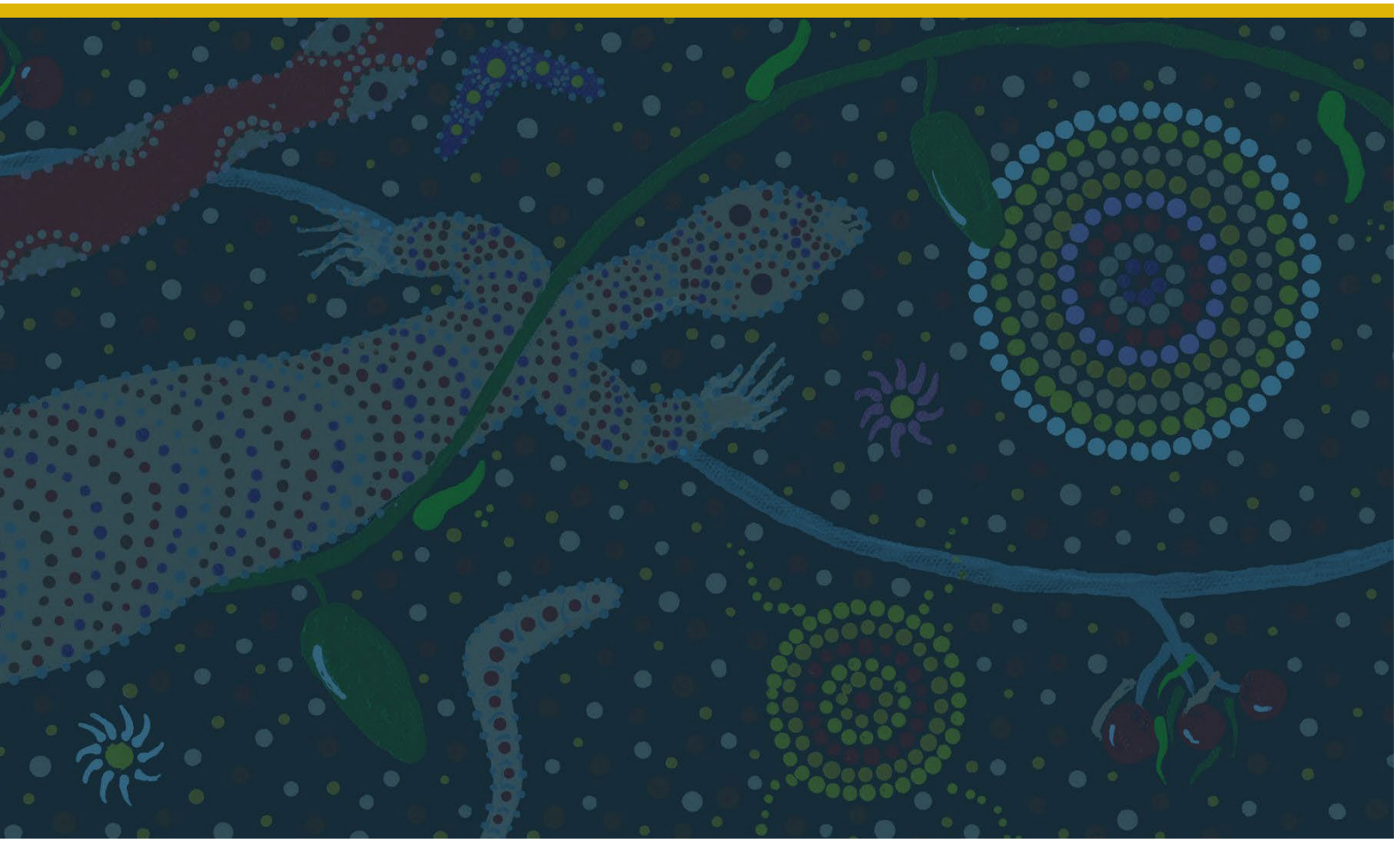
KCGM

SIGNIFICANT SPECIES MANAGEMENT PLAN

FLORA

FIMISTON GOLD MINE OPERATIONS EXTENSION (STAGE 3)
FIMISTON SOUTH PROJECT
v8 March 2026



KALGOORLIE CONSOLIDATED GOLD MINES PTY LTD

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VERSIONS

Version	Date	Document Changes
1	Oct 2022	New Document. Specific Species Management Plan (SSMP) developed to meet the requirements of the Western Australian Environmental Protection Agency.
2	Mar 2023	Updated in Response to RFI to include more comprehensive management actions and monitoring
3	Mar 2024	Updated in response to Revised Proposal - ERD Response to Submissions - second RFI
4	Jul 2024	Document updated to address clarification from the Revised Proposal - ERD Response to Submissions consultation.
5	Oct 2024	Document updated in response to Response to Submissions RFI and subsequent consultation
6	Nov 2024	Document split into two – flora and fauna – to assist with conditioning
7	Nov 2025	Updated to align with new Ministerial Statement 1258
8	Mar 2026	Document updated to reflect comments from EPA/DBCA

A full document history in the correct format is located in Section 6 of this document

1. SUMMARY

Kalgoorlie Consolidated Gold Mines Pty Ltd) (KCGM) is the proponent for the Fimiston South Project (FS Project). The objective of the proposal is to continue the ongoing operations of the Fimiston Gold Mine and enable uninterrupted mining and mineral processing until approximately 2034.

The Proposal is summarised in Section 2.1 of this Significant Species Management Plan (SSMP) for ease of reference.

This SSMP was prepared in accordance with the '*Instructions on how to prepare* Environmental Protection Act 1986 – *Part IV Environmental Management Plans*' (version 2.1, 2024) published by the Western Australian (WA) Environment Protection Authority (EPA). This SSMP details the measures that are required to manage potential impacts to conservation significant species from the Proposal. The information contained in this SSMP is summarised in Table 1.

Table 1 Management Plan Summary

Title of Proposal	Fimiston Gold Mine Operations Extension (Stage 3) and Mine Closure Planning: Revised Proposal
Proponent	Kalgoorlie Consolidated Gold Mines Pty Ltd
Ministerial Statement Number	MS 1258
Purpose of the SSMP Flora	The SSMP Flora is submitted to fulfil the requirements of MS1258 in accordance with the '*Instructions on how to prepare* Environmental Protection Act 1986 – *Part IV Environmental Management Plans*' (version 2.1, 2024)
Key Environmental Factors and Objectives	Key Environmental Factor: Flora and vegetation, EPA Objectives: Flora and vegetation: 'To protect flora and vegetation so that biological diversity and ecological integrity are maintained' (EPA, 2023).
Condition Clauses	B1-1, B1-2 C1, C2, C3, C4
Proposed Construction Date	Continuation of existing operations and implementation of MS1258 after Ministerial approval received on 20 October 2025.
EMP requirements pre - construction	**B1-2** The proponent must review and update the Significant Species Management Plan Flora (Version 6, November 2024, or any future revisions) that demonstrates how achievement of the environmental outcomes in condition B1-1 will be monitored and substantiated, and satisfies the requirements of C4, and submit it to the CEO.

2. CONTEXT, SCOPE, AND RATIONALE

2.1 The Project

KCGM manages and operates the following assets for the owner, Northern Star Resources Limited (NSR):

- Fimiston Operational Area: open pit mining, waste rock disposal and tailings facilities;
- Mt Charlotte Underground Mine: underground mining;
- Gidji Gold Processing Plant: mineral processing and tailings disposal; and
- Exploration: mineral resource definition drilling and core processing.

The following operational areas are incorporated within the revised Fimiston Operational Area:

- Fimiston Open Pit;
- Fimiston Tailings Storage Facilities (TSFs);
- Fimiston Processing Plant; and
- Fimiston Waste Rock Dumps (WRD).

2.1.1 Location of the Fimiston Operations

The Fimiston operations are located adjacent to the City of Kalgoorlie-Boulder (CKB) approximately 600 kilometres (km) east of Perth, Western Australia.

2.2 The Revised Proposal – Fimiston South Project

The approved Ministerial Statement 1258 for a significant amendment to the Fimiston South project extends the current operational life to approximately 2034.

The Fimiston South project includes:

- A cut back of the Fimiston Open Pit, the Ivanhoe cutback
- Construction of the new Fimiston III TSF and 3rd cell for Fim IIE TSF;
- An extension to the existing Southern WRD; and
- Development of areas for supporting infrastructure and services are also required.

Fimiston Operations will continue to operate under the new Ministerial Conditions and revised Management Plans.

2.3 Key Environmental Factors

This SSMP specifically addresses the Flora and Vegetation environmental factors, as defined within the EPA's *Statement of Environmental Principles, Factors and Objectives and Aims of EIA* (EPA, 2023).

The environmental objective of the Flora and Vegetation factor, as defined within the EPA's Environmental Factor Guideline: Flora and Vegetation (EPA, 2016), is:

To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

2.3.1 Activities affecting Key Environmental Factor – Flora and Vegetation

Potential threats on flora and vegetation potentially resulting from the FS Project are:

- direct loss of flora and native vegetation due to clearing 1,868 ha of vegetation, and;
- indirect impacts on flora and vegetation from construction and operation of expanded pit, new TSF and WRD including:
  - dust deposition on vegetation;
  - impact to flora and vegetation from water used for dust suppression;
  - changes to vegetation structure and composition due to altered surface drainage flow patterns resulting in changes to hydrology;
  - alteration of groundwater regimes due to clearing, and water from the TSF entering groundwater;
  - indirect impacts from altered fire regimes, and;
  - invasion of introduced flora.

2.4 Condition Requirements

Ministerial Statement 1258 conditions are set out in Table 2.

The Environmental Protection Act 1986 (EP Act) and Biodiversity Conservation Act 2016 (BC Act) have been considered in preparation of this SSMP for *Eremophila praecox* (Priority 2). Regional surveys completed by KCGM support significant growth in species knowledge, home range and understanding of this species.

The Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) is not applicable to *E. praecox* as this species is not listed under federal legislation.

Table 2 Condition Requirements

Condition requirement	Addressed in Section
B1-1 The proponent must ensure the implementation of the significant amendment proposal achieves the following outcome: (1) Disturb no more than 126 individuals of Eremophila praecox within the disturbance footprint as shown in Figure 1. (2) No adverse impacts to Eremophila praecox outside the disturbance footprint as shown in Figure 1."	3.1.1.1 3.1.1.1
B1-2 The proponent must, in consultation with the Department of Biodiversity, Conservation and Attractions, review and update the Significant Species Management Plan Flora (Version 6, November 2024, or any future revisions) that demonstrates how achievement of the environmental outcomes in condition B1-1 will be monitored and substantiated, and satisfies the requirements of C4, and submit it to the CEO.	This SSMP

Condition requirement	Addressed in Section
C4-1 The environmental management plans required under conditions B1-2, B2-3 and B3-3 must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (1) Threshold criteria that provide a limit beyond which the environmental outcomes are not achieved; (2) Trigger criteria that will provide an early warning that the environmental outcomes are not likely to be met; (3) Monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure threshold criteria and trigger criteria. Include methodology for determining alternate monitoring sites as a contingency if proposed sites are not suitable in the future; (4) Baseline data; (5) Data collection and analysis methodologies; (6) Adaptive management methodology; (7) Contingency measures which will be implemented if threshold criteria or trigger criteria are not met; and (8) Reporting requirements.	(1) 3.1.1.1 (2) 3.1.1.1 (3) 2.10 (4) 2.6.1 (5) 2.10 (6) Section 4 (7) 3.1.1.1 (8) 3.1.1.1
C4-2 The plan required under condition B1-2 is also required to include: (1) Confirmation of the following: (a) location and number of each Eremophila praecox monitoring plot (b) location and number of each monitoring point to identify indirect impacts to Eremophila praecox. (2) Justification for the proposed monitoring regime in its ability to identify indirect impacts to Eremophila praecox. (3) Protocol for any new Eremophila praecox populations identified as a result of monitoring undertaken for this significant amendment proposal.	(1)(a) Figure 2 & 3 (1)(b) Figure 2 & 3 (2) 2.10 (3) 2.10 Table 6
C4-5 Without limiting condition C3-1, failure to achieve an environmental outcome, or the exceedance of a threshold criteria, regardless of whether threshold contingency measures have been or are being implemented, represents a non-compliance with these conditions.	

2.5 Rationale and Approach

The FS Project has been designed to avoid, where possible, impacts to key environmental factors located within the design footprint, including the location of *E. praecox* in relation to key landform placement.

Adjustments to designs have been undertaken to ensure there is the best possible balance between preservation of environmental values and project requirements.

The location of the significant species were considered when selecting a preferred location for landforms. Whenever possible, these locations were avoided, or landform designs were adjusted.

2.6 Survey and Study Findings

2.6.1 Flora

The results from several botanical surveys have been used to support the assessment and identification of potential impacts of the FS Project implementation on the Environmental Factor of flora and vegetation. The most recent consolidated flora and vegetation assessment report was prepared by Phoenix Environmental Sciences (2024). This revised and updated version includes a summary of consolidated historical and recent survey findings into one document.

Local and regional surveys are planned to occur each spring to further knowledge on the priority species in the area and to provide more detailed regional knowledge to use as reference for species monitoring.

Known remnant *E. praecox* shrubs on KCGM's tenements will be monitored over time to evaluate long term resilience to indirect impacts to maintain viable populations throughout and beyond the mine life. This remnant (impact) population will be compared with reference (control) sites in Lakeside Timber Reserve which is discussed further in Section 2.10.

Existing assessment reports which document regional flora and vegetation within the surrounding area of the mine development envelope (MDE) (<100kms) were reviewed and are included within the revised consolidated assessment mentioned above (Phoenix 2024), as outlined in Table 3.

Table 3 Vegetation and Flora Surveys (2015-2024)

Report	Survey Description	Survey Date
Level 1 flora and vegetation survey for the Fimiston Waste Rock Dump Extension. Draft 1. (Botanica Consulting 2015).	Level 1 flora and vegetation	24 June 2015
Tailings Storage Facility Expansion Level 2 Flora and Vegetation Report (Botanica Consulting 2015a).	Level 2 flora and vegetation survey for the tailings area	24 – 28 September 2014
Flora and vegetation, and fauna surveys for proposed infrastructure within the Development Envelope of the Fimiston Gold Mine Operations (Phoenix 2018).	Investigation of proposed infrastructure areas in the floodway and north of the Fimiston II TSF.	6-8 September and 11-12 November 2017.
Gap analysis, biological survey and consolidation report for the Fimiston Gold Mine Operations (Phoenix 2018b).	Desktop study and some field work to consolidate vegetation mapping and update SREs knowledge	6-8 September 2017; 11-12 November 2017
Targeted Flora and Short Range Endemic Invertebrate Survey for IIE Project, (Phoenix 2019a)	Targeted flora survey 10 sampling sites for SREs	13-14 November 2018 (flora) 7-9 November; 13-14 December 2018 (SRE)
Regional flora, vegetation and terrestrial fauna survey for the Gidji Operations, (Phoenix, 2019).	Flora and vegetation followed by a second phase flora and vegetation.	10–11 November 2017 & 15-16 November 2018.

Report	Survey Description	Survey Date
Targeted flora and short-range endemic invertebrate study for the FIM IIE Project, (Phoenix 2019a).	Targeted *E. praecox* and general short range endemic survey for the Fimiston II Cell E TSF Project, December 2019.	13-14 November 2018.
Regional survey for *E. praecox* for the FIM IIE Project, (Phoenix 2019b).	Survey for the State listed Priority 2 flora species *E. praecox* in the broader Kalgoorlie region.	9-15 August 2019.
Regional survey for Eremophila praecox for Fim IIE Project. (Phoenix 2019b)	Regional survey to determine distribution of the species and gain an understanding on likely number of regional plants	9-15 August 2019
Flora and vegetation assessments for the Fimiston Gold Mine Operations (Phoenix 2022a).	Desktop, targeted and baseline vegetation survey - Gap analysis of botanical values at the Fimiston Operational Area and botanical survey in areas where further survey work was required.	19-21 May 2021, 4-8 October 2021, 13-16 December 2021
Regional survey for *E. praecox* for the FIM IIE Project (Phoenix 2025)	Survey for the State listed Priority 2 flora species *E.praecox* in the broader Kalgoorlie region.	9-12 July 2024; 24-25 July 2024

Eremophila praecox

One Priority 2 species, *E. praecox*, is present within the MDE, of which 13 populations or 126 plants will be impacted by clearing activities. The total overall population size is 729 known plants (updated dataset July 2024). From regional survey work it is evident that there are more individuals in the region that have not been counted yet (pers comm Phoenix botanist).

As a proportion the FS Project clearing of no more than 126 individuals of *E. praecox* of 729 known plants equates to 17% of the known population of *E. praecox* (refer to Figure 1). Based on the mapping, there are 75 known populations (62 regional + 13 at Fimiston). Populations were delineated by proximity of records to other records. Plants located more than 500 m apart were assigned to different populations in line with Stack (2010). Some exceptions were applied to occasional isolated records that were slightly further apart from or where they were considered likely to be connected to the population. Some consideration was also given to barriers, i.e. drainage lines (*E. praecox* rarely occurs in drainage areas) and roads.

The *E. Praecox* species is most frequently recorded in clay loam soils in Eucalyptus and/or Allocasuarina woodland with a variable understory, frequently with Acacia. *E. praecox* has previously been recorded in Conservation Reserves in particular the Kurrawang Nature Reserve, Bullock Holes Timber Reserve and Lakeside Timber Reserve. 193 plants (26% of known plants) were identified in Reserves during surveys conducted for the FS Project. This indicates that the species is likely more common than previously known and is present in Reserve areas outside of and independent from the Fimiston Operational MDE.

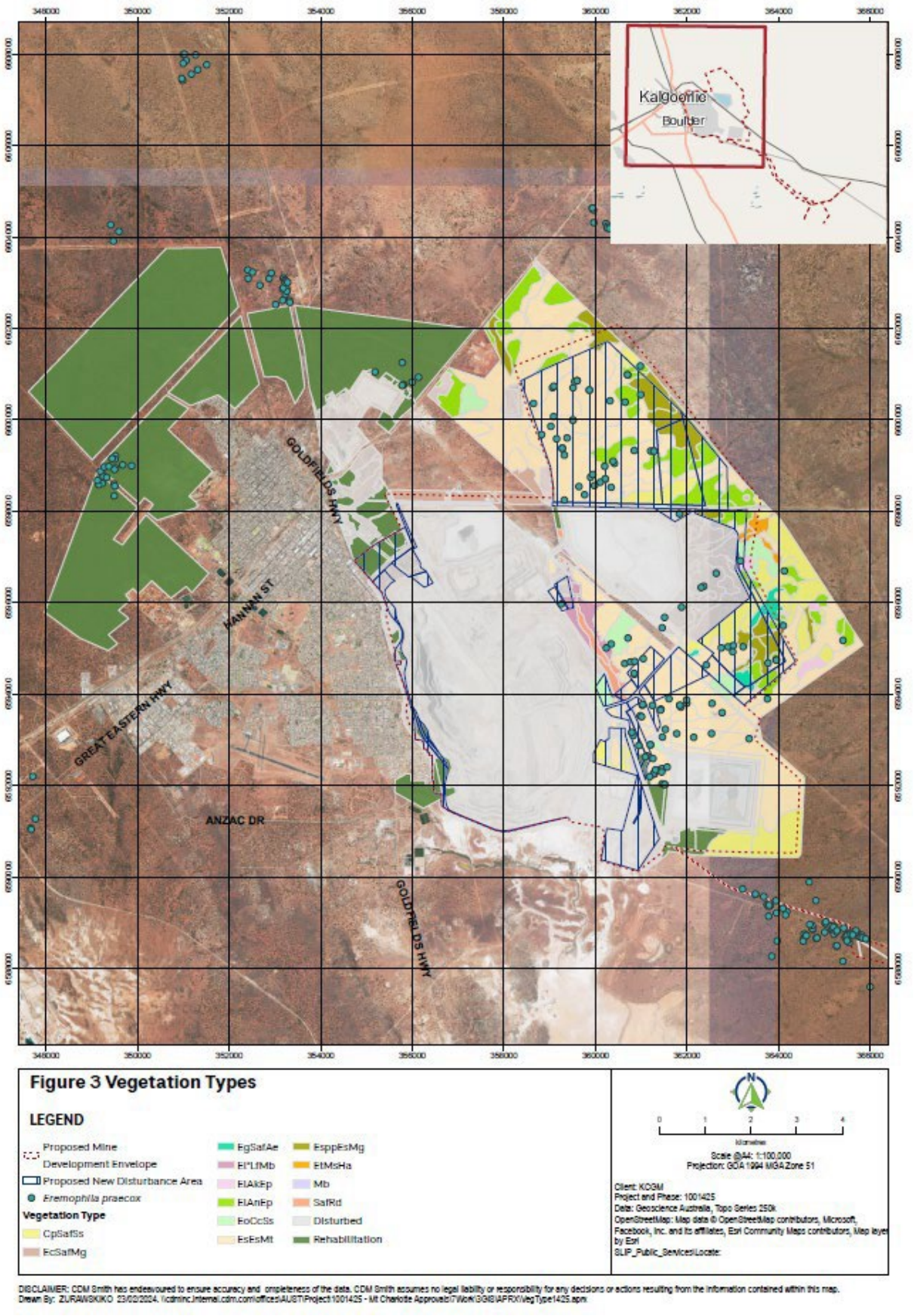

Figure 1 Significant Flora Records at Fimiston Operation

2.6.2 Weeds

Weeds are usually opportunistic plant species that are not native to an area, but once introduced, are able to compete effectively for resources (often out competing and displacing native vegetation). They can also be inadvertently or intentionally introduced and spread past their intended range, such as garden plants or even commercial crops.
The Fimiston Operational area has been altered and degraded from 'natural' conditions by historical mining, pastoral, livestock farming and other agricultural activities as well as urbanisation. Impacts include disturbance and alteration of the ground surface, higher rates of erosion by water and wind and recreational activities.
Vegetation in the regional area surrounding Kalgoorlie-Boulder has also been substantially altered by clear felling for wood (firewood, mining timber, boiler feed) in the 1900s, with most trees in the region considered regrowth. As a result, many weed species have been introduced to the area and have become widespread. The region's low annual rainfall restricts weed populations to a large extent.

Weeds which have been found on the KCGM lease area, are considered a significant environmental or agricultural risk and are targeted for control and eradication, these include:

- Rumex vesicarius - Ruby Dock;
- *Echium plantagineum* - Paterson's Curse (Declared Weed (DW));
- *Opuntia stricta* - Prickly Pear (Weed of National Significance (WoNS) and DW);
- *Silybum marianum* - Milk Thistle, Variegated Thistle (DW);
- *Carthamus lanatus* - Saffron Thistle (DW);
- *Lycium ferocissimum* - African Boxthorn (WoNS); and
- *Datura stramonium* - Thornapple (DW).

The WA Biosecurity and Agriculture Management Act 2007 requires removal of declared weeds.
Weed management at KCGM is controlled as per the Northern Star Weed Management Procedure 2023 (Appendix A).

2.7 Key assumptions and uncertainties

A number of assumptions and uncertainties based on surveys undertaken to date form the basis of the proposed management approach, as set out below.

2.7.1 Assumptions

Key assumptions include:

- Utilising areas of existing disturbance to minimise clearing and implementing progressive rehabilitation throughout the life of the project will minimise the impacts of the FS Project on conservation significant species.
- Surveys to date provide sufficient information to confirm the presence of *E. praecox* within the MDE area and suggest numerous healthy populations exist within the surrounding region.
- The MDE and broader regional areas have been adequately surveyed for flora and vegetation and no other significant species identified that could be affected by the proposed mine development activities.

2.7.2 Uncertainties

Key uncertainties include:

- The extent to which dust generated from implementation of the FS project will travel from the source to receptor.
- Occurrence of extreme rainfall events, drought or fire during the proposed life of mine and post-closure time frames.
- The resilience of conservation significant flora species to dust deposition.

2.8 Management approach

Management measures to minimise the intensity of the potential effects of implementing the proposed mine waste storage development activities are necessary to ensure the proposed activities will not have a significant detrimental impact on key environmental factors.
Specific application of the mitigation hierarchy for the implementation of the proposed mine waste storage development activities is as follows.

2.8.1 Avoid

Where practical, mapped occurrences of *E. praecox* from field surveys were included into KCGM GIS data base and have influenced the design by avoiding 60 known plants within the MDE (retained without any disturbance).

2.8.2 Minimise

Impacts on conservation significant species (*E. praecox*) and the supporting conditions unique to each species have been managed through field ground proofing, review of surveys and discussions with Project team/s to influence modification of design where possible to minimise the potential or the risk likelihood; this has resulted in minimising the total area identified for clearing.
Potential impacts on vegetation and fauna habitat from dust deposition will be managed via the implementation of the KCGM-ENV-010 Dust Monitoring and Management Procedure, a subcomponent of the FAQMP.
Potential indirect impacts to *E. praecox* due to disruption or disturbance resulting from dust emissions are managed to minimize any impacts. The KCGM Noise and Vibration Monitoring and Management Plan (NVMMP) includes control measures and operational

Specific controls which include:

- Maintain implementation of Fimiston Weed Management Procedure (Appendix A), with spraying or other suitable action when weed species are identified on KCGM leases or in rehabilitation areas.
- Minimise dust generation from mining and road use that could cause temporary disturbance to flora and fauna as per the FAQMP.
- Use of additional dust control measures where practical, such as application of saline water on an as needs basis dust suppression as per the FAQMP.
- Continue to implement the Seepage and Groundwater Management Plan to minimise indirect impacts on vegetation from rising saline water.
- Ensure a fire management and emergency response plan is available at key locations and firefighting equipment is readily available on all vehicles and all facilities.
- Maintain existing procedures for feral animals, including cat trapping when numbers are identified as increasing (usually spring).
- Clearing activities will not be undertaken when the Fire Danger Rating is severe or higher.

2.8.3 Remediate

Rationale for choice of indicators and/or management actions
Monitoring indicators and triggers have been developed based on recent individual species knowledge and have been successfully collected and verified as representative and acceptable to subject matter experts within specialist areas of science and regulatory departments such as the Department of Biodiversity, Conservation and Attractions (DBCA). KCGM is currently leading the collection of representative individual species baseline information within Western Australia and Australia (for *E. praecox*).
This new species data can be used to develop meaningful and practical individual species management indicators (trigger levels and threshold limits). Specific studies where KCGM is assisting

the scientific community to understand these species include:

- *E. praecox*: confirmation of overall distribution and confirmation of habitat definition to aid conservation management strategies.
- Lead development of understanding and aid identification of conservation management strategies.

2.9 Management-based Provisions

The following management actions will assist in meeting the Trigger criteria and Threshold criteria in the outcome-based provisions (Section 3.1.1.1 Outcome-based Provisions). These actions will be reviewed as part of the monitoring and reporting processes, and changes made where required.

The management objectives for this SSMP are:

- Disturb no more than 126 individuals of *E. praecox* within the disturbance footprint.
- No adverse impacts to *E. praecox* outside of the disturbance footprint.
- Avoid direct and indirect impact on *E. praecox*.
- Minimise the potential risk of impact on *E. praecox* from clearing activity.
- Minimise the potential risk of a decline in *E. praecox* populations.
- Minimise the potential risk of a decline of *E. praecox* populations due to dust, weeds and displacement.
- Minimise the potential risk of a decline in *E. praecox* habitat condition due to a change in fire regime.

The management actions for this SSMP, as detailed in Table 4, are summarised as:

- Clearing management.
- Hydrology Management.
- Weed management.
- Traffic management.
- Fauna exclusion zones.
- Dust management.
- Fire management.
- Introduced predator management.
- Protocol for new *E. praecox* identified.

Triggers and thresholds have been established for management targets and are detailed in Table 4. These triggers and thresholds are initial estimates for early warning triggers. These will be modified and updated over time as more information is available on the species and habitats. Any modifications and adaptive management will be to improve on protections for the species and will be discussed with stakeholders prior to implementation.

Table 4 Management-based Provisions

Management Actions	Target	Monitoring	Reporting
Clearing Management • Disturb no more than 126 individuals of *E. praecox* within the disturbance footprint • Implementation of an internal clearing permit procedure, including onsite demarcation and notification procedures. • *E. praecox* within close proximity to operational areas to be delineated with flagging tape, signage or similar to alert all personnel of their location to prevent adverse impact outside the approved disturbance footprint. • Inductions of all site personnel to include information on significant species, management targets, measures and expectations. • Undertake progressive clearing, minimising the amount of active disturbance present. • Progressively rehabilitate areas as appropriate.	Minimise the potential for incidental damage to priority flora habitat	Annual flora and vegetation surveys. Monitoring during clearing to minimise impact.	Annual reporting. Flora and Vegetation health reporting. Incident reports.
Hydrology Management • Design surface hydrology to avoid changes in hydrology to sensitive areas (WSP, 2023). • Maintain the supernatant pool size, under normal operating conditions, below a maximum of 15% of the total surface area of the paddock in which deposition is occurring on the Fimiston TSFs to mitigate the seepage rate. • Maintain Groundwater level to >4 meters below ground level (mbgl) to keep water below plant root level in the soil profile to protect the Eucalypt woodland vegetation in the vicinity of the Fimiston TSFs as per the Part V Licence (L6420/1988/14)	Maintain groundwater levels to >4 mbgl through seepage recovery. Minimise the normal operating supernatant pool size to <15%	Daily monitoring of supernatant pool. Quarterly Groundwater Monitoring as per Licence	Quarterly Groundwater Monitoring Report to Department of Water and Environmental Regulation (DWER) Annual Audit Report of the SGMP in the Annual Environment Report

Management Actions	Target	Monitoring	Reporting
Weed Management • Surveys to be undertaken to identify and record the presence of any significant weed species prior to topsoil stripping to reduce contamination of rehabilitation materials • Weed management information, such has location, and species is saved within the secure KCGM drives and spatially analysed using a Geographic Information system where required • Posters displaying common weeds in the Kalgoorlie area have been developed and are available on the document management system for display in work areas where appropriate. • Weed control is considered when mobilising earthmoving equipment to site / during contractual discussions. • Vehicles and tools are cleaned free of weed seed and vegetative material before arrival on site, to stop the spread of weeds to new areas. • Weed control is undertaken using physical and chemical control by licensed practitioners. The method used will depend on the type of weed, area of weeds to be managed, what the land is used for and physical characteristics. • Particular attention is paid to areas which are made available for topsoil stripping, topsoil stockpiles and rehabilitated areas. Measures applied to these areas include separate stockpiling of weed contaminated materials, herbicide spraying of stripped soils/stockpiles and/or rejection of contaminated soils.	Weeds are managed across the site. Declared weeds are controlled in accordance with legislative requirements.	Topsoil stockpiles are periodically inspected for weed populations. Weeds are recorded during annual vegetation surveys.	Annual reporting. Flora and Vegetation health reporting. Incident reports.
Fire Management Ensure a fire management and emergency response plan is available at key locations and firefighting equipment is readily available on all vehicles and all facilities.	Minimise decline in habitat condition due to changed fire regimes.	Record evidence of fire in annual flora and vegetation surveys.	Annual reporting. Flora and Vegetation health reporting. Incident reports.

Management Actions	Target	Monitoring	Reporting

Traffic Management
• Avoid accidental disturbance to flora and vegetation by enforcing strict traffic management rules:
  ○ keeping to designated tracks with no off-road driving permitted
  ○ driving to road and weather conditions
  ○ reduced speed limits within suitable habitat.
• All off road activity to be reported to Environmental personnel.
• Worker awareness training.
	Minimise the potential for incidental damage to priority flora habitat		Internal audit reporting for speeding and off-road driving.

Dust emissions Management • Implement the KCGM-ENV-010 Dust Monitoring and Management Procedure • Minimise dust generation from mining and road use that could cause temporary disturbance to flora and fauna • Undertake dust suppression measures that include good house–keeping practices for vehicles, cleared areas, and active stockpiles. • Implement dust suppression measures such as the use of watercarts will be used during dry and windy conditions, as required. •	Minimise the potential for decline in population due to dust.	Annual vegetation surveys. Dust, flora and vegetation health monitoring.	Annual reporting. Flora and Vegetation health reporting. Incident reports.
Protocol for identification of new E. praecox shrub • Confirm identification with expert • Set exclusion zone and install demarcation to prevent disturbance • Minimise clearing around the area • Add new shrub to spatial data • Add to monitoring program	Protect newly Identified shrubs	Annual vegetation surveys. Dust, flora and vegetation health monitoring.	Annual reporting. Flora and Vegetation health reporting.

2.9.1 Implementation

Implementation of this SSMP will be assisted through KCGM's Environmental Management System (EMS) incorporating systems, processes, procedures and work instructions relating to the management, monitoring and reporting components of this SSMP.
KCGM is committed to conducting its activities for the Project in an ecologically responsible manner. The key personnel involved in implementation of this SSMP, and their roles and responsibilities are listed in Table 5.

Table 5 Roles and Responsibilities

Role	Responsibility
KCGM	KCGM has the overall responsibility for implementation of this SSMP. If any roles are delegated to a contractor or consultant, KCGM has the responsibility to audit compliance and ensure any contingency actions are implemented.
Environment Manager – Kalgoorlie Operations	Overall accountability for auditing and compliance assessment of the SSMP during operation to ensure it is maintained and meets objectives and targets. Provide technical support to all Project personnel to ensure the SSMP is implemented correctly and complied with. Implement and maintain the SSMP, review its effectiveness and review the implementation as required. Obtain relevant approvals from regulatory agencies for disturbance as required. Ensure all personnel involved in the Project are inducted and will adhere to the SSMP requirements. Implement monitoring programs and documenting results. Liaise with stakeholders and technical experts for advice and resolution of management aspects/objectives as required. Review and close out contingency actions as required. Report as required to regulating authorities. May delegate all or part responsibility to an appropriately qualified person.
Construction Manager / Environment Manager – Kalgoorlie Operations	Overall accountability for auditing and compliance assessment with the SSMP during construction and operations to ensure it is maintained and meets objectives and targets. Overall accountability to ensure the SSMP is implemented, reported and maintained on-site. Ensure personnel attend inductions, have sufficient resources and training to meet the requirements of the SSMP. Support KCGM's fauna and flora management initiative and culture. Comply with all legal requirements and the requirements of the SSMP. Seek advice when in doubt about requirements. Appoint appropriate consultants to undertake specific activities set out in the SSMP if required.
All personnel	Must receive induction prior to commencement of work on site. Comply with all legal requirements and the requirements of the SSMP. Attend area specific environmental inductions/ briefings and any other training required. Participate in toolbox meetings and encourage personnel to suggest improvements.

2.10 Monitoring Program

A detailed monitoring program has been prepared for *E. praecox* based on the findings of recent surveys. KCGM consulted with Phoenix Environmental Sciences in the preparation and implementation of the monitoring program.

The monitoring plan will be executed by personnel with a minimum of 5 years of experience in conducting flora surveys, ensuring that the data collected is reliable and accurate. The surveys are scheduled to take place during the spring season, specifically between September and November, to capture the optimal growth period of the flora.

Monitoring will be undertaken in accordance with best-practice techniques and a summary of actions is outlined in Table 6.

Table 6 Monitoring Program Summary

Monitoring Event	Monitoring Action	Frequency	Responsibility
Pre-clearance Surveys/ desktop	To be undertaken prior to disturbance activities to confirm the locations of *E. praecox* shrubs Monitoring of clearing register for compliance to approvals. Review of Indicative Site Layout to determine clearing proximity to E. praecox. Add new occurrences of *E. praecox* shrubs to monitoring inventory and install buffers for protection.	Prior to clearing	Environmental Manager, Kalgoorlie Operations
Significant flora Monitoring	Annual monitoring of health of vegetation that is habitat for significant flora. Monitoring to detect dust impacts on vegetation.	Annually in Spring	Environmental Manager, Kalgoorlie Operations
Inspections of supernatant pond	Inspection to maintain <15% of pond area to mitigate seepage.	Daily visual check Survey twice weekly	Environmental Manager, Kalgoorlie Operations
Groundwater Monitoring	To maintain groundwater levels >4 mbgl of vegetation.	Quarterly as per Groundwater Licence	Environmental Manager, Kalgoorlie Operations

Control Sites

By their nature *E. praecox* populations are frequently sparse, comprised of a groups of individuals spaced hundreds of metres apart. Subsequently, to monitor for potential indirect impacts within the MDE the condition of the vegetation surrounding *E. praecox* individuals will be conducted and compared to the condition of vegetation surrounding control *E. praecox* populations that occur outside of the area of potential impact, against 20 impact sites (20x20 quadrats), located within the MDE. ~~Two sites will be used as reference sites for comparison~~.

20 control sites (20x20 quadrats) have been chosen within the Lakeside Timber Reserve: Bore Road 1, located 2 km south of Fimiston, and Bore Road 2, situated 2.5 km south of Fimiston. These sites were selected based on the size of the *E. praecox* population, accessibility, tenure, and their proximity to Fimiston. The close proximity of these sites to the remnant floodway *E. praecox* population at Fimiston ensures that any local environmental changes will be reflected across all three populations,

providing a comprehensive understanding of the area's ecological dynamics.

Should a quadrant become compromised or becomes unusable, a replacement quadrant at another nearby populations will be established for monitoring. This replacement population will be selected based on proximity to the MDE, similarity of host vegetation type and health of the population to ensure a like-for-like comparison.

Shrub Health Assessment

For the *E. praecox* shrub health assessment, the locations of selected shrubs will be recorded using a GPS unit, and a peg marker will be placed within 0.5 meters of each shrub to facilitate future identification. The health of the shrubs will be evaluated using the Condition and Defoliation Scale of Casson et al. (2009), which has been modified so that higher scores indicate better health (see Table 7). This scoring system allows for straightforward interpretation of the data. The mean, median, and range of health scores will be analysed to detect any changes over time. Additionally, the survival rates of the *E. praecox* shrubs at all three sites will be analysed using the Kaplan-Meier survivorship method with staggered entry, enabling the detection of impacts as data accumulates.

Table 7: Condition & Defoliation Scale (Casson et.al. 2009)

Tree Health Rating	Description
Condition 5	very healthy plants showing signs of vigorous growth
Condition 4	generally robust and healthy
Condition 3	leaf tip dieback but general health appears satisfactory
Condition 2	branch dieback and yellowing leaves
Condition 1	total defoliation or dead
Defoliation 1	0-25% defoliation
Defoliation 2	25-50% defoliation
Defoliation 3	50-75% defoliation
Defoliation 4	75-100% defoliation

Vegetation Health Habitat Assessment

Vegetation health will be assessed within a 20 x 20 metre quadrat at each site. The quadrat will be scored as a single unit using the Casson et al. (2009) Vegetation Health Scale (Table 7), providing an assessment of the overall vegetation health within the designated area. As far as is practical, the regional populations selected will occur in the same vegetation type as those within the MDE.

Table 8: Vegetation Health Scale (Casson et. al. 2009)

Vegetation Health Rating	Description
4	Healthy no signs of stress
3	Some early signs of stress, a few individuals, likely one species
2	Signs of stress in several individuals, one or more species
1	Signs of stress in many individuals, several species
0	Advanced decline and/or death of many individuals and several or most species

Dust Monitoring

Visual assessment of dust on the foliage of all *E.praecox* shrubs in the Project will be scored using the Dust Scale shown in Table 9.

Table 9: Dust Scale

Scale	Rating	Description
1	No dust	0% of foliage dusty
2	Slight dust	1-25% of foliage dusty
3	Moderate dust	26-50% of foliage dusty
4	Heavy dust	51-75% of foliage dusty
5	Very heavy dust	76-100% of foliage dusty

Data Analysis and Reporting

Data from the monitoring surveys will be compared between the sites and across years, to assess whether there is a divergence in health between control and impact sites over time . The interpretation of the monitoring results will consider all factors collectively, rather than in isolation, to provide a holistic understanding of the ecosystem's health. A detailed report outlining the findings and recommendations will be published within two months of the monitoring. If the trigger criteria thresholds, such as a significant reduction in vegetation or shrub health, are reached, these will be communicated immediately to determine if further investigation and action is required.

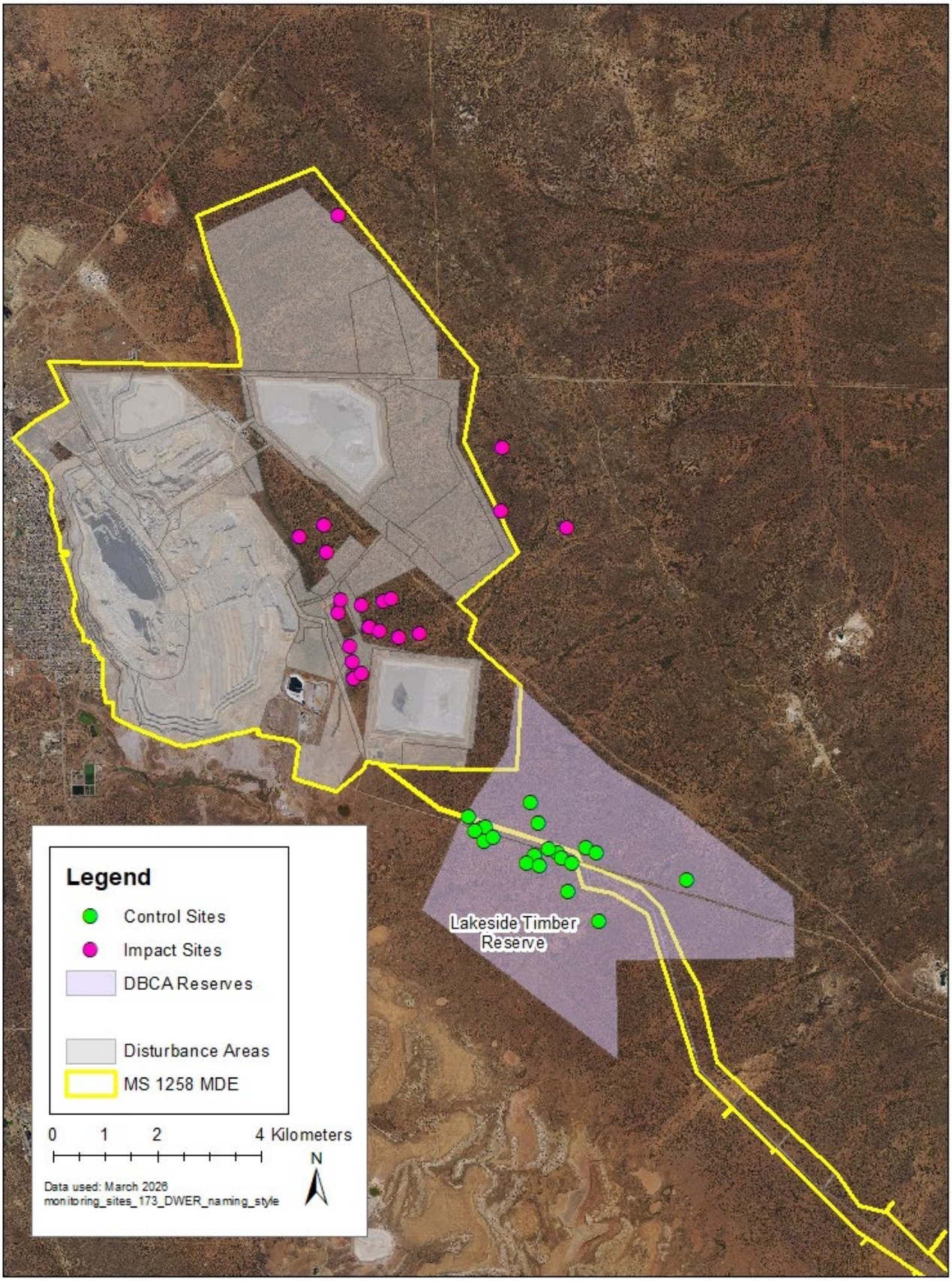

Figure 2 E. praecox all monitoring sites

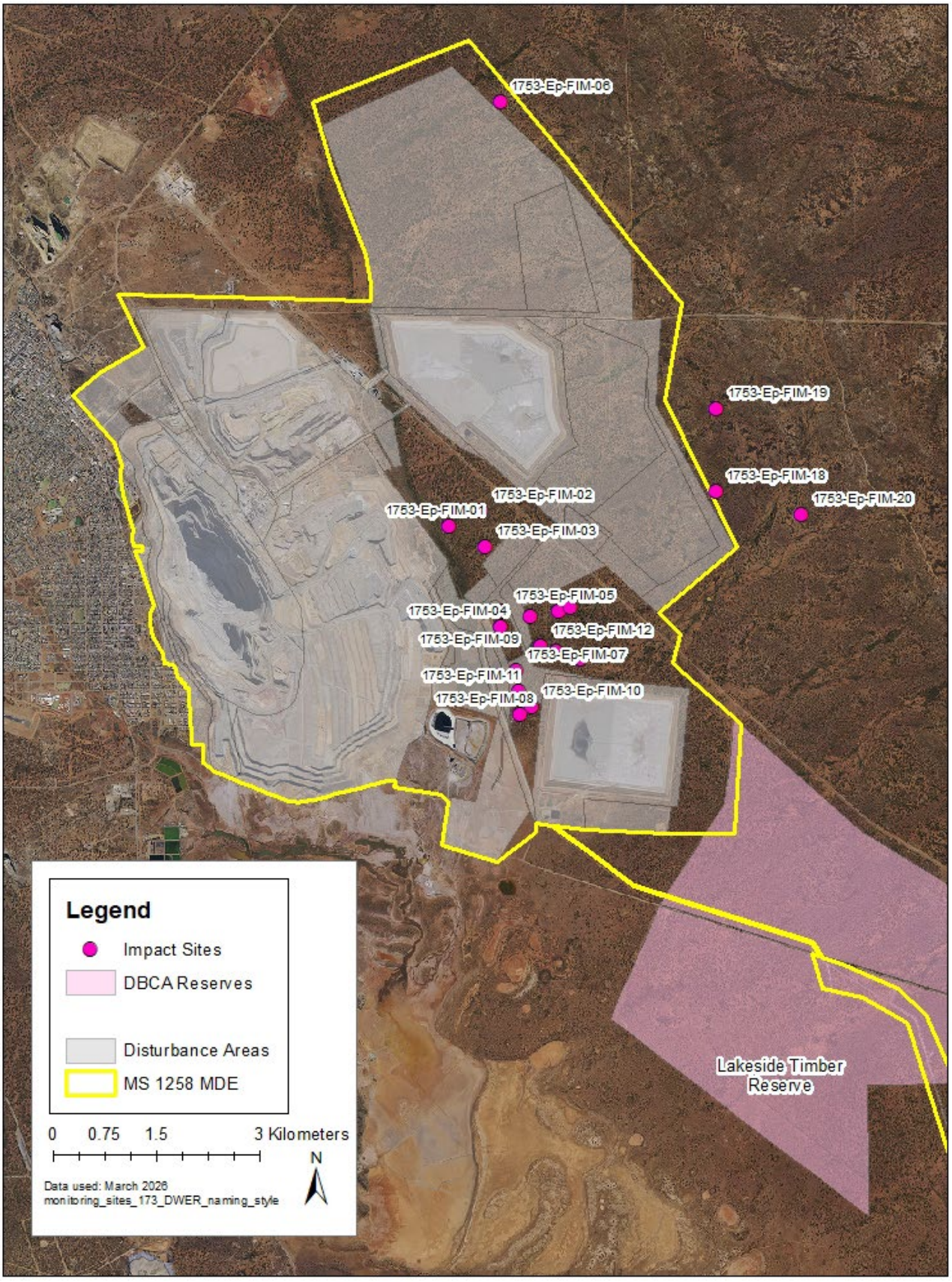

Figure 3 E. praecox reference monitoring sites

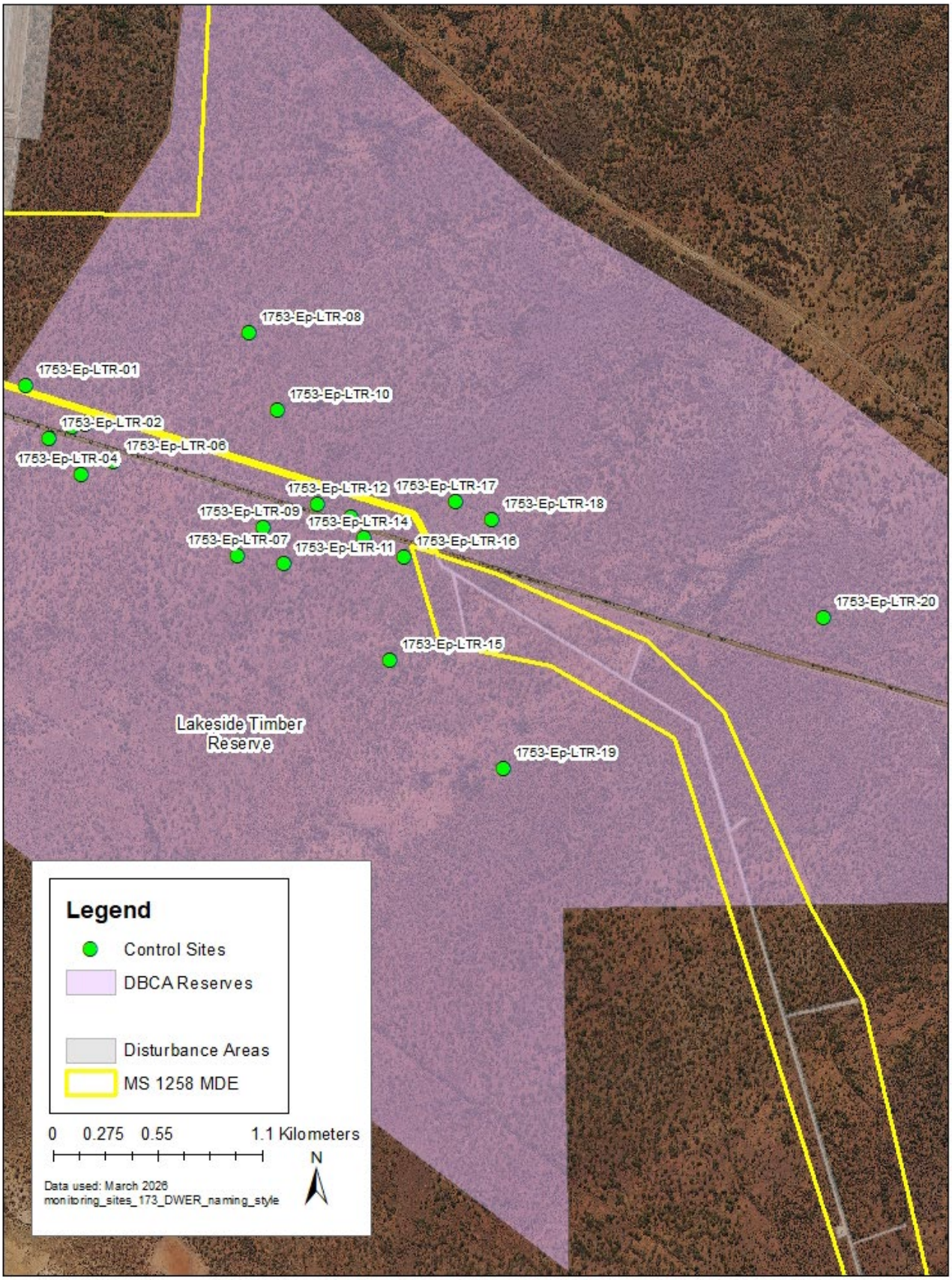

Figure 4 E. praecox regional monitoring sites

2.10.2 Triggers and Threshold Rationale

Rationale for chosen outcome-based thresholds and triggers for this SSMP are outlined in Table 10. Rationale for chosen objective-based provisions are discussed in Table 11.

Table 10 Rationale for *E. praecox* outcome-based provisions

Threshold	Rationale
80% of the allowable disturbance is reached during clearing activities (100 plants cleared)	Setting a trigger at 80% of the allowable disturbance during clearing activities, such as when 100 plants are cleared, serves as an early warning system. This allows for timely intervention and corrective actions to prevent exceeding the disturbance limit, ensuring that operations remain within safe and sustainable boundaries. This approach also helps manage risks associated with environmental impacts. By monitoring and acting at the 80% mark, there is a buffer to address any unforeseen issues that might arise, reducing the likelihood of unintended consequences and maintaining ecological balance. Furthermore, many environmental regulations and guidelines recommend such triggers to ensure compliance with legal standards. This helps in maintaining sustainable practices, avoiding penalties, and supporting conservation efforts by protecting biodiversity and preserving significant portions of the habitat. Lastly, setting the trigger at 80% enhances operational efficiency. It allows project managers and environmental officers to plan their activities more effectively, ensuring that they stay within the allowable limits and allocate resources appropriately.
A 10% decline in the health or abundance of *Eremophila praecox* populations outside the disturbance footprint is detected during monitoring	Setting a trigger at a 10% decline in the health or abundance of *Eremophila praecox* populations outside the disturbance footprint is crucial for early detection of environmental impacts. This threshold acts as an early warning system, allowing for timely intervention to mitigate further negative effects and prevent more significant declines. This approach is essential for conservation and biodiversity. *Eremophila praecox* is a species of concern, and even small declines in its population may have broader ecological implications. Monitoring for a 10% decline ensures proactive and effective conservation efforts, helping to maintain the viability of the species' local population. Environmental regulations require monitoring and reporting of impacts of the FS Project on local flora. Setting a 10% trigger aligns with these requirements, ensuring that any adverse effects are documented and addressed promptly to remain in compliance with MS1258. Lastly, this threshold aids in risk management. By setting a relatively low threshold, it provides a buffer to manage risks associated with environmental degradation. This helps maintain the health of the ecosystem and supports sustainable development practices.
The overall vegetation health in impact quadrats shows a statistically significant decline relative to control quadrats ($p < 0.05$)	A greater decline in vegetation health within impact quadrats relative to control quadrats may indicate a project related impact exceeding natural variability. Following detection of a statistically significant impact, ($p < 0.05$). Supportive descriptive data values will then be used to help inform the scale of the change that was detected (Vegetation Health Scale). This approach aims to provide a robust level of assessment where the scale of change can be used for investigation of potential impacts. This approach supports conservation of *E. praecox* by enabling early detection of disproportionate declines in vegetation health within impact areas, allowing timely investigation and implementation of management

	actions to prevent further deterioration of habitat condition.
Change of habitat health (more than 20% difference of vegetation cover or species diversity or increase in weed cover) in areas containing *E. praecox* in comparison to control sites.	If a decline in health is identified during vegetation health monitoring, the response actions in Table 12 will allow investigation to determine if the causes are attributed to the FS Project and, if necessary, allow for early intervention of further management measures to prevent impacts on *E. praecox*. It is widely known that all plants experience a natural rate of mortality. If *E. praecox* and/or habitat are experiencing higher foliage loss than control sites, then the cause of this should be investigated. The triggers for species health decline will be compared with control monitoring to allow consideration for climatic variation such as rainfall and factors outside of the proponent's control.
Conservation significant species within the MDE but outside areas of clearing experience a statistically significant higher foliage cover loss rate than that of control sites.	The objective is for no proposal-related indirect adverse impacts to uncleared flora and vegetation within the MDE. 'Adverse' is defined as an impact likely to change the conservation status or significantly change the local population's numbers of a species. It is widely known that all plants experience a natural rate of mortality. By comparing the rate of mortality of the areas containing *E. praecox*, it may be deduced if the area is experiencing natural rates of mortality. If the rate of mortality appears higher than control sites, it should be investigated, reported and corrective actions implemented if it is attributable to proposal related indirect effects. However, it should be noted that the extent of mortality will determine if the key environmental outcome is not being achieved as it may not mean the impact can be defined as 'adverse'. By reporting a difference, the proponent is adopting a precautionary approach. Through monitoring any significant foliage cover loss of conservation significant species, any potential degradation of individual health can be identified, investigated and potentially rectified prior to mortality.
Statistically significant reduction in number of *E. praecox* present compared to control sites	A reduction in *E. praecox* numbers compared to control sites is an indicator of a negative impact that may represent a significant change to the local population of the species. If changes to numbers relative to host plants are noted, then the cause of this should be investigated utilising environmental impact assessment methodology.

Table 11 Rationale for *E. praecox* objective-based provisions

Management	Rationale
Clearing procedure and authorised internal permit process for all clearing activities to prevent unauthorized clearing within the Mine Development Envelope (MDE).	The means by which a direct proposal-related impact may occur to Priority flora is vegetation clearing. If clearing occurs which has not received an approved internal clearing permit within the MDE, it is considered a non-compliance or failure of the procedure which is in place to prevent vegetation clearing of Priority flora.

3. EMP PROVISIONS

The key objectives of the SSMP are to review and ensure compliance against the "*Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans*" (EPA 2024) and ensure that once approval of the FS Project (s38) is received that the impending activities of that Project will not inadvertently impact on Environmental Factors regarding flora and vegetation, as per "*Statement of environmental principles, factors, objectives and aims of EIA*" (EPA 2023).

To meet this objective, management provisions have been established to assist implementation of practical and safe mitigation measures to minimise the potential impacts as summarised in Section 2.6. Environmental impacts incorporate quantifiable and non-quantifiable impacts, outcome-based and management-based provisions (included in this SSMP).

Early response triggers (thresholds) for management-based provisions are detailed in the tables below:

- Outcome-based provisions are performance-based and may be used where part of the environment is able to be objectively measured and reported. Therefore, outcome-based provisions have been established to specify triggers and thresholds of direct impacts and indirect impacts to ensure the FS Project achieves acceptable environmental outcomes.
- Management-based provisions have been established to specify management actions and targets for indirect impacts that are non-quantifiable. As monitoring is undertaken and additional population data is gathered, the management targets are expected to be reviewed and quantifiable outcome-based provisions established.

3.1 Triggers, Thresholds and Contingency Actions

The Trigger criteria have been developed with reference to the information available from the baseline surveys and initial monitoring. It is expected that once sufficient monitoring data is collated over time (i.e. 3 years) that Trigger criteria and Threshold criteria will be reviewed by an appropriate flora specialist and revised as necessary, with this SSMP.

Contingency actions for *E. Praecox* include:

- Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts.
- Review dust, weather and weed monitoring to compare *E. praecox* and control sites. Determine whether the changes observed in the impact sites are comparable to the observations in the reference sites.
- Investigate potential causes for the observed decline in vegetation health which may include but are not limited to:
    - seasonal conditions (e.g., rainfall and temperatures)
    - effectiveness of weed control
    - spatial variation (near-impact areas) versus sites located further from impact
- Develop strategies based on the outcomes of the investigation to prevent a recurrence and, if necessary or possible, reverse the decline in health of the *E. praecox* habitat. Management measures may include the following:
    - Change monitoring frequency if issues arise
    - Implement engineering controls if deemed effective.

3.1.1 *Eremophila praecox*

3.1.1.1 Outcome-based provisions

Purpose of EMP: to comply with MS1258.

Table 12 Outcome-based provisions for *E. praecox*

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
Trigger criteria: 80% of the allowable disturbance is reached (100 out of 126 plants cleared).	**Trigger level actions:** Review pre-clearance surveys and baseline data. Review clearance register for compliance approvals.	Monitoring and reporting of areas that have been cleared. Monitoring of authorised internal permits for all clearing activity within the disturbance footprint.	Pre and post clearance activities. Continue monitoring and collecting field data.	Annual Compliance Assessment Report (CAR) report to DWER/ EPA (MS 1258) Potential non-compliance to be reported to DWER/ EPA within 7 days providing a report within 21 days of becoming aware
Threshold criteria: 90% of the allowable disturbance is reached (113 plants).	**Threshold contingency actions:** Report internally as an incident Investigate cause and extent of plant loss. Review pre-clearance surveys and baseline data. Review clearance register for compliance approvals. Review clearing procedures. Engage with key stakeholders	Monitoring and reporting of areas that have been cleared. Monitoring of authorised internal permits for all clearing activity within the disturbance footprint.	Pre and post clearance activities. Continue monitoring and collecting field data.	Annual Compliance Assessment Report (CAR) report to DWER/ EPA (MS 1258) The Annual Environmental Report (AER) to DMIRS

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
	including DBCA and relevant specialists where required to determine key actions.			
Trigger criteria: A 10% decline in the health or abundance of *Eremophila praecox* populations outside the disturbance footprint is detected during monitoring	**Trigger level action:** Review all monitoring data in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts. Review monitoring frequency	Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing *E. praecox* and control sites away from the FS Project.	Continue to collect field data. Following the development of a more complete dataset	Annual Compliance Assessment Report (CAR) report to DWER/ EPA (MS XXX) The Annual Environmental Report (AER) to DMIRS
Threshold criteria: A 20% decline in the health or abundance of *Eremophila praecox* populations outside the disturbance footprint is detected during monitoring	**Threshold contingency actions:** Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal	Monitoring and reporting of areas cleared and/or rehabilitated in the previous 12 months.	Increase frequency of monitoring until situation is stabilized.	Annual Compliance Assessment Report (CAR) report to DWER/ EPA (MS 1258) The Annual Environmental Report (AER) to DMIRS

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
	related impacts. Conduct a detailed survey Review dust, weather and weed monitoring to compare *E. praecox* and control sites. Determine whether the changes observed in the impact sites are comparable to the observations in the reference sites.			
Trigger criteria: **Statistical analyses indicate a statistically significant decline in vegetation health at impact sites relative to control sites with tests designed to show divergence over time and a p value < 0.05**	**Trigger level actions:** Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts. Change in frequency of vegetation health monitoring.	Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing *E. praecox* and control sites away from the FS Project.	Continue to collect field data. Following the development of a more complete dataset over a three year period, the monitoring methodology, frequency and monitoring sites will be reduced to every three years.	.
Threshold criteria: **The median condition decreases by ≥1 unit relative to the previous year and the interquartile range of condition scores falls entirely below the**	**Threshold contingency actions:** Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts.	Monitoring and reporting of areas cleared and/or rehabilitated in the previous 12 months. Assessment of vegetation health,	Annual monitoring to be undertaken for at least three years. Following the development of a more complete dataset over a three year period, the	

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
previous year's median, indicating at least 50% of the individuals have declined in condition	Review dust, weather and weed monitoring to compare *E. praecox* and control sites. Determine whether the changes observed in the impact sites are comparable to the observations in the reference sites. Investigate potential causes for the observed decline in vegetation health which may include but are not limited to: • seasonal conditions (e.g., rainfall and temperatures) • effectiveness of weed control • spatial variation (near-impact areas) versus sites located further from impact Develop strategies based on the outcomes of the investigation to prevent a recurrence and, if necessary or possible, reverse the decline in health of the E. praecox habitat including, increasing the frequency of	condition and weed presence in permanent quadrats located in areas containing E. praecox and control sites away from the FS Project.	monitoring methodology, frequency and monitoring sites will be reduced to once every three years.	

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
	vegetation health monitoring If decrease is due to changes attributable to the project, then engineering and operational controls will be investigated to stop indirect impacts. Alert relevant stakeholders and confirm measures are being undertaken. Increase staff training and awareness on factors which have implications to vegetation health for example dust, changes to hydrology			
Trigger criteria: Change of vegetation health (more than 20% difference of vegetation cover or species diversity or increase in weed cover) in areas containing *E. praecox* in comparison to control sites not attributable to natural cause.	**Trigger level actions:** Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts. Change in frequency of vegetation health monitoring.	Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing *E. praecox* and control sites away from the FS Project.	Continue to collect field data. Following the development of a more complete dataset over a three year period, the monitoring methodology, frequency and monitoring sites will be reduced to every three years.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS1258). The Annual Environment Report (AER) to DMIRS.

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • Trigger criteria • Threshold criteria	**Response Actions:** • Trigger level actions • Threshold contingency actions	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
Threshold criteria: Change of vegetation health (more than 30% difference of vegetation cover or species diversity or increase in weed cover) in areas containing *E. praecox* in comparison to control sites.	**Threshold contingency actions:** Review all monitoring data (including control sites) in relation to management measures and any other available data such as weather and climate to determine if the decrease is due to proposal related impacts. Review dust, weather and weed monitoring to compare *E. praecox* and control sites. Determine whether the changes observed in the impact sites are comparable to the observations in the reference sites. Investigate potential causes for the observed decline in vegetation health which may include but are not limited to: • seasonal conditions (e.g., rainfall and temperatures) • effectiveness of weed control • spatial variation (near-impact areas) versus sites located further from impact	Monitoring and reporting of areas cleared and/or rehabilitated in the previous 12 months. Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing E. praecox and control sites away from the FS Project.	Annual monitoring to be undertaken for at least three years. Following the development of a more complete dataset over a three year period, the monitoring methodology, frequency and monitoring sites will be reduced to once every three years.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS1258). The Annual Environment Report (AER) to DMIRS. Report to DWER & EPA within 7 days and provide a report within 21 days of becoming aware.

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • Trigger criteria • Threshold criteria	**Response Actions:** • Trigger level actions • Threshold contingency actions	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
	Develop strategies based on the outcomes of the investigation to prevent a recurrence and, if necessary or possible, reverse the decline in health of the E. praecox habitat including, increasing the frequency of vegetation health monitoring If decrease is due to changes attributable to the project, then engineering and operational controls will be investigated to stop indirect impacts. Alert relevant stakeholders and confirm measures are being undertaken. Increase staff training and awareness on factors which have implications to vegetation health for example dust, changes to hydrology			

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • Trigger criteria • Threshold criteria	**Response Actions:** • Trigger level actions • Threshold contingency actions	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
Trigger Criteria: Conservation significant species within the MDE but outside areas of clearing experiences a 10% higher foliage cover loss rate than that of control sites and that foliage cover loss is not attributed to natural causes.	**Trigger level actions:** Report internally as an incident Investigate if this is from natural causes or related to the FS Project.	Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing E. praecox and control sites away from the FS Project. Maintain current vegetation mapping with continuous improvement filling in gaps within GIS layers.	Increase monitoring frequency to identify sudden changes in foliage cover.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS1258). The Annual Environment Report (AER) to DMIRS.

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Outcome/s: No significant impact to *E. praecox* outside the approved clearing areas. Key environmental values: Presence of Priority 2 species *E. praecox* Key impacts and risks: reduction in presence of *E. praecox*				
Outcome-based				
Criteria: • **Trigger criteria** • **Threshold criteria**	**Response Actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring**	**Timing / Frequency of Monitoring**	**Reporting**
Threshold criteria: Conservation significant species within the MDE but outside areas of clearing experiences a statistically significant higher foliage cover loss rate than that of control sites and that foliage cover loss is not attributed to natural causes.	**Threshold contingency actions:** Report internally as an incident. Investigate cause and extent of mortality and if it is likely to result in the key environmental outcome not being achieved. If necessary (deemed to be proposal- related), consider measures to prevent a re-occurrence of the incident and/or remediation strategies to address the impact. Engagement with key stakeholders including DBCA, and relevant specialists where required to determine key actions.	Assessment of vegetation health, condition and weed presence in permanent quadrats located in areas containing *E. praecox* and control sites away from the FS Project. Maintain current vegetation mapping with continuous improvement filling in gaps within GIS layers.	Continue to collect field data annually. Following the development of a strong dataset over this period, the monitoring methodology, frequency and monitoring sites will be reduced to every three years.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS1258). The Annual Environment Report (AER) to DMIRS.

3.1.1.2 Objective-based EMPs

Purpose of EMP: to comply with EPA Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans.(2024)

Table 13 Objective-based conditions for *E. praecox*

EPA factor/s and objective/s: Flora and Vegetation. To avoid direct and minimise indirect impacts to *E. praecox* to the maximum extent practical. Objective/s: To avoid clearing and impacts to *E. praecox* Key environmental values: Presence of Priority 2 species, *E. praecox* Key impacts and risks: Reduction in presence of *E. praecox*				
Objective-based				
Management targets	**Management actions**	**Monitoring**	**Timing / frequency of actions**	**Reporting**
Objective Management of clearing boundaries to prevent unauthorised clearing by implementation of permitting process and procedure	**Management Actions** • Train staff in clearing procedures • Survey and mark boundaries of areas prior to clearing • Environmental Officer to confirm boundaries prior to clearing occurring. • Maintain clearing buffer of 20 m for known remaining *E. praecox* shrubs • Clearing only with an authorised internal permit within the Mine Development Envelope (MDE). Contingency actions	Internal audit of recorded *E. praecox* against areas approved for clearing. Utilisation of GIS in machinery or other survey techniques for clearing activities to monitor active progression.	Annual auditing of internal clearing permits and documentation of contingency actions.	Annual Compliance Assessment (CAR) Report to DWER/EPA (MS1258).

	• Report internally as an incident in accordance with internal procedures. • Review management strategies and implement changes to prevent future occurrences which may include the following: • Audit and review of training and staff inductions i.e. Increase in staff training and awareness to include information on legislative requirements, appropriate clearing procedures). • Ground Disturbance Permit competency training • Review impact on species report and non-compliance. • Review impact of unauthorised clearing and report any noncompliance to DWER within 7 days of identification. • Installation of signage where appropriate. • Undertake rehabilitation of unauthorised clearing (i.e. disturbance from vehicle tracks, vegetation clearing) by appropriately qualified personnel as required, in accordance with rehabilitation procedure • Undertake rehabilitation of unauthorised clearing (i.e. disturbance from vehicle tracks, vegetation clearing) by appropriately qualified personnel as required, in accordance with rehabilitation procedure.		Annual report cycle to assist annual fees and calculation of disturbance footprint. Monitoring and reporting of areas cleared and/or rehabilitated in the previous 12 months.	The Annual Environment Report (AER) to DMIRS.

4. ADAPTIVE MANAGEMENT AND REVIEW OF THE SSMP

KCGM operations recognises the dynamic nature of both natural ecosystems, man-made work areas and changing legislative environment and supports adaptive management under this SSMP.
Adaptive management involves:

- Monitoring and evaluation against management targets (including trigger thresholds) and environmental criteria (trigger limits);
- Implementing mitigation measures, reviewing and assessing new technologies or survey techniques; and
- Systematically adapting management of change to assist maintaining the under pinning environmental factor objectives of the EP Act.

Any changes to a Project will instigate a review and consideration of risks, mitigation controls and management actions. Assumptions and uncertainties will be evaluated against collected monitoring data on a recurrent basis in a process of continual improvement and establishing early response indicators/criteria. Any review and consideration of management actions or additions to this plan made in relation to adaptive management/continuous improvement may be made available to DBCA and/or DWER on request.
Examples of adaptive management include:

- The introduction of a different / alternative species-specific monitoring technique;
- The identification of potential trigger criteria to aid identification and development of conservation management strategies;
- Change to conservation status of a species triggers a review in the requirements of this SSMP;
- Changes to state or national regulatory or other standards triggering a review of this SSMP; and
- Early identification of new proposal/projects which may pose potential risk, whether actual or frivolous, and complete environmental impact assessment if unclear identification or magnitude of impact/s.

5. STAKEHOLDER CONSULTATION

KCGM has undertaken extensive stakeholder engagement with regards to the development of the FS Project. Reflecting the diverse range of stakeholders, their needs and engagement preferences, KCGM has employed a range of strategies to inform stakeholders of the Fimiston South Revised Proposal over the last two years and collate their feedback.

The consultation and engagement process involved:

- Identifying key stakeholders and interests;
- Developing and implementing the consultation and engagement program; and
- Recording stakeholder feedback.

The outcomes of consultation are recorded in a Stakeholder Consultation Register. Consultation to date has been comprised predominately of meetings and correspondence with a number of State agencies, Local Government, Traditional Owners and non-government organisations and interest groups.

KCGM is committed to ongoing stakeholder identification, communication, engagement and consultation through the expansion planning and approval phase, and through to construction, operational and closure phases of the Project.

The relevant stakeholders for this SSMP are:

- Department of Biodiversity, Conservation and Attractions (DBCA): Conservation of Priority Species;
- Western Australian Environmental Protection Authority (EPA): Assessment of the FS Project under Part IV of the EP Act and assessment of this SSMP;
    - All comments received during the assessment period from decision-making authorities and the public that relate to this SSMP will be considered and changes made as/where required.
    - Provision of technical reports and field opportunities have been arranged with DBCA.
- Community: Part of public consultation phase under FS Project assessment.

The community have not been consulted specifically about the SSMP as the locations of priority species is considered confidential information and is not released publicly to protect the species. The community has been consulted about the FS Project.

6. DOCUMENT HISTORY

XComplexity of changes	Minor revisions **X**	Moderate revisions		Major revisions	☐		
Number of Key Environmental Factors One		2-3 **X**		> 3	☐		
Date of revision for submission to EPA: 31/10/2024							
Proponent's operational requirement timeframe for approval of revision Reason for Timeframe:		< One Month **X**	< Six Months	☐ > Six Months	☐	None	

Item no.	EMP section no.	EMP pg. no.	Summary of change	Reason for change
1	General	All	Overall framework amended	Comply with 'Instructions on how to prepare Environmental Protection Act 1986 - Part IV Environmental Management Plans, (version 2.0; 2021)'
2		iv	Document History/Version control	More suitable to be at the front of the document.
3	Section 1	2	Present background of the project	To provide the purpose of the SSMP and update the Management Plan Summary as per the EPA guidelines
4	Section 2	3	Inclusion of Priority 1 and 2 species (*Jalmenus aridus and Eremophila praecox respectively*), and the Vulnerable Malleefowl (*Leipoa ocellata*)2.4	Shows knowledge/awareness of Significant Species within the area and ability to plan around this
5		5	Update to survey and study findings (Section 2.6)	Included to align with EPA guidelines and give new in sight to the extent of significant species prevalence.
6		11	Update to the Management approach (Section 2.8)	Section and sub-section included to describe rationale of the management approach against the potential impacts on the environment as per EPA EMP template and guideline
7		13	Inclusion of Monitoring Program (Section 2.8.4)	Section and table included to describe the rationale for the management actions against the potential impacts on the environment as per EPA EMP template and guideline.
8	Section 6	48	Included Changes to EMP	Updated to align with EPA EMP template

Item no.	EMP section no.	EMP pg. no.	Summary of change	Reason for change
			Version 5 as of July 2024	
9	2.6.1		Update of reference	The reference by Phoenix (2023) in relation to the last sighting of *J. aridus* at the Lake Douglas location has been amended to R.P. Weir pers.com to R. Eastwood, (2022).
10	2.7.1		Typo	Included the word 'not' when referencing the likely impact to flora and vegetation, and fauna to.
11	2.7.2		Clarification of role of S. artemisioides subsp. filifolia.	*S. artemisioides subsp. filifolia* as a host plant, and not a feed plant as previously noted.
12	2.9		Clarify timeframes for clearing.	Address comment from DBCA for the ERD consultation period.
13	2.9		Included reference to the Translocation Protocol.	Address comment from DBCA for the ERD consultation period.
14	3.1.2		Amend the reference of habitat shrub to breeding shrub for *J. aridus.*	Clarification required to demonstrate accurate use by the species.
15	5		Update of reference to published research papers.	Research has now been published and peer reviewed.
			Version 6 as of 31 October 2024	**Stand alone Significant Species Management Plan - Flora**
	2.6.1 and 2.6.2		Added in reference to regional surveys for both *E. praecox* and *J. aridus* and updated population numbers based on recent surveys	To confirm that these will be undertaken
	2.7.1		Removed reference waste storage	Not relevant
	2.9		Added adaptive management for triggers.	As requested by DBCA
	2.10		Committed to adding newly found shrubs to the monitoring program. Added references to the monitoring program appendices	As requested by DBCA
	3.1		Additional actions included in adaptive management	As requested by DBCA
	3.1.1		Updates to response actions. Removed reference to changing monitoring	As requested by DBCA

Item no.	EMP section no.	EMP pg. no.	Summary of change	Reason for change
			frequency	
	3.1.2		Updated triggers and thresholds and actions Removed reference to changing monitoring frequency	As requested by DBCA
	Appendix A		New/ updated *E. praecox* monitoring plan	As requested by DBCA
	Appendix C		New/ updated *J. aridus* monitoring plan	As requested by DBCA
			Version 6 as of 21 November 2024	
			SSMP revised to separate into two separate management plans, those being this management plan and an SSMP for Fauna	As requested by DWER
			Version 7 as of 17 November 2025	
			Flora SSMP updated as per MS 1258 conditions	Requirement of new conditions
	3.1.1.1 Outcome-based Provisions	25 - 26	New outcomes triggers and thresholds added to the outcomes table in line with MS 1258	Requirement of new conditions
	Monitoring plan		Removed and information added to Monitoring section	Comply with 'Instructions on how to prepare Environmental Protection Act 1986 - Part IV Environmental Management Plans, (version 2.1, 2024)'
			Version 8 as of 31 March 2026	
	2.10 Monitoring		Flora SSMP updated as per comments received from EPA/DBCA	As per comments received from EPA/DBCA in March 2026
	Table 4 - Management Based Provisions and Table 6 - Monitoring Program Summary		Dust scale added	As requested by DBCA
	3.1		Addition of triggers and thresholds with Casson Vegetation Health scale	As requested by DBCA

Item no.	EMP section no.	EMP pg. no.	Summary of change	Reason for change
	3.1.1 Table 11		Addition of triggers and thresholds with Casson Vegetation Health scale	As requested by DBCA
			Remove '*without attributable natural cause'* from criteria	As requested by DBCA
	Table 7		Condition & Defoliation (2-metric scale) used for field work added to document	More comprehensive and has provided more robust field data

7. GLOSSARY

Term	Explanation
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority (Western Australian)
EP Act	Environmental Protection Act 1986 (Western Australian)
FAQMP	Fimiston Air Quality Management Plan
Fimiston	KCGM's Fimiston gold mine
FS Project	Fimiston South Project
KCGM	Kalgoorlie Consolidated Gold Mines Pty Ltd
MDE	Mine Development Envelope
Mt	Million tonnes
NVCP	Native Vegetation Clearance Permit
NVMMP	Noise and Vibration Monitoring and Management Plan
p.a	Per annum
SSMP	Significant Species Management Plan
TSF	Tailings Storage Facility
WRD	Waste Rock Dump

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9. APPENDIX A: Weed Management Procedure

1. PURPOSE

The purpose of this document is to provide control and management actions to minimise the impact of weeds on the natural environment located within and surrounding all Northern Star Resources Ltd (Northern Star or the Company) tenements.

A list of weeds commonly found on Northern Star tenements can be found in Appendix I.

2. SCOPE

This procedure applies to all Northern Star's Australian Operations and covers the management of weeds.

3. ROLES AND RESPONSIBILITIES

Role	Key Responsibilities
General Manager - Environment	▪ Communicate all requirements to site. ▪ Ensure resources are available to implement this procedure.
Environmental Personnel	▪ Communicate all requirements to site. ▪ Assist site departments to comply with this procedure. ▪ Review and update this procedure as required. ▪ Work collaboratively with Department Heads/Managers to ensure up to date information is provided to all concerned parties with respect to weed management and hygiene practices. ▪ Plan and perform weed management programs when required. ▪ Educate staff and contractors of obligations relating to weed management and control when working for the Company. ▪ Maintaining the Weed Register.
Operations Manager	▪ Provide the resources and time for personnel to comply with this procedure. ▪ Ensure this procedure is implemented on site.
Managers	▪ Ensure investigations and corrective actions are carried out according to Northern Star minimum standards.
Superintendent and Supervisors	▪ Maintain awareness of this procedure applicable to their area of responsibility. ▪ Ensure awareness is provided to personnel regarding their obligations under this procedure. ▪ Ensure all weed hygiene certification requirements are in place for vehicle/machinery movements.
Site Personnel and Contractors	▪ Comply with this procedure. ▪ Report suspected weed infestations to their immediate supervisor/site contact and the appropriate Environmental Representative. ▪ Follow instructions from Superintendents and Supervisors.

4. DEFINITIONS AND ACRONYMS

Declared pests – weeds (DW)	Plants which have been declared as a Declared Pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*. These plants are prevented entry into Western Australia or have control or keeping requirements.
SDS	Safety Data Sheet: a document that outlines the health and safety information about hazardous chemicals.
Weed	An environmental weed is a non-native or non-locally occurring plant that invade native ecosystems and adversely affect the survival of native flora and fauna.

Weed of National Significance (WoNS)	A weed which has been identified by the Federal Government as a problematic plant species in Australia.
Weed Hygiene Certificate (Exploration specific)	An exploration specific certificate required for all new machinery coming to site or vehicles that have been in areas with potential weeds, to ensure they are weed free.
Weed Hygiene Clearance Form	An internal certificate required for all new machinery coming to site or vehicles that have been in areas with potential weeds, to ensure they are weed free.

5. PROCEDURE

5.1 Notification and Reporting

Weed infestations identified by employees or contractors are to be reported as hazards through the Northern Star site incident reporting system to ensure controls are followed up. The following information should be included in the hazard report:

- GPS coordinates or a clear description of the location.
- A clear description of the suspected weed (and photo if available).
- Approximate number of weeds or area of coverage.

Actions are to be sent out via INX and the Environmental Department are responsible for controlling introduced weed species on Northern Star tenements.

All weeds identified as Declared Pests or Weeds of National Significance (WoNS) should be reported to The Department of Agriculture and Food, Western Australia (DAFWA) using the MyWeedWatcher app or contacting DAFWA's Pest and Disease Information Services (info@agric.wa.gov.au). Declared Pests and WoNS are identified in Appendix I, and can be found on the Department of Primary Industries and Regional Development Website.

5.2 Record Keeping

The Environmental Department is responsible for maintaining weed maps and the GIS-based weed register. All reported infestations will be entered in the weed register and include the following information:

- Site.
- Project EGS.
- GPS coordinates.
- Weed species.
- Weed category (significance status – WoNS, Declared or general).
- Date Identified.
- Control implemented (yes/no).
- Control Type (spray, hand pulling ect).
- Control implementation date.
- Person Responsible.

5.3 Monitoring Schedule

Areas that pose a higher risk to weed infestation, such as rehabilitated areas, topsoil stockpiles, drainage lines, areas close to site boundaries, previously infested or controlled areas and any area where material has been brought in should be inspected periodically to ensure potential weed infestations are managed and controlled. These inspections can be included as part of routine vegetation monitoring, or general housekeeping monitoring.

Prior to topsoil stripping, surveys should be undertaken to identify and record the presence of any significant weed species to reduce the risk of contaminating rehabilitation materials. In addition, topsoil stockpiles should be periodically inspected for weed populations and control measures put in place to remove any weeds prior to use in rehabilitation.

Weed monitoring should also be included in the scope of annual waste dump monitoring conducted by a qualified consultant.

Any weeds that are identified during any monitoring activities should have their location noted, and a control program arranged as soon as practical.

5.4 Control Methods

There are a number of control methods used to manage and remove weeds across Northern Star sites, including but not limited to, preventative, physical and chemical. In some circumstances, external providers may be brought onto site to assist with the management of weeds. For the best results, the control of weeds should be undertaken prior to the plants going to seed, where practicable. If the weeds have gone to seed, a blower-vac may be used to capture seeds that have fallen prior to germination.

5.4.1 Preventative Weed Control

Preventative methods such as minimising soil disturbance, using established tracks, limiting vehicle access to rehabilitation areas and practicing vehicle weed hygiene can help in reducing the spread of weeds across Northern Star operations.

Weed hygiene refers to preventing the spread of weeds or invasive plant species by actively inspecting and thoroughly cleaning any vehicle or equipment prior to and post entry to areas that harbour weed species or present an opportunity for weed species to propagate.

Weed transportation opportunities:

- As seeds stuck in tyres/rims, radiators, seats, grills etc.
- As pieces of plant trapped in bash plates, suspensions, bar work, earthmoving attachments.
- In dirt or soil in air filters, foot wells and trays of vehicles.
- In mud stuck to the vehicle underside or wheel arches, chassis rails, running boards etc.

5.4.2 Vehicle Movements

All vehicles and equipment will arrive onsite clean and leave site clean. Contractors will be advised of Northern Star's commitment to weed hygiene and if possible, ensure vehicles and equipment have been weed checked and cleaned prior to arriving onsite. Where this is not practical, vehicles will need to be inspected on arrival.

Where vehicles have been working in areas of known weed infestation, inspections should also be done at the completion of such works.

5.4.3 Inspections

All vehicles and equipment that are planned to be used in natural bush areas or areas of ground disturbance where weeds are established or may establish, should be inspected for signs of seed, soil, mud or other vegetative material. Where inspections determine that there is material that poses a weed hygiene risk, the vehicle should be cleaned and certified to be able to enter the work site. Vehicles and equipment should be thoroughly inspected in any areas that are deemed a potential trap for vegetative material, but particularly in the following areas:

- Engine bay, including radiator and areas that can trap seed.
- Underbody, including wheel arches and areas that can trap mud or vegetation.
- Interior, including floor mats, foot wells, seats etc.
- Buckets, cutting edges, tracks etc.
- Toolboxes, spare wheel carriers, tyre and rims etc.

5.4.4 Cleaning

- Cleaning should be undertaken at a purpose-built wash down facility where debris is trapped in a sump for suitable disposal.
- If a wash down facility is unavailable, the vehicle should be washed where there is no possibility of seed entering waterways or the environment.
- Cleaning may involve the use of high-pressure water or air.
- A sheeted drill pad or laydown area would be considered acceptable as an alternate wash down area. Additional bunding may be required to prevent contaminated water dispersal.
- For remote area works, a portable firefighting unit may be required to assist with weed hygiene.
- Earthmoving equipment should be unloaded from floats or low loaders before washing down to prevent the float and deck becoming contaminated.

5.4.5 Certification

Inspection personnel should inspect and certify vehicles and equipment are clean and issue the appropriate clearance document (NSR-ENV-COR-002-FOR Weed Hygiene Clearance). Please note that all Exploration related activities should refer to NSR-EXP-COR-025-PRO Weed Hygiene Certification Procedure and use the NSR-EXP-COR-025A-FOR Weed Hygiene Certificate.

Should a vehicle present for inspection after being cleaned and still be found to have a weed hygiene risk, the inspector should note the unclean areas on the certificate and instruct the representative to re-clean these areas before submitting for a final inspection.

Certificates are only valid for entry to a single project. If, for example, a drill rig is to head to another prospect after drilling at a local prospect, it should be re-certified as clean before entering the second prospect. Please contact your Site Environment Department if you have any questions regarding Weed Hygiene Clearance.

Once a vehicle has been certified weed free, it can remain so only whilst it travels on sealed or well-maintained graded gravel roads that are free from weeds and other vegetation.

5.4.6 Chemical Weed Control

Chemical control involves the use of herbicides to control weeds. Herbicides are an important and effective component of the weed control programme as, in some situations, herbicides offer the only practical, cost-effective and selective method of managing certain weeds. As herbicides reduce the need for cultivation or ground disturbance, they can prevent soil erosion and water loss.

Herbicides should be applied using a dedicated vehicle mounted spray tank or backpack weed sprayer (Figure 1). When applying herbicides, all Northern Star personnel and contractors should follow the Herbicide Spraying for Weed Management Safe Work Procedure NSR-EXP-COR-024-SWP. Weed sprayers and herbicides are to be used in line with the manufacturers' instructions and safety requirements of the herbicide SDS.

Figure 1 Backpack weed sprayer

5.4.7 Physical weed control

Physical control methods often depend on the type and size of the area of weeds to be managed, what the land is used for, physical characteristics and the value of the land. Physical control methods can include:

- Hand pulling.
- Mowing.
- Blower-vac.
- Grazing.
- Mulching.
- Tilling; or
- Burning.

5.4.8 Engaging External Contractors

Where required, an external contractor may be engaged to control a weed infested area. In these cases, Northern Star personnel are required to follow the WHSMS – Contractor Management Framework Manual NSR-OHS-103-MAN.

6. LEGISLATION AND REGULATORY REQUIREMENTS

- Biodiversity Conservation Act 2016
- Biosecurity and Agricultural Management Act 2007
- Commonwealth Environment Protection and Biodiversity Conservation Act 1999
- Conservation and Land Management Act 1984
- Environmental Protection Act 1986
- Mining Act 1978

In addition to the above legislation, all sites should adhere to any conditions against tenements, licences, approvals, Mining Proposals and Ministerial Statements.

Further information and guidance about weeds in Western Australia can be found on the Department of Biodiversity Conservation and Attractions (DBCA) website.

7. RELATED DOCUMENTS

Document Name	Document Number
Weed Hygiene Clearance	NSR-ENV-002-FOR
Herbicide Spraying for Weed Management Safe Work Procedure	NSR-EXP-COR-024-SWP
WHSMS – Contractor Management Framework Manual	NSR-OHS-103-MAN
Weed Hygiene Procedure	NSR-EXP-COR-025-PRO
Weed Hygiene Certificate	NSR-EXP-COR-025A-FOR

8. REVISION HISTORY

Revision Number	Date	Changes made to document
1	01/08/2023	New standardised document
1.1	14/10/2024	Minor revision - addition of blower-vac information and minor edit to the "control methods" section
2.0	22/08/2025	Scheduled 2yr review. Minor update of role titles and additional definition for Weed Hygiene Clearance Form.

9. APPENDICES

APPENDIX I - Weeds Commonly Found on Northern Star Tenements

9.1 APPENDIX I – Weeds Commonly Found on Northern Star Tenements

Species	Description	Suggested Methods of Control	Image
Agave americana (Century Plant)	A rhizomatous, perennial tree-like monocot that grows to 6 m high. The leaves are fleshy & spine-tipped. Has yellow flowers in Jan or Apr. Grows in sand. Found in cultivated, occasionally naturalised around old habitations & along roadsides.	Needs to be removed mechanically by hand.	
Alhagi maurorum (Camel-thorn) **Declared Weed**	A rigid, spiny shrub, that grows up to 1.5m high. Has yellow & red & purple pea flowers.	Hand remove isolated plants & small populations. Apply Grazon® (triclopyr & picloram) when plant is actively growing. Because of the plants extensive root system, a close watch must be kept on treated areas for several years to detect any regrowth. Consult product's information sheet on herbicide application.	
Amaranthus viridis (Green Amaranth)	An erect or ascending annual herb that grows up to 1 m high. Has green flowers from Nov to Dec or Jan to Aug. Found in disturbed areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Arctotheca calendula (Cape Weed)	A decumbent or ascending, annual herb that grows up to 30cm high. Has yellow flowers from Aug to Nov. It is a weed of roadsides, waste places & cultivated land.	For large infestations apply Lontrel® in early growth stages. Spraying glyphosate will control cape weed at all growth stages. A combination of chemical and physical control with follow up treatment provides optimal control. Consult product's information sheet on herbicide application.	
Argemone ochroleuca (Mexican Poppy)	An erect prickly shrub that grows up to 1-1.5m high. The flowers have six petals, are pale yellow and roughly 3-7cm in diameter.	Hand removal, slashing or mowing of plants prior to seed formation. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Gramoxone® (paraquat) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Asclepias curassavica (Redhead Cottonbush)	An erect shrub that grows up to 1.5m high. Has orange & red flowers. Grows in sandy soils.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Brassica tournefortii (Mediterranean Turnip)	An annual herb that grows up to 60cm high. Has yellow-cream-white flowers from Jun to Nov. Grows in sandy soils. Is an aggressive weed of disturbed ground, roadsides, cultivation & seaside.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Buglossoides arvensis (Corn Gromwell)	An annual herb that grows up to 60cm high. Has white flowers from Jul to Nov	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Capsella bursa- pastoris (Shepherd's Purse)	An erect annual herb that grows up to 40cm high. Has white flower from Jul to Nov. Found in lawns & disturbed sites.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Carrichtera annua (Ward's Weed)	An erect annual herb that grows up to 40cm high. It has yellow flowers from Sep to Nov. Found in semi-arid regions.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Carthamus lanatus (Saffron Thistle) **Declared Weed (NT only)**	An erect, spiny, annual herb that grows up to 70cm high. The leaves are rigid with spiny lobes and it has yellow flowers in Dec or Jan to Apr. Grows in a variety of soils & is a weed of crops, pastures & waste grounds.	Hand remove isolated plants through spring and early summer. Apply glyphosate (e.g. Roundup®) or alternatively spot spray with Lontrel® Best controlled at rosette stage. Consult product's information sheet on herbicide application.	
Cenchrus ciliaris (Buffel Grass)	A tufted or sometimes stoloniferous perennial, grass-like or herb that grows up 1.5m high. Has purple flowers from Feb to Oct. Grows in white, red or brown sand, stony red loam & black cracking clay.	Cut out and physically remove small populations and seedlings. Entire plants with dormant buds must be removed. Spray with Verdict® or spot spray with glyphosate six weeks after heavy rain. Follow-up with seedling control. Consult product's information sheet on herbicide application	

Species	Description	Suggested Methods of Control	Image
Centaurea melitensis (Maltese cockspur)	An erect annual or biennial, herb that grows up 1m high. Has yellow flowers from Sep to Dec or Jan to Mar. It is a weed of roadsides, cultivated areas & other disturbed areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Chenopodium murale (Nettle- leaf Goosefoot)	An erect, much- branched annual herb, that grows up to 1m high. Has green flowers from Apr to Dec. An agricultural weed found in cultivated & disturbed areas & coastal sites.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Cichorium intybus (Chicory)	A perennial herb that grows up to 1.5 m high. Has blue flowers from Nov to Dec or Jan to May. Found at road verges & waste areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Citrullus lanatus (Pie Melon)	A trailing annual herb or climber. It has yellow flowers from Jan to Dec. Grows in sandy gravelly soil, loam & clay. Found in plains, river banks, centres of dry lakes, drainage areas & disturbed areas.	Hand removing isolated plants including most of the tap root is effective for small infestations. If fruits have formed, they should be collected and destroyed. Metsulfuron is effective on young plants, otherwise spot spray with Garlon®. Consult product's information sheet on herbicide application.	
Conyza bonariensis (Flaxleaf Fleabane)	An erect annual herb that grows up to 1.5 m high. Has white flowers from Jan to Dec. Variety of soils. Weed of cultivation, waste places & roadsides.	Generally, more difficult to control than other species of Fleabane. Hand remove small and/or isolated infestations prior to seed set. Re- sprouts from basal buds after top removal. Timing of application is key to the efficacy of any herbicide treatment. Most susceptible to glyphosate at the rosette stage and least susceptible at flowering. Consult product's information sheet on herbicide application. At later stages, it is difficult to control with any single herbicide treatment.	
Cucumis myriocarpus (Prickly Paddy Melon)	A prostrate annual herb. Has yellow flowers from Jan to Feb or Apr to May. Grows in disturbed areas.	Hand remove isolated plants before flowering. Has a high tolerance to glyphosate. Metsulfuron applied by backpack is effective, otherwise spot spray with Garlon®. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Datura ferox (Fierce Thornapple) **Declared Weed**	A bushy annual plant, growing to approximately 1m high. Leaves are broadly oval to triangular in shape and bright green, flowers are white trumpet shaped. Fruits are egg shaped and prickly. WARNING: Fierce Thornapple is poisonous to humans and toxic to livestock.	Small plants are susceptible to herbicide; however, this treatment may be ineffective for mature plants. Mechanical removal is best for small infestations. Larger infestations should be removed by ploughing or tilling the soil and followed up with removal of seedlings.	
Datura innoxia (Downy Thornapple) **Declared Weed**	A stout, bushy, hairy annual herb that grows up to 1 m high. Has white flowers in Dec or Jan to Aug. Found in disturbed areas. WARNING: Thornapple is a poisonous plant and contact may cause headaches, nausea and dermatitis.	Hand remove isolated plants & small populations in early stages of growth (WARNING: PPE must be worn). Apply glyphosate (e.g. Roundup®) in early stages of plant's growths. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Dittrichia graveolens (Stinkwort)	An erect, bushy, viscid, aromatic, annual herb that grows up to 0.5m high. Has yellow / yellow - white flowers from Jan to Nov. Grows in a variety of soils and is a weed of waste grounds, along rivers & roadsides.	Hand remove isolated plants before flowering. Slash close to ground otherwise plants can resprout. Any treatment should be applied twice, early and then late summer. Apply glyphosate (e.g. Roundup®) when plants are small, or up to flowering. Clean equipment, clothing spread of seed. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Echium plantagineum (Paterson's Curse) **Declared Weed**	An erect annual or biennial herb that grows up to 60cm high. Has blue / blue – purple / pink / white flowers mainly from Sep to Dec or Jan. It is a weed of roadsides, vacant lands & disturbed grounds.	Plants are best treated when young. Spot spray in late autumn/winter when most seed has germinated for the year with chlorsulfuron, this will also help prevent further germination. Glyphosate (e.g. Roundup®) applied at early flowering will control existing plants. Consult product's information sheet. Grubbing and cutting are suitable for young plants if 20 to 40 mm of taproot is removed. Slashing or mowing can cause out of season flowering and seed production.	
Ehrharta villosa (Pyp Grass)	A slender rhizomatous, perennial grass-like or herb that grows up to 1.5 m high. Has purple- green flowers from Oct to Dec or Jan. Grows in sand & found in coastal sand dunes & limestone.	Spray with Verdict® or glyphosate (e.g. Roundup®). Several sequential applications will likely be required. Consult product's information sheet on herbicide application.	
Erodium aureum	A spreading, short-lived perennial herb that grows up to 20cm high. Has pink-purple flowers from Jul to Oct. Grows in sand, sandy clay & loam.	Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Erodium cicutarium (Common Storksbill)	A decumbent, ascending, or erect annual or biennial, herb that grows up to 20cm high. Has pink-white flowers from May to Oct. A weed of wasteland, crops & pastures.	Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Erythrostemon gilliesii (Bird of Paradise Flower)	An erect shrub that grows up to 3m high. Has yellow & red flowers from Mar to Apr or Oct. Often cultivated.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Galenia pubescens var. pubescens	A prostrate perennial, herb (semi-woody at base) that can grow up to 10cm high & to 2 m wide. Has white-pink flowers in Apr or Nov to Dec. Grows in sandy soils and found in disturbed sites.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

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Gazania linearis	Clump-forming perennial, herb that grows up to 30cm high. Has yellow-orange-red flowers from Jun to Dec. Found in coastal areas & roadsides, wasteland around settlements.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Helianthus annuus (Sunflower)	An erect, woody annual, herb that grows up to 3m high. Has yellow flowers from Aug to Dec or Jan to Apr. Weed of habitation, roadsides & waste land in dry places.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Hordeum leporinum (Barley Grass)	A tufted annual, grass- like or herb that grows up to 40cm high. Has green-cream flowers in Sep to Oct. Grows in white, grey, or red clayey sand, sandy loam & clay.	Prevent seed set. Hand pull or spray with Fusilade® Fortet 4-6 weeks after opening rains. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Lycium ferocissimum (African Boxthorn) **WoNS**	Intricately branched, spiny shrub, 0.5- 2.5(-4) m high. Fl. white-purple-blue, Apr to May or Aug to Dec. Found in waste grounds.	Hand pull or dig out small seedlings ensuring removal of all roots. For mature plants cut and paint with glyphosate (e.g. Roundup®) and follow up treatment on regrowth. Consult product's information sheet on herbicide application.	
Lysimachia arvensis (Pimpernel)	A hairless spreading annual herb. Has red & blue flowers in spring. It is a weed of horticulture, crops, pastures, granite rocks and gardens.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Malva parviflora (Marshmallow)	An erect or decumbent, annual, or perennial herb, that grows up to1.2m high. Has blue-purple/pink/white flowers in Mar or Jul to Nov. Grows in sandy & clayey soils. Found in disturbed areas.	Hand remove isolated plants. Chemical control is only effective at early growth stages, it is naturally tolerant to glyphosate and difficult to control due to substantial taproot. Able to regrow after cutting or defoliation, although plants may be killed if the tap root is cut below the crown. Weed control measures carried out after flowering are unlikely to prevent viable seeds entering the soil seed bank.	

Species	Description	Suggested Methods of Control	Image
Medicago laciniata var. laciniata	A prostrate or ascending, annual herb that can grow up to 40cm high. Has yellow flowers from Aug to Oct. Grows in red clay and sand, loam over granite and found in flats & road verges.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Medicago minima (Small Burr Medic)	A prostrate annual herb that grows up to 10cm high. Has yellow flowers from Jul to Sep. Grows in grey loamy sand, red- brown clay loam, granite & ironstone. Found in hills, valley slopes, rangelands & roadsides.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Medicago polymorpha (Burr Medic)	A prostrate or ascending annual herb that grows up to 20cm high, to 50cm wide. Has yellow flowers from Jan to Feb or May or Jul to Nov. Grows in black, brown, white, yellow, or grey sand, ironstone gravel, orange-brown sandy clay, granite. Found in flood plains, valley slopes, dunes, clay flats & roadsides.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Mentha suaveolens (Apple Mint)	An aromatic rhizomatous, perennial herb that grows to 1m high. Has pink/white/blue flowers from Jan to Mar. Grows in damp areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Monoculus monstrosus	An erect annual herb that grows up to 70cm high. Grows in red- brown loams or sandy clays, yellow-white or grey-brown sandy loam, brown clay loam, limestone & granite. Found in undulating sandplains, hills and slopes, valley slopes, creek beds & saline watercourses.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Nicotiana glauca (Tree Tobacco)	An erect, spindly shrub or tree that grows between 1-6m high. Has yellow flowers in Mar or May or Aug to Dec. Grows in sand, clay & clay loam.	Hand remove isolated plants & small populations. Apply Grazon® (triclopyr & picloram) to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Oligocarpus calendulaceus	An open, prostrate to decumbent annual herb that grows 6cm high. Has yellow flowers in Feb or Apr to May or Oct. Grows in calcareous loam, red clay loam, sandy clay, ironstone. Found in flat marine plains, depressions, disturbed sites & road verges.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Oncosiphon suffruticosum [Previously: Pentzia suffruticosa] (Calomba Daisy)	An erect, spreading, aromatic annual herb that grows up to 1m high. Has yellow flowers in Sep to Oct or Dec. Grows in red clay loam, red-brown gravelly clay loam, granite & limestone. Found in seasonally inundated areas, clay pans, paddocks & road verges.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Opuntia stricta (Prickly Pear) **Declared Pest / WoNS**	A spreading to erect shrub that grows up to 2m high. Has yellow flowers. Grows in sandy soils.	Physical removal and burning of plants are the most effective method of control. All dislodged segments and fruit must be collected and destroyed.	

Species	Description	Suggested Methods of Control	Image
Orbea variegate (Starfish Cactus)	A prostrate, succulent herb. Grows in calcareous soils. Found in plains above salt lake & highly disturbed site.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Oxalis bowiei (Bowie Wood Sorrel)		Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Oxalis pes-caprae (Soursob)	A bulbaceous and rhizomatous, perennial, herb, that grows up to 30cm high. Has yellow flowers from Jun to Oct. It is a common weed.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Pennisetum villosum (Feathertop)	A rhizomatous, tufted perennial, grass- like or herb, that grows up to 1m high. Has yellow/purple flowers from Feb to Oct. Grows in sand, loam, sandy clay. Cultivated in gardens but also a weed of disturbed habitats.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Phyla canescens (Lippia)	A procumbent or ascending, perennial herb. Has blue-purple-white-pink flowers. Mainly known from moist plains.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Polygonum aviculare (Wireweed)	A prostrate, sprawling annual, herb that grows up to 10cm high. Has green-white-pink flowers from Oct to Dec or Jan to May. Grows in sandy clay, clay loam. A weed of cultivation & waste places.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

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Portulacaria afra (Jade Plant)	An erect shrub that grows up to 1.5m high. Grows in sand, clay, loam & found in flats.	Needs to be removed mechanically by hand.	
Rostraria pumila	A tufted annual, grass- like or herb that grows up to 20cm high. Has green flowers from Jul to Oct. Grows in grey, black or red sand, sandy clay, clay & limestone. Found at roadsides, sand dunes & cliff slopes.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Rumex hypogaeus [Previously: Emex australis] (Doublegee) **Declared Pest**	Prostrate annual, herb. Fl. green, Jan to Dec. Sand, loam, or clay. Disturbed areas, weed of cereals, road verges.	Control of doublegees should occur shortly after emergence and should continue for a number of years. Herbicides will give poor results applied to plants with more than 12 leaves at the time of spraying. Spot spray plants with 1% Grazon® or glyphosate at 0.5-0.7% to kill existing plants. Alternatively wipe actively growing plants with 50% glyphosate. Read the manufacturers' labels and material safety data sheets before using herbicides.	

Species	Description	Suggested Methods of Control	Image
Rumex vesicarius L [Previously: Acetosa vesicaria] (Ruby Dock)	An erect, stout, fleshy, hollow-stemmed, annual herb that grows up to 1m high. Has red- pink flowers in Jul to Sep. Grows in sandy alluvial soils & gravelly ironstone soils. Found along roadsides & in disturbed areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Salvia reflexa (Mintweed) **Declared Pest**	A hoary, aromatic annual herb that grows up to 6m high. Has blue flowers from Oct to Dec or Jan to Apr. Found in margins of water-courses.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) when plants are seeding or actively growing. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Salvia verbenaca (Wild Sage)	A slightly aromatic, perennial herb that grows up to 1m high. Has blue-pink-purple flowers in Apr or Jul to Oct. Often found along roadsides.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

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Schinus molle var. areira (Pepper tree)	A tree that grows up to 5m high. Has white- cream flowers. Grows in red, sandy loam, alluvium & granite. Found in old mine sites & rubbish tips, drainage lines & creek banks.	Needs to be removed mechanically by hand.	
Schismus arabicus (Araby Grass)	A tufted ascending annual grass-like or herb that grows up to 25cm high. Has green/purple flowers in Sep. Grows in sand & loam. Found on roadsides & sandplains.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Schismus barbatus (Kelch Grass)	A tufted ascending annual grass-like or herb that grows up to 25cm high. Has green/purple flowers in Aug to Nov. Grows in sand, limestone, clay.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Sisymbrium irio (London Rocket)	An erect annual or biennial herb that grows up to 60cm high. Has yellow flowers from Jul to Dec. Grows in sandy & clayey soils.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Sisymbrium orientale (Indian Hedge Mustard)	An erect annual or biennial herb that grows up to 1m high. Has yellow flowers from Mar to Nov. Found in disturbed areas.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Solanum nigrum (Black Berry Nightshade)	An erect, perennial herb or shrub (short-lived) that grows up to 1m high. Has white flowers from Jan to Dec.	Prevent seed set for several years. Hand weed small communitys. In bushland situations, manually remove plants before flowering. For large infestations use Starane® when actively growing in summer, will provide reasonably selective control. Do not use in or near wetlands. Control infestations within 5 km of the target area to reduce dispersal of seed by birds. Consult product's information sheet on herbicide application.	

Species	Description	Suggested Methods of Control	Image
Sonchus oleraceus (Common Sowthistle)	An erect annual herb that grows up to 1.5m high. Has yellow flowers from Jan to Dec. Grows in a variety of soils. Is a weed of waste places & disturbed ground.	Remove small and/or isolated populations manually prior to seed set. Slashing is often ineffective as flowers continue to be produced. Spot spray Lontrel® preferably at the rosette stage. Consult product's information sheet on herbicide application.	
Sorghum halepense (Johnson Grass)	A rhizomatous, tufted perennial, grass- like or herb that grows up to 2m high. Has brown flowers from Aug to Dec or Jan to Feb. Grows in loam & sand.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Spergularia diandra (Lesser Sand Spurry)	A recumbent to ascending annual or perennial herb that grows to 25cm high. Has pink flowers from Sep to Nov. Grows in sandy & clayey soils. Found on roadsides, railway tracks & cleared land.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	

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Tribulus terrestris (Caltrop)	A prostrate annual herb. Has yellow flower from Jan to Dec. Often found on sandy soils and waste places.	Exclude people and close tracks to stop spread. Hand remove small/isolated populations, pulling plants from the root crown. Apply herbicide to prevent seed set. Glyphosate (e.g. Roundup®) is effective on seedlings.	
Urtica urens (Small Nettle)	A monoecious annual herb (with stinging hairs) that grows up to 60cm high. Has green flowers from Jul to Nov. Grows in sandy soils.	Hand remove isolated plants & small populations. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.	
Xanthium spinosum (Bathurst Burr) **Declared Pest**	Coarse annual herb that grows to 1 m high. Has flowers from Jan to Jun. It is a weed of disturbed & cultivated land.	Hand remove isolated plants. Apply glyphosate (e.g. Roundup®) in early stages of plant's growth, before burrs have formed. Grazon® (triclopyr & picloram) can be applied in later stages of plant's growth to provide some selective control. Consult product's information sheet on herbicide application.