or fragmentation, the introduction of feral predators or new invasive species/infestations, introduction or spread of the pathogen *Phytophthora cinnamomi*, and altered fire regimes causing injury death or loss of habitat or loss of populations.

Introduction of plant pathogens Increase in plant pathogen may i (Phytophthora cinnamomi)

Increase in plant pathogen may increase tree deaths / tree hollow loss.

1.3. Condition Requirements

No specific conditions relating to Conservation Significant Fauna currently apply to the Project. This Management Plan is submitted with the environmental referrals in order to satisfy the EPA and the Department of the Environment and Energy (DoEE) that Talison has taken into consideration the environmental objectives set for terrestrial fauna, specifically:

- Carnaby's Cockatoo (Calyptorhynchus latirostris) Endangered (EPBC Act, WC Act);
- Baudin's Cockatoo (Calyptorhynchus baudinii) Endangered (EPBC Act, WC Act);
- Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) Vulnerable (EPBC Act, WC Act);
- Western Quoll / Chuditch (Dasyurus geoffroii) Vulnerable (EPBC Act and WC Act);
- Wambenger Brush-tailed Phascogale (Phascogale tapoatafa wambenger) Conservation Dependent (WC Act);
- Western Ringtail Possum (Pseudocheirus occidentalis), Vulnerable, EPBC Act), Critically Endangered, WC Act);
- Southern Brown Bandicoot (Isoodon obesulus fusciventer) Priority 4 (DBCA Priority List); and
- Western Brush Wallaby (Notamacropus irma) Priority 4 (DBCA Priority List).

The following legislative framework however apply to the Greenbushes site as part of Talison Lithium Australia Pty Ltd's offset proposal "Waste Rock Dump Expansion, Greenbushes - EPBC 2013/6904 - Protected Matters Offset Proposal' (dated 11 May 2016). This includes an offset proposal to meet the requirement of Condition 7 of Clearing Permit CPS 5056/2 to address impacts to foraging habitat for Carnaby's Cockatoo, Baudin's Cockatoo and Forest Red-tailed Black Cockatoo. The offset proposal includes the placement of 123 hectares of Carnaby's Cockatoo, Baudin's Cockatoo foraging habitat into a conservation covenant under the Soil and Land Conservation Act 1945.

This Plan is submitted with the environmental referrals in order to satisfy the EPA and DoEE that Talison has taken into consideration the environmental objectives set for conservation significant terrestrial fauna as outlined in section 1.2.

Talison are committed to implementing the proposed expansion in a manner that meets these objectives. The purpose of this Plan is to manage the potential impacts on threatened fauna that may be listed under Section 178 of the EPBC Act resulting from the proposed expansion. In addition, the Plan provides guidelines on fauna monitoring that could be utilised to determine the level of impact on fauna species within Talison's operations. The Plan addresses management issues relevant to the EPBC listed threatened fauna species which are considered likely to occur within the MDE.

1.4. Rationale and Approach

1.4.1. Survey

Biologic Environmental Survey Pty Ltd (Biologic) was engaged to conduct fauna surveys over the Greenbushes MDE. This included detailed habitat assessments as well as targeted fauna surveys in 2011 and 2018 to determine conservation significant species within the study area. Mr Tony Kirkby was also engaged to conduct specialised black cockatoo surveys over the study area in 2013 and 2018. There was additional follow-up work from Zoological Pty Ltd who conducted specialised



investigation into the use of potential Black Cockatoo hollows as well as detailed Western Ringtail Possum surveys. Details of these surveys are outlined in Table 4.

Table 4: Surveys and Studies

Date	Survey Type	Details	
September 2011	Level 1 Vertebrate Fauna Survey – Biologic Environmental	Undertake a comprehensive literature and database review of previous fauna surveys and records within the Greenbushes Mining Leases (Study Area); Undertake a field survey to map and describe fauna habitats present within the Study Area, including any of importance that may support conservation significant species; and Conduct targeted surveys for fauna of conservation significance within the Study Area, including habitat tree assessments for three threatened Black Cockatoo species potentially occurring.	
February 2018	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey	The survey was undertaken in February 2018 (Biologic 2018a) and included motion camera recording, targeted searches, opportunistic records and nocturnal surveys, as well as active foraging and leaf litter and soil sifting for SRE's.	
January / February 2018	Black Cockatoo Survey - Kirkby	A ground based targeted black cockatoo survey was undertaken by recognised black cockatoo Researcher Tony Kirkby in early 2018. The survey was undertaken within blocks of vegetation within the MDE to assess the suitability for foraging and breeding by the three black cockatoo species known from the Greenbushes area.	
March 2018	Black Cockatoo Habitat Quality Assessment - Ennovate	An assessment of habitat quality (based on Kirkby 2018 survey) was undertaken by Ennovate (2018).	
July 2018	Greenbushes Black Cockatoo Tree Hollow Review – Harewood	Greg Harewood was engaged to undertake an aerial (drone) survey of recorded trees with hollows suitable for black cockatoo breeding (within and in proximity to the MDE).	
June 2018	Preliminary Western Ringtail Possum Surveys - Harewood	Greg Harewood was engaged to undertake preliminary Western Ringtail Possum assessment.	

1.4.2. Key Assumptions and Uncertainties

The key assumption and uncertainties within this plan include:

- Direct impacts to fauna during construction are limited to mortality during pre-mining and construction activities (clearing and plant movement).
- Most fauna will disperse in front of the clearing front where they are able.
- Conservation significant species were assessed for their likelihood to occur within the proposal footprint, by reviewing current distribution, habitat requirement and location and age of previous records in the vicinity of the study area.
- Previously cleared areas within the MDE do not contain habitat requirements or known records of conservation significant species. Conservation significant fauna are not expected to occur within previously cleared areas, therefore these areas do not require management during the construction of the proposal.

If any conservation significant species assumed not to occur in the proposal footprint is subsequently recorded, the proposed management actions will ensure there is no additional impact. Current



management actions ensure conservation significant ground dwelling fauna such as the Western Quoll would be trapped and relocated in the trapping program.

1.4.2 Study Findings

Fauna surveys have been conducted over the MDE by Biologic Environmental Surveys with total of 43 species were recorded during the survey directly and/or via secondary evidence, comprising 14 mammals (including six introduced species), 30 birds, seven reptiles and two amphibians. Two species targeted during this survey were confirmed as occurring within the Study Area, the Western Quoll and the Wambenger Brush-tailed Phascogale, scats belonging to a common brush tail possum or Western Ringtail Possum were also recorded.

Tony Kirkby also surveyed the area for potential for use as a black-cockatoo breeding hollow, this was further reviewed by Greg Harewood. The results area as follows:

Reviewed Status	Trees identified by Kirkby (2018)	Trees identified by Biologic (2011)	Total
Actual/Potentially Suitable Hollow - Chew Marks	13	1	14
Potentially Suitable Hollow - No Chew Marks	16	0	16
Hollow Appears Unsuitable	12	18	30
No Hollow Seen	6	4	10
Status Unknown	0	13	13
Total	47	36	83

1.4.3. Management Approach

The management approach has been informed by best practice and recent experience on mine and construction projects in Western Australia. The hierarchical approach taken focuses on avoiding clearing of habitat suitable for conservation significant fauna by locating mine expansion developments on previously disturbed or cleared areas where possible. Where habitat clearing cannot be avoided, the management measures detailed in this Plan are intended to minimise the duration, intensity and/or extent of impacts on fauna during clearing, pre-mining and construction activities. Any significant unavoidable residual impacts on conservation significant fauna will be addressed through implementation of an appropriate offset.

1.4.4. Rationale for Choice of Management Targets

The management approach is informed by results of previous fauna surveys and follow up specialised species surveys, and the proposed expansion parameters in order to minimise disturbance impact. The proposed expansion parameters to minimise the extension of the disturbance footprint considering, the 20 year expected mine life by use of existing disturbed areas and progressive rehabilitation. The mitigation measures have been designed for the approximate 20-year life of mine and as such the plan may require revisions and adaptation of the plan through the course of the mine life.



The rationale for the choice of management targets is described below.

• Management Target 1: *Minimise mortality of conservation significant fauna within the MDE during clearing activities and during all phases of mining activities.*

This management target focuses on implementing a trapping and relocation program that is as effective as practicable in removing fauna from the MDE and reduces the risk of mortality, together with use of a qualified Fauna Spotter during clearing to achieve the management target. Fauna mortality has been identified as a key issue during clearing. The number of fauna mortalities will be reduced by a trapping and relocation/ translocation program prior to clearing vegetation. This includes the Chuditch, Brush-tailed Phascogale, Quenda and the Western Ringtail Possum (although highly unlikely) which are conservation significant species that may occur in the MDE, and are vulnerable to the impacts of the Proposal. This territorial species has been chosen as the target species for the trapping and relocation program. Other species such as Western Brush Wallaby are difficult to trap, but disperse quickly and are not suitable as a target species for relocation.

• Management Target 2: No disturbance of active Black Cockatoo nests.

Impacts to Black Cockatoos is a key risk during construction. Clearing of potential breeding trees will impact the Black Cockatoo's nesting activities during breeding season. Inspecting all Black Cockatoo breeding trees for active nests prior to any clearing disturbance will reduce disruption to the adults and fledglings ensuring the proposal does not disturb nesting birds until the chicks have fledged and left the nest.



2. Conservation Significant Fauna Management Plan Provisions

This portion of the Plan outlines the measures that will be implement to ensure the protection of conservation significant fauna within the MDE. Outlined are specific measures to mitigate and manage potential risks and ensure the protection of conservation significant species which may occur.

2.1. Objectives of the Plan

The objectives of the plan include providing:

- An overarching framework for all conservation significant fauna species in the MDE;
- Information on the likely extent of direct and indirect impacts to conservation significant fauna resulting from the proposed expansion, including updated information collected during ongoing fauna surveys and application of adaptive management during the life of mine, rehabilitation, and closure phases;
- A monitoring and reporting program to be implemented during all phases of the project to assess the effectiveness of the mitigation measures and inform an adaptive management approach; and
- Commitment to maximise the ongoing protection of conservation significant fauna species within the MDE.

2.2 Key Risks and Impacts to Conservation Significant Fauna

The key potential impacts to conservation significant fauna arising from Talison's activities are presented in Table 5. Potential Impacts on fauna are likely to be associated with direct loss of individuals, habitat loss, alteration or fragmentation, the introduction of feral predators or new invasive species/infestations, introduction or spread of the pathogen *Phytophthora cinnamomi*, and altered fire regimes causing injury death or loss of habitat or loss of populations. Management targets related to weeds and Dieback are identified in the Weed and Hygiene Management Plan.

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Table 5: Potential Environmental Impacts

Potential Environmental Impacts	Details
Fragmentation of habitat	Fragmentation of habitat areas normally associated with linear infrastructure or infrastructure construction.
Clearing activities	Direct loss of suitable habitat for conservation significant fauna species (including foraging and dispersal habitat.
Vehicle strike	Direct mortality or injuring of conservation significant fauna species.
Altered fire regimes	Due to the increased presence of people and machinery in the area, there is however an increased risk of accidental fires. The result of these changes is likely to be a reduction in widespread cool, controlled burns across the Mine Site Development Envelope and an increased risk of uncontrolled, hot burns for small areas within the MDE.
Introduction of feral predators	Introduced predators (e.g. cats, foxes, wild pigs) are recognised as a threat to the survival of a number of conservation significant species. Mining activities can contribute to an increase in these feral predator populations through an increase in available food and water.
Loss of individuals or populations	Direct mortality to conservation significant species.
Light and noise emissions disrupting nocturnal activities	Development of the project may result in an increase in light and noise emissions which could potentially result in changes to conservation significant species
Entrapment leading to injury or death	Trenches, excavations, and water storage structures often have steep, slippery sides which prevent fauna escaping from them.



2.2. Management Objectives and Targets

Table 6: Management Objectives and Targets

Project Management Objectives	Management targets
Avoid vehicle strike causing injury or death or population loss	No Death or population loss.
Minimise the potential for clearing activities to cause injury or death	No Death or population loss due to direct interaction with equipment or machinery.
Minimise requirements for clearing and associated loss/fragmentation of habitat that may displace conservation significant fauna	No clearing outside approved clearing areas. Area of land rehabilitated consistent with Talison Rehabilitation Strategy
Prevent increased feral predator abundance within the MDE	No feral predator increases due to mining operations.
No net increase in fire frequency.	No fires attributed to mining or associated activities.
Minimise light and noise pollution	Limit light overspill, lights will be strategically located limit light overspill to within the MDE (if this is possible) and designed to shine towards plant operations and minimise light spill to the environment. Noise will comply to the Regulation 17 approval.
Avoid entrapment of conservation significant fauna leading to injury or death	No incidences of conservation significant fauna injury or death due to entrapment in artificial water sources, open holes, trenches, landfill, and any water holding or domestic waste facilities.
Avoid direct impact to breeding Black Cockatoos as a result of hollow loss during breeding activity.	No loss of hollows associated with secondary infrastructure such as roads, services areas, buildings, pipelines etc.
Avoid direct impact to breeding Black Cockatoos as a result of hollow loss during breeding activity.	No trees cleared which have nesting birds of fledglings present



2.3. Management actions to be implemented to achieve the environmental objective

2.3.1. Terrestrial Fauna (Birds) specifically: Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Forest Red-tailed Black Cockatoo (*C. banksii naso*) and Baudin's Black Cockatoo *(C. baudinii)*(together Black Cockatoos))

The Plan is designed to be adaptive and will be updated over the life of the project (approximately 20 years) with increased knowledge about Black Cockatoos in the Jarrah and Marri forests of the South West region. Prior to commencement of the project Talison will update this plan in consultation with relevant government departments as required. As such this plan remains a working document. Table 7 presents the environmental criteria to measure achievement of environmental objectives through implementation of this Plan.

2.3.1.1. Project Avoidance and Mitigation Measures

The project has been designed with the aim to retain Black Cockatoo habitat where possible. Works will be undertaken in previously cleared/disturbed areas and will avoid clearing of native vegetation wherever possible. Pre-existing access tracks will be utilised where possible to avoid unnecessary clearing of habitat. Where it is not possible to retain Black Cockatoo habitat due to project requirements, avoidance and mitigation measures will be implemented to minimise impacts to Black Cockatoos during clearing. Table 7 outlines the avoidance and mitigation measures to be implemented during all project phases including clearing, construction, mining and closure of the site.

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Conservation Significant Fauna Management Plan

Table 7: Management Actions **Terrestrial Fauna Birds**

Management Objective	Management	Management Action	Phase	Responsibility	Records and Reports
	Targets				
Minimise the potential for clearing activities to cause injury or death to Black Cockatoos	Minimal Black Cockatoo Deaths due to direct interaction with equipment and machinery and no unintentional clearing of habitat	 Clearly mark Black Cockatoo breeding trees proposed to be retained in the MDE (as indicated on Figure 4) on design drawings and demarcate by coloured tape or bunting. Any trees identified as being actively used for breeding will be protected in accordance with (Standards Australia, 2009)Retention of trees on development sites which involves but is not limited to: Establishing a Black Cockatoo Tree Protection Zone (TPZ) and prohibiting threatening activities within the TPZ; Clearly demarcate the TPZ; Ground Protection within the TPZ where necessary; Maintaining the TPZ (i.e. weed control and general maintenance) Monitoring, survey and input of TPZ within GIS database to ensure compliance of mine site activities with TPZ. Qualified Fauna Spotter present during clearing. The TPZ is outline in Figure 4 	Pre-mining /construction/Cleari ng	Manger Environment	Internal audits and inspections of areas to be cleared before and after clearing. Incident reporting of Black Cockatoo death and over-clearing. Survey data/ GIS Databases Annual Environmental Report. Incident reports for over-clearing.
Minimise the potential	Minimal Black	Provide GPS co-ordinates of areas approved to be cleared and those	Pre-mining	Manger Environment	Internal audits and inspections of areas to be
for clearing activities to	Cockatoo Deaths	required to be retained within GIS to ensure no unapproved clearing is	/construction/Cleari		cleared before and after clearing.
to Black Cockatoos	interaction with	uldenaken.	ng		Incident reporting of Black Cockatoo death and over-clearing.
	machinery and				Survey data/ GIS Databases.
	no unintentional				Annual Environmental Report.
	clearing of habitat				Incident reports for over clearing.
Minimise the potential for clearing activities to cause injury or death to Black Cockatoos	Minimal Black Cockatoo Deaths due to direct interaction with equipment and machinery	If clearing during Black Cockatoo breeding season (July-November), nesting hollows in potential breeding trees will be checked prior to clearing and/or Qualified Fauna Spotter present during clearing. <u>ENV – PR – 9002 - Black Cockatoo Handling and Rescue Procedure</u>	Immediately prior to clearing	Manger Environment	Internal audits and inspections of areas to be cleared before and after clearing / nesting hollows. Incident reporting of Black Cockatoo death and over-clearing/ unauthorised nesting hollow. Survey data/ GIS Databases Annual Environmental Report. Incident reports for over-clearing/ unauthorised nesting hollows. Monitoring report (following consultation with DBCA).
Minimise the potential	Minimal Black	If active Black Cockatoo nests are located in the Project Area, the tree and	Immediately prior to	Manger Environment	Incident reporting of Black Cockatoo death and
cause injury or death	due to direct	nesi wili be lett unaisturbea until tleaglings have lett the hest.	ciedring		over-clearing/ unauthorised nesting hollow.
to Black Cockatoos	interaction with	ENV – PR – 9002 - Black Cockatoo Handling and Rescue Procedure			Annual Environmental Report
	equipment and				Incident reports for over clearing / unauthorized
	machinery				nesting hollows.

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Conservation Significant Fauna Management Plan

Table 7: Management Actions **Terrestrial Fauna Birds**

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
Minimise the potential for clearing activities to cause injury or death to Black Cockatoos	Minimal Black Cockatoo Deaths due to direct interaction with equipment and machinery and No unintentional clearing of habitat	Staged clearing will be considered whereby nonactive habitat trees are cleared and active habitat trees are left overnight or until vacant before being cleared. <u>ENV - PR - 5003 - Clearing Disturbance Criteria and Permit</u> <u>ENV7000 - Rehabilitation Timeline</u>	Clearing	Manger Environment	Internal audits and inspections of areas to be cleared before and after clearing / inspection of hollows. Incident reporting of Black Cockatoo death and over-clearing. Survey data / GIS Databases Annual. Environmental Report. Incident reports for over-clearing.
Minimise the potential for clearing activities to cause injury or death to Black Cockatoos	Minimal Black Cockatoo Deaths due to direct interaction with equipment and machinery	In the event that a Black Cockatoo is identified during clearing, the Black Cockatoo Handling and Rescue Procedure should be followed. Site induction, training and education will have outline the requirement of reporting and procedures when working in vegetated areas. <u>ENV – PR – 9002 - Black Cockatoo Handling and Rescue Procedure</u>	Clearing	Manger Environment	Internal audits and inspections of areas to be cleared before and after clearing. Incident reporting of Black Cockatoo death and over-clearing. Survey data/ GIS Databases. Annual Environmental Report. Incident reports for over-clearing.
Minimise pollution from light and noise.	Minimal disruptions to Black cockatoos from noise and light emissions.	Lights will be strategically placed and designed to shine towards plant operations and minimise light spill to the surrounding environment. Equipment design will specify compliance with Australian Standard noise limits	All Phases	Manger Environment	Incident reports for light spill and noise violations.
Minimise habitat loss due to disease infestation	No spread of dieback to Uninfested & Uninterpretable.	Follow Dieback management measures outlined in the procedures <u>ENV8001 - Dieback Management Plan</u> <u>ENV - PR - 8006 - Vehicle Hygiene</u> A Greencard training program will be implemented for staff working in areas where dieback controls are required.	All mine site actives	Manger Environment	Dieback Mapping and internal reporting. Ground disturbance register, survey and GIS database. Annual Environmental Report. Incident Reporting for breach in Dieback management procedures. Greencard Training (Onsite).
Minimise habitat loss due to disease infestation	No spread of dieback to Uninfested and Uninterpretable.	As far as practical, time the clearing phase of the operation to occur during the dry months to reduce the risk of spreading the disease <u>ENV8001 - Dieback Management Plan</u> <u>ENV - PR - 8006 - Vehicle Hygiene</u>	Pre-mining /construction/Cleari ng	Manger Environment	Dieback Mapping and Internal reporting. Ground disturbance register, survey and GIS database. Annual Environmental Report. Incident Reporting for breach in Dieback management procedures.
Minimise increases to feral predator abundance (cat, dog,	Waste and water sources not available to feral predators.	Avoid attraction of both feral and native species by implementing domestic waste management procedures <u>ENV4000 - Waste Minimisation and Management Plan</u> <u>ENV4001 - Waste Management Schedule</u>	All phases	Manger Environment	Opportunistic observations and Quarterly Monitoring Program. Incident reports of fauna predation.

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Table 7: Management Actions **Terrestrial Fauna Birds**

Conservation Significant Fauna Management Plan

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
fox) and herbivorous competitors.	Predator control program implemented. Minimal increase in predator abundance.	Landfills will be fenced Putrescible waste will be covered on a weekly basis, Putrescible waste bins will have secure lids. A feral animal control program will be implemented on site in cooperation with regional control programs where appropriate. No domestic animals will be allowed on site Site induction, training and education will have outline the requirement of feral animal control, reporting, domestic animals and procedures. A quarterly monitoring program of feral predator abundance will be undertaken of langfill areas waste site and waterboles to determine control			Internal audits and inspections. Annual Environmental Report. Predator control to include monitoring of predator species.
No increase in fire frequency or intensity.	No fires attributed to mining and associated activities.	program effectiveness.Avoid increases in fire frequency through maintenance of fire breaks through use of implemented fire management procedures (e.g. Hot Work Permit system, fire-fighting training, Emergency Response Plan).Firefighting equipment will be located on site, in machinery and vehicles. SAF2011 - Hot Work SAF2065 - Site Risk Management MIN1012 - Treating Tyre Fires Lightning protection equipment will be installed as part of project design where necessary.Talison will work with DBCA and DFES to undertake prescribed burns. Talison will contribute to fire management in the region.Fire breaks will be maintained on the site A Hot Work Permit system will be implementedThe site emergency response plan will be implemented in the event of a fire Staff training, inductions and awareness to include information on the prevention and management of fires.Emergency Response Personnel will be trained in Fire Fighting and Response Site induction, training and education will have outline the requirement of training and emergency response with respect to fires.ERT2002 - Response to Fire (Surface) MIN1033 - Working Offsite, Remote Areas	All phases	Manger Environment	GIS / Mapping. Incident Reporting.
Minimise requirements for clearing which	No clearing outside approved	Any areas that are cleared that do not need to remain cleared will be rehabilitated as soon as practicably possible. This will be undertaken in conjunction with the Talison Rehabilitation Strategy.	All mine site actives.	Manger Environment	Ground disturbance register Internal clearing permits. Survey data. Annual Environmental Report. Incident reports for over-

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Conservation Significant Fauna Management Plan

Fable 7: Managemei	nt Actions
Terrestrial Faund	ı Birds

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
results in habitat loss and fragmentation	clearing areas. Progressive rehabilitation undertaken.	Internal Ground disturbance and clearing strategy developed ENV - PR - 5003 - Clearing Disturbance Criteria and Permit Progressive land clearing with the amount of active disturbance minimised. Progressive rehabilitation in accordance with the Talison Rehabilitation Strategy. Site induction, training and education will have outline the requirement of with respect to clearing and native vegetation practices. ENV7000 - Rehabilitation Timeline Completion criteria will incorporate fauna and habitat restoration objectives.			clearing. Monitoring report (following consultation with DBCA).

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Conservation Significant Fauna Management Plan

Figure 4: Tree Protection Zones and Buffers





2.3.2 Terrestrial Fauna (Mammals) specifically: Chuditch (Dasyurus geoffroil), Brush-tailed Phascogale (Phascogale tapoatafa), Quenda (Isoodon obesulus), Western Brush Wallaby (Macropus Irma) and Western Ring Tail Possum (Pseudocheirus occidentalis)

2.3.2.1 Project Avoidance and Mitigation Measures

The project has been designed to retain as much habitat pertaining to species considered to be of conservation significance. Two surveys targeting vertebrate fauna have been completed within the MDE to date confirming the following significant fauna are known to occur within the vicinity of the MDE and project area:

- Western Quoll (Dasyurus geoffroii) Vulnerable (EPBC Act and WC Act);
- Wambenger Brush-tailed Phascogale (Phascogale tapoatafa wambenger) Conservation Dependent (WC Act);
- Southern Brown Bandicoot (Isoodon obesulus fusciventer) Priority 4 (DBCA Priority List); and
- Western Brush Wallaby (Notamacropus irma) Priority 4 (DBCA Priority List).

A further species, Western Ringtail Possum (*Pseudocheirus occidentalis*, Critically Endangered, EPBC Act; Critically Endangered, WC Act), has possibly been recorded in the local region but is highly unlikely to occur within the project area and MDE. Works will be undertaken in previously cleared/disturbed areas and will avoid clearing of native vegetation wherever possible. Any pre-existing access tracks will be utilised where possible to avoid unnecessary clearing of habitat. Where it is not possible to retain habitat due to project requirements, avoidance and mitigation measures will be implemented to minimise impacts to conservation significance fauna during clearing. Table 9 outlines the avoidance and mitigation measures to be implemented prior to, and during all project phases including clearing, construction, mining and closure of the site. The objective of this Plan is to ensure the proposed expansion is managed to maintain the local conservation significant fauna population, its diversity, variability and ecological function at the species, population and community level, in compliance with the EPA objective for terrestrial fauna (EPA 2016).

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Conservation Significant Fauna Management Plan

Terrestrial Fauna - Mammals

Managemen t Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
Minimise the potential for clearing activities to cause injury or death to mammals	Minimal threatened species terrestrial fauna deaths due to direct interaction with equipment and machinery.	Any areas that are cleared that do not need to remain cleared will be rehabilitated as soon as practicably possible. This will be undertaken in conjunction with the Talison Rehabilitation Strategy. Internal Ground disturbance and clearing strategy developed <u>ENV - PR - 5003 - Clearing Disturbance Criteria and Permit</u> Progressive land clearing with the amount of active disturbance minimised. Progressive rehabilitation in accordance with the Talison Rehabilitation Strategy. <u>ENV7000 - Rehabilitation Timeline</u> Completion criteria will incorporate fauna and habitat restoration objectives. Minimise disturbance to fauna and habitat by locating infrastructure, where possible, in existing disturbed areas and undertaking clearing in a progressive manner. Subject to consultation and agreement with DBCA, a capture and release program will be implemented prior to clearing by a suitably qualified and experienced environmental professional. A qualified fauna spotter will be present during all land clearing. The person will hold a permit to handle and move significant fauna under Regulation 15 of the Wildlife Conservation Act 1950, have suitable equipment to administer emergency care to injured and or displaced fauna and have access to a care facility that can used to rehabilitate injured fauna See <u>ENV9001 – Management of Injured Fauna</u> .	All phases	Manger Environment	Internal audits and inspections of areas to be cleared before and after clearing. Incident reporting of Chuditch death and over-clearing. Clearing register. Annual Environmental Report. Chuditch register of all capture and releases, sightings and interactions including GIS Databases.

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Conservation Significant Fauna Management Plan

Table 9: Management Actions

Terrestrial Fauna - Mammals

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
Minimise the potential of vehicle strike causing injury or death to mammals	Minimal mammal death attributable to mining vehicle strike.	 The following traffic management rules will be implemented: Driving restricted to designated tracks unless required and approved for an exempt purpose (exploration or biological surveys) driving to road and weather conditions, Speed limits reduced to 40 km when driving on mine roads, All sightings and interactions with conservation significant fauna species detailed in this plan to be reported to the Environmental Department. Environmental personnel will maintain contact details for local wildlife carers/vets for injured mammals. Staff inductions, training and awareness to provide information on the mammals including Chuditch (Dasyurus geoffroil), Brush-tailed Phascogale (Phascogale tapoatafa), Quenda (Isoodon obesulus), Western Brush Wallaby (Macropus Irma) and Western Ring Tail Possum (Pseudocheirus occidentalis) and Southern Brown Bandicoot (Isoodon obesulus fusciventer) via ESIS and inductions (e.g. how to identify species, conservation status, the importance of minimising impacts on the species, adherence to speed limits, reporting to Environmental Department). ENV9001 – Management of Injured Fauna. 	All phases	Manger Environment	Incident reports of speeding, unauthorised driving and Chuditch (Dasyurus geoffroil), Brush-tailed Phascogale (Phascogale tapoatafa), Quenda (Isoodon obesulus), Western Brush Wallaby (Macropus Irma), Southern Brown Bandicoot (Isoodon obesulus fusciventer) and Western Ring Tail Possum (Pseudocheirus occidentalis) deaths. Internal audits and inspections of vehicle speeds.
Minimise entrapment leading to injury or death of mammals	Minimal mammal deaths due to entrapment in drill holes, containers, bins, open excavations, trenches, landfill or water holding facilities.	Fauna egress points and/or fauna ladders will be installed in excavations and dams deemed to pose a risk to fauna. Open holes, including drill holes, to be covered or capped during construction or rehabilitated when they are no longer required or are outside active areas. Domestic waste facilities will be fenced Putrescible wastes will be covered on a minimum weekly basis. Shipping containers/ Intermodal containers to have doors closed securely when not in use.	All phases	Manger Environment	Incident reports for entrapped fauna. Internal audits and inspections of site high risk areas for potential for entrapment and death.

SITE MANAGEMENT PLAN **ENVIRONMENT ENV9006**

Conservation Significant Fauna Management Plan

Table 9: Management Actions

Terrestrial Fauna - Mammals

Management Obiective	Management Taraets	Management Action	Phase	Responsibility	Records and Reports
Minimise requirements for clearing which results in habitat loss and fragmentation	No clearing outside approved clearing areas. Progressive rehabilitation undertaken.	Any areas that are cleared that do not need to remain cleared will be rehabilitated as soon as practicably possible. This will be undertaken in conjunction with the Talison Rehabilitation Strategy. Internal Ground disturbance and clearing strategy developed <u>ENV - PR- 5003 - Clearing Disturbance Criteria and Permit</u> Progressive land clearing with the amount of active disturbance minimised. Progressive rehabilitation in accordance with the Talison Rehabilitation Strategy. ENV7000 - Rehabilitation Timeline Completion criteria will incorporate fauna and habitat restoration objectives.	All phases	Manger Environment	Ground disturbance register. Internal clearing permits. Survey data. Annual Environmental Report. Incident reports for over-clearing.
Minimise pollution from light and noise.	Minimal disruptions to fauna from noise and light emissions.	Project travel between dusk and dawn will be limited to essential travel. Lights will be strategically placed and designed to shine towards plant operations and minimise light spill to the surrounding environment. Noise will comply with the Regulation 17 permit	All phases	Manger Environment	Incident reports for light spill and noise violations.
Minimise increases to feral predator abundance (cat, dog, fox) and herbivorous competitors.	Waste and water sources not available to feral predators. Predator control program implemented. Minimal increase in predator abundance.	Avoid attraction of both feral and native species by implementing domestic waste management procedures ENV4000 - Waste Minimisation and Management Plan ENV4001 - Waste Management Schedule Landfills will be fenced Putrescible waste will be covered on a weekly basis, Putrescible waste bins will have secure lids. A feral animal control program will be implemented on site in cooperation with regional control programs where appropriate. A quarterly monitoring program of feral predator abundance will be undertaken of landfill areas, waste site and waterholes to determine control program effectiveness . Staff training and awareness to include information on feral species via induction and ESIS (e.g. impact on the Chuditch (Dasyurus geoffroil), Brush-tailed Phascogale (Phascogale tapoatafa), Quenda (Isoodon obesulus), Southern Brown Bandicoot (Isoodon obesulus fusciventer) Western Brush Wallaby (Macropus Irma) and Western Ring Tail Possum (Pseudocheirus occidentalis), no feeding of feral species and all sightings of feral species to be reported).	All phases	Manger Environment	Opportunistic observations. Quarterly Monitoring Program. Incident reports of Chuditch predation. Internal audits and inspections. Annual Environmental Report. Predator control to include monitoring of predator species.

SITE MANAGEMENT PLAN

ENVIRONMENT ENV9006

Conservation Significant Fauna Management Plan

Terrestrial Fauna - Mammals

Management Objective	Management Targets	Management Action	Phase	Responsibility	Records and Reports
No increase in fire frequency or intensity.	No fires attributed to mining and associated activities.	Avoid increases in fire frequency through maintenance of fire breaks through use of implemented fire management procedures (e.g. Hot Work Permit system, fire-fighting training, Emergency Response Plan). Firefighting equipment will be located on site, in machinery and vehicles. SAF2011 - Hot Work SAF2011 - Hot Work SAF2011 - Treating Tyre Fires Lightning protection equipment will be installed as part of project design where necessary. Talison will contribute to fire management in the region. Fire breaks will be maintained on the site A Hot Work Permit system is implemented currently on site and will be extended to the expanded operations The site emergency response plan will be implemented in the event of a fire Staff training, inductions and awareness to include information on the prevention and management of fires Emergency Response Personnel will be trained in Fire Fighting and Response ERT2002 - Response to Fire (Surface) MIN1033 - Working Offsite, Remote Areas	All phases	Manger Environment	Aerial photography. Incident reports. GIS Database.

2.4 Monitoring

The following monitoring will be undertaken for the Plan:

- Monitoring of the existing feral fauna populations (focussing on the fox, pig, rabbit and cat population). This information is intended to provide a baseline for comparison of feral animal numbers over the life of mine. Best practice techniques developed following consultation with DBCA. The information will also guide any feral control programs implemented in the Project area. Monitoring of incident reports for Conservation Significant Fauna predation, vehicle strike, speeding and night driving, over-clearing, light and noise disturbance and fire.
 - Quarterly Monitoring Program of existing feral fauna populations at sites including landfill, waste, waterhole sites in and immediately surrounding the Greenbushes Project site.
- Monitoring of clearing through the clearing register, survey data, GIS database and aerial photography.
- Monitoring of rehabilitation progress criteria defined in the Talison Rehabilitation Strategy. Where there is evidence of management targets not being met, or a trigger value being breached – for instance Threatened Fauna being killed, management measures will be reviewed to ensure further deaths do not occur.

2.5 Reporting

The following reporting in relation to this Plan will be implemented

- An Annual Environmental Report (AER) will be submitted to the appropriate regulatory authorities. The AER will include details on Talison's implementation of conservation significant fauna species management activities ;
- Provision of data (annually) from monitoring programs to DBCA, EPA and DoEE; and
- In the event that the management target is exceeded (or not met), the relevant authority will be notified within 7 days of identification of the exceedance, including contingency actions which have been implemented.

3 Adaptive Management and Review of the management Plan

This Plan has defined the purpose in section 1.2, outlined specific management and mitigation measures to address the issue related to threatened fauna (Section 2), and introduced monitoring and evaluation of these measures (Section 3). The management approach for the Threatened Fauna at the mine site will be adaptive. The Threatened Fauna Management Plan will be formally reviewed annually by a suitably qualified experienced person. In addition to the annual review, the Plan will be reviewed if:

- New information is learned from monitoring, or monitoring indicates that management targets are not being achieved; or
- New information becomes available about the conservation significant fauna species, for instance a change in conservation status.
- New requirements need to be included as a consequence of approvals being issued or modified.

Talison implement adaptive management to respond to any issues identified in implementation of management measures, monitoring and evaluation against the management targets, to more effectively meet the environmental objective of the plan. Environmental management is



undertaken in accordance with an Environmental Management System (EMS) developed to meet the requirements of ISO14001, relevant legislation and regulations and Australian Standards and other requirements. The EMS is certified to ISO14001 and the integrated management system is certified to ISO 9001. Environmental measurement and monitoring is undertaken in accordance with the relevant environmental work procedures by Environmental Officers on site and the results recorded in accordance with the Filing Register.

Environmental Work Procedures have been developed to ensure that statutory monitoring requirements are met and to ensure that monitoring is undertaken in a controlled manner. Analysis and evaluation of the monitoring and measurement data is conducted and communicated in accordance with procedure ENV5001 Environmental Statutory Reporting.

Potential adaptive management actions include:

- A. Conservation significant fauna mortalities:
 - Investigate cause;
 - Review site speed limit and decrease;
 - Assess the effectiveness of training on management of fauna and amend training method if required and implement more training;
 - Review feral animal control program and increase frequency; and
 - Investigate fauna fencing.
- B. Disturbance of Black Cockatoo nesting sites:
 - Investigate cause;
 - Review and revise as required methods used for locating and marking breeding trees;
 - Assess the effectiveness of training on management of fauna and amend training method if required and implement more training;
 - Increase buffer distance around breeding trees; and
 - Assess the effectiveness of temporary fencing around breeding trees and adjust temporary fencing if required.



4 Stakeholder Consultation

Talison consulted with stakeholders while developing this plan, consistent with the EPA's expectations to align the plan with the principles of environmental impact assessment. This section provides a summary of the consultation that occurred. The comments raised during consultations with stakeholders were considered in preparing the plan. A summary of the consultation and Talison response is included in Table 10.

Table 10: Stakeholder Consultation

Date	Organisation	Summary of Consultation	Talison Response to
19/8/18	DoEE	Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts of the proposed action on Black Cockatoos. This information must include, but is not limited to, measures proposed to avoid or mitigate: (a) the clearance of known and suitable nesting hollows including potential engineering or design controls that can be implemented to avoid the clearance of hollows and mitigation measures to be applied for the hollows that are proposed to be cleared; (b) introduction and/or spread of weeds and <i>Phytophthora cinnamoni</i> (dieback); (c) any impact on the supply of permanent water or decrease to the quality of the permanent water for fauna; and (d) noise, vibration and vehicle strike that could impact the Black Cockatoos utilising the known breeding hollow/s in proximity to the mine site.	Talison has considered the prosed expansion of the Greenbushes Lithium Mine fauna trapping and relocation program in the development of this plan. Advice will be sought from suitably qualified consultants on the fauna trapping and relocation program during development of the program.
19/8/18	DoEE	Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts of the proposed action on the Western Ringtail Possum. This information must include, but is not limited to, measures proposed to avoid or mitigate impacts of: (a) feral animals (cat and fox); and (b) introduction and/or spread of weeds and <i>Phytophthora cinnamoni</i> (Dieback).	Talison has considered this and has within the Conservation Significant Fauna Management Plan and has suitable procedures in place to manage appropriately.
19/8/18	DoEE	Describe and assess the likely effectiveness of measures proposed to avoid and/or mitigate the direct and indirect impacts of the proposed action on Chuditch. This information must include, but is not limited to, measures proposed to avoid or mitigate impacts of: (a) feral animals (cat and fox).	Talison has considered the prosed expansion of the Greenbushes Lithium Mine fauna trapping and relocation program in the development of this plan. Talison has considered this and has within the Conservation Significant Fauna Management Plan and has suitable procedures in place to manage appropriately.
31/8/18	EPA	Management and mitigation for black cockatoos should include clearing during nonbreeding periods and the use of buffers around confirmed nesting hollows that will be retained.	Management and mitigation for black cockatoo hollows are outlined within the plan and have been consider by Talison the advice of specialist consultant advice.



5 References

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