



KEYSBROOK MINERAL
SANDS PROJECT

DIEBACK AND WEEDS
ENVIRONMENTAL
MANAGEMENT PLAN,
KEYSBROOK MINERAL SANDS
PROJECT, MS810

DOCUMENT REFERENCE

DIEBACK AND WEEDS ENVIRONMENTAL MANAGEMENT PLAN

27-APR-23

Doral Mineral Sands Pty
Ltd

ABN: 18 096 342

ACN: 096 342 451

Lot 7 Harris Road

Picton WA 6229

T: +61 8 9725 5444

F: +61 8 9725 4557

E: admin@doral.com.au

W: www.doral.com.au

DOCUMENT DETAILS

DOCUMENT ID	REPORT TITLE	DATE	PREPARED FOR
DIEBACK AND WEEDS ENVIRONMENTAL MANAGEMENT PLAN	DIEBACK AND WEEDS ENVIRONMENTAL MANAGEMENT PLAN, KEYSBROOK MINERAL SANDS PROJECT, MS810	27-Apr-23	EPA

AMENDMENT REGISTER

Date	Rev	Description of Revision	Approved
Nov 2010	1	Initial Document	MM
Jan 2011	2	Updated EMP	MM
Apr 2018	3	Updated EMP to support S45C	PG
Aug 2022	4	Updated EMP to support S45C (Lot 56)	CB
Apr 2023	4	Updated EMP to support S45C (Lot 63)	CB

TABLE OF CONTENTS

1. CONTEXT, SCOPE AND RATIONALE.....	1
1.1. PROPOSAL	1
1.2. KEY ENVIRONMENTAL FACTOR	1
1.3. CONDITION REQUIREMENTS	2
1.4. RATIONALE AND APPROACH	3
1.4.1. SURVEY AND STUDY FINDINGS	3
1.4.2. KEY ASSUMPTIONS AND UNCERTAINTIES.....	5
1.4.3. MANAGEMENT APPROACH	5
1.4.4. RATIONALE FOR CHOICE OF PROVISIONS.....	6
2. ENVIRONMENTAL MANAGEMENT PLAN PROVISIONS	7
3. ADAPTIVE MANAGEMENT AND REVIEW OF THE EMP	10
3.1. MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY.....	10
3.2. EMP REVISIONS	11
3.3. REPORTING.....	11
3.4. AUDITING	11
4. STAKEHOLDER CONSULTATION	12
5. CHANGES TO AN EMP	16
6. REFERENCES.....	18
FIGURE 1: SITE LOCATION	i
FIGURE 2: WEED LOCATIONS	ii
FIGURE 3: DIEBACK MAPPING	iii
APPENDIX 1: WEED LOCATIONS	iv

TABLES

TABLE 1: WDMP SUMMARY

TABLE 2: POTENTIAL WEED AND DIEBACK PROJECT RISKS

TABLE 3: CONDITION REQUIREMENTS

TABLE 4: OBJECTIVE BASED EMP PROVISIONS

TABLE 5: MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY ACTIONS

GLOSSARY

TERM	DEFINITION
BAM ACT	<i>Biosecurity and Agriculture Management Act 2007</i>
CAR	Compliance Assessment Report
DBCA	Department of Biodiversity, Conservation and Attractions
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
KLPL	Keysbrook Leucoxene Pty Ltd
MS	Ministerial Statement
PER	Public Environmental Review
WDMP	Weed and Dieback Management Plan

SUMMARY

This Weed and Dieback Management Plan (WDMP) has been prepared to meet Condition 9 of Ministerial Statement No. 810 for the Keysbrook Mineral Sands Mine (the Project) as indicated in Table 1. The proponent for the Project is subsidiary Keysbrook Leucoxene Proprietary Limited (KLPL), a subsidiary of Doral Mineral Sands Pty Ltd (Doral).

TABLE 1: WDMP SUMMARY

Proposal Name	Keysbrook Mineral Sands Mine
Proponent Name	Keysbrook Leucoxene Proprietary Limited
Ministerial Statement Number	MS810
Purpose of the EMP	Fulfil the requirements of Implementation Condition 9.
EPA Key Environmental Factor/s, outcome/s and objective/s	<p>Flora and vegetation:</p> <ul style="list-style-type: none"> • Prevent the introduction of new weed species within the Project area; • Minimise the spread of existing weeds and dieback within the Project area; • Provide control measures to progressively reduce the distribution/abundance of existing priority weed species within the Project area.
Implementation Condition Clauses	<p>Condition 9</p> <p>Condition 6.2</p> <p>Condition 7.2</p> <p>Condition 8.3</p>
Key Provisions of the Plan	<ol style="list-style-type: none"> 1. Annual weed survey to identify and record locations of declared and priority weeds within the Project area; 2. Management measures to prevent introduction and spread of weeds and dieback within Project area. 3. Provision of control measures to progressively reduce the distribution/abundance of existing priority weed species on and around the Project area.

1. CONTEXT, SCOPE AND RATIONALE

1.1. PROPOSAL

Doral Mineral Sands Pty Ltd (Doral) through its subsidiary Keysbrook Leucoxene Proprietary Limited (KLPL), operate a mineral sands mine and primary processing plant (the Project) within an area of rural land near the townships of Keysbrook and North Dandalup, 70 km south of Perth (Figure 1). The Project is within the Shire of Murray and the Shire of Serpentine-Jarrahdale.

The Keysbrook Mineral Sands Mine targets a deposit containing high grade leucoxene. Leucoxene is a fine, granular, weathered titanium mineral used as feedstock for titanium pigment plants. The surface mining operation migrates across the land, and the shallow mine void is backfilled to pre-disturbance contours and generally rehabilitated within two years of mining.

The Project is located on privately owned land, used for grazing and other rural land uses. The currently approved area of disturbance is 1,532ha, within a 3,015ha Development Envelope (Attachment 3, Figure 2 of MS810). Native vegetation approved for clearing ranges in condition from good to degraded. Doral has secured 75 hectares of native vegetation in two parcels through conservation covenants as per Condition 6 MS810. The area of mining approved under MS810, provides for 9 years of mining, which commenced in October 2015.

Based on the current mining schedule, the current ore reserve within the approved mine area as defined in (Attachment 3, Figure 2 of MS810), is due to be exhausted in 2023. In order for the continuation of the mine and workforce, KLPL seeks to amend the Project to include Part Lot 63 Westcott Road under Section 45C of the *Environmental Protection Act 1986* (EP Act). The 'amendment area' is within the existing EPA Development Envelope and includes a disturbance (mine) area of 140.52ha of cleared pasture and 1.78ha of amenity vegetation. No additional native vegetation clearing is proposed. Mining the amendment area will produce an additional ~65,000 tonnes of heavy mineral concentrate and result in ~18 months additional mining for the Project.

To support the request to EPA to amend the Project under Section 45C, KLPL has updated this Weed and Dieback Management Plan (WDMP) to incorporate the amendment area and demonstrate the amendment can be managed in accordance with Condition 9 of MS810.

1.2. KEY ENVIRONMENTAL FACTOR

The key environmental factor relevant to this WDMP is Flora and Vegetation. While the majority of the approved mining area is cleared pasture, competition from weeds can impact the quality of remnant native vegetation and constitutes a threatening process in the establishment of successful rehabilitation (pasture or native vegetation). Similarly, the presence of *Phytophthora* dieback infestations in the Project area has the potential to spread the pathogen into areas of native vegetation currently unaffected by dieback.

Potential weed and dieback related risks arising from the Project are summarised in Table 2.

TABLE 2: POTENTIAL WEED AND DIEBACK PROJECT RISKS

SOURCE	ACTIVITY	POTENTIAL IMPACT	INHERENT RISK
Mining and Exploration	Clearing and grubbing.	Spread of weed species to uninfested areas.	Low

SOURCE	ACTIVITY	POTENTIAL IMPACT	INHERENT RISK
	Topsoil removal and movement.	Spread of weed species to uninfested areas. Spread of dieback to uninfested areas.	Low
	Heavy and light vehicle movements.	Introduction of new weed species.	High
		Spread of weed species to uninfested areas	Low
		Spread of dieback to offsite uninfested areas.	Low
	Ore extraction and material replacement in pit.	Spread of dieback to new areas	Low
	Material imports to site (e.g., limestone)	Introduction of new weed species	Medium
Revegetation using seed and tube stock. Pasture re-establishment using purchased seed.	Introduction of new weed species through planting tube stock in rehabilitation areas	High	
	Introduction of new weed species in purchased seed spread in rehabilitation areas		
Natural events	Localised flooding.	Introduction of new weed species Spread of dieback	Medium

1.3. CONDITION REQUIREMENTS

The Project was assessed and approved under Part IV of the *Environmental Protection Act 1986* on 19 October 2019, with the issuing of Ministerial Statement 810. Revisions to the Project were approved via Section 46C in June 2011 and Section 45C in February 2013 and October 2019. A Section 46 amendment to extend the time limit for commencement of the Project was made in October 2014. A further request under Section 45C was requested in May 2023.

This WDMP has been prepared to address the following Conditions in MS810.

TABLE 3: CONDITION REQUIREMENTS

CONDITION NO.	CONDITION	RELEVANT SECTION OF WDMP
9	Weed and Dieback Management	
9.1	<i>Prior to the commencement of operations, the proponent shall prepare and submit a Dieback and Weed Management Plan to the requirements of the CEO.</i>	Completed: January, 2011.
6	Protection of native vegetation	

CONDITION NO.	CONDITION	RELEVANT SECTION OF WDMP
6.1	<i>Prior to the commencement of clearing the proponent shall, in consultation with the DEC, ensure that a minimum of 75 hectares of native vegetation within the area cross-hatched in Figure 2 is protected in perpetuity by an instrument or instruments approved by the CEO.</i>	N/A
6.2	<i>The instrument or instruments referred to in 6.1 shall include the following:</i> <i>b. measures which have the objective of maintaining a functioning and self-sustaining vegetation community</i>	Section 2 Management Targets 1-4 (Table 4)
7	Protection of watercourses and wetlands	
7.1	<i>The proponent shall not clear vegetation or undertake mining activities:</i> <i>a. within 20 metres of the banks of watercourses shown in Figure 9 of the PER document;</i>	N/A
	<i>b. within 100 metres of the boundary of a conservation category wetland.</i>	N/A
7.2	<i>The proponent shall implement management measures (including but not limited to weed and disease control, revegetation and monitoring) in respect to the areas under 7.1 to achieve a functioning and self-sustaining vegetation community.</i>	Section 2 Management Targets 1-4 (Table 4)
8	Rehabilitation management plan	
8.3	<i>The rehabilitation management plan shall:</i> <i>c. identify measures to eradicate weeds in the revegetation areas;</i>	Section 2 Management Targets 1-4 (Table 4)
	<i>d. identify measures to use dieback un-infested topsoil and dieback resistant species in the revegetation areas</i>	Section 2 Management Targets 4 (Table 4)

1.4. RATIONALE AND APPROACH

1.4.1. SURVEY AND STUDY FINDINGS

WEEDS

Baseline surveys of the proposal area recorded 34 weed species, excluding pasture species (Bennett Consulting, 2004) (Appendix 1). The weed species are collectively known as environmental weeds (introduced plants that have established in a natural ecosystem and adversely contributing to a decline of natural communities).

There are a number of Declared Plants as listed under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) known to occur in the Shire of Serpentine - Jarrahdale and Shire of Murray (Appendix 1). The Department of Primary Industries & Regional Development (DPIRD) (2017) has developed a Declared plant surveillance plan for the South West Land Division of Western Australia which lists 15 prioritised declared

weeds for control across Western Australia (including Weeds of National Significance). Community, industry and biosecurity groups have selected another seven species as high priority surveillance targets:

- *Gomphocarpus fruticosus* (narrow leaf cotton bush)
- *Zantedeschia aethiopica* (arum lily)
- *Echium plantagineum* (Paterson's curse)
- *Solanum* species (silverleaf nightshade *S. elaeagnifolium* and apple of Sodom *S. linnaeanum*)
- *Emex australis* and *E. spinosa* (doublegee)
- *Moraea flaccida* and *M. miniata* (cape tulip)
- *Rubus laudatus* (blackberry)

These species have been selected as priority targets as they are agricultural weeds which have an adverse effect on agricultural production or systems and are likely to be found in the South West Land Division of Western Australia.

Weed surveys undertaken across the Project area and along roads bordering the project during October/November 2017 have identified three of the high priority declared plants in the vicinity of the project area (Figure 2):

- *Gomphocarpus fruticosus* (Narrow Leaf Cotton Bush);
- *Zantedeschia aethiopica* (Arum Lily);
- *Echium plantagineum* (Paterson's Curse).

An additional Flora and Vegetation survey of the proposed amendment area (Lot 63) and surrounds was conducted by (Ecoedge, 2023) to support the request for amendment under S45C. Results of this survey did not identify any Declared or priority weed species within the proposed amendment area (Ecoedge, 2023).

***Phytophthora* Dieback**

A 2006 baseline survey identified *Phytophthora cinnamomi* in the Project area (Figure 3; MBS, 2006). Additional surveys undertaken in 2013 and 2016 confirmed the presence of the pathogen in an area of highly disturbed remnant vegetation (Terratree, 2013 & 2016). The cleared, grazing areas that formed the majority of the 2013 and 2016 survey areas were determined to be unmappable (uninterpretable) given the absence of indicator species. Remnant vegetation in the area surveyed is classified as degraded, with few indicator species remaining. A 2017 Dieback risk assessment determined that these areas must be assumed to be infested and managed accordingly (Terratree, 2017). This determination can be applied to much of the project area given intensive and unrestricted livestock movement between areas of infested and excluded vegetation and periods of seasonal inundation across the lower areas. Similarly, the risk assessment concluded it is likely *P. cinnamomi* is present in the drainage lines and tributaries in the surrounding areas and hence the areas should be managed as if designated infested.

A *Phytophthora* Dieback assessment was completed by BARK Environmental (2023) of the amendment area, as well as Lots 62 and 200. Due to historical disturbance activities, there is an overall absence of suitable native indicator plants necessary to enable assessment, which resulted in the entire subject area to being mapped as excluded. A *Phytophthora* Dieback Occurrence map is provided in Figure 3. The Department of

Biodiversity, Conservation and Attractions (DBCA) methodology for Dieback Assessment notes that in areas where Keighery disturbance ratings of 5 or greater occurs, such as Degraded or Completely Degraded areas (Lot 63), that assessment is not possible (DPaw, 2015). The assessment concluded that the amendment poses no significant risk to flora and vegetation as there is no significant vegetation remaining to be at risk. The assessment (BARK Environmental, 2023) recommends that:

- The Dieback Management Plan / EMP tactics for the disturbance activities within Lot 63 should be kept simple because there is no susceptible intact vegetation remaining at the site;
- The key tactic to adopt at Excluded sites is to ‘arrive clean and leave clean’ to avoid introduction and/or spread of diseases and weeds within and beyond the subject area;
- Should any areas be retained for revegetation that includes plants susceptible to *Phytophthora* disease, it is recommended that standard Dieback hygiene protocols are included during inductions, at entry/exit points, clean-down of footwear/vehicles/equipment and the sourcing of seedlings is preferable from a NIASA accredited nursery to minimise risk of disease introduction;
- Plants within any revegetation areas displaying disease symptoms could be sampled as soon as practicable for early detection, diagnosis and treatment using Phosphite application.

1.4.2. KEY ASSUMPTIONS AND UNCERTAINTIES

The key assumptions and uncertainties with this WDMP include:

- The Flora and Vegetation surveys conducted for the Project have accurately recorded the presence of all high priority declared plants;
- Results of annual weed surveys undertaken for the Project area since commencement of mining have been relied upon;
- The cleared, grazing areas that formed the majority of the 2013 and 2016 dieback survey areas were determined to be unmappable (uninterpretable) given the absence of indicator species. A 2017 Dieback risk assessment determined that these areas must be assumed to be infested and managed accordingly (Terratree, 2017);
- The (BARK Environmental, 2023) Dieback assessment for the proposed amendment area was also determined to be excluded, given it comprises cleared pasture with no indicator species.

1.4.3. MANAGEMENT APPROACH

As the Project area is predominantly pasture used for agriculture (dairy and beef cattle), weed control is focused on Declared and Priority Plants as listed under the BAM Act given that these agricultural weeds pose the greatest risk to agricultural production.

Environmental weeds will be targeted for control within native vegetation enhancement and rehabilitation areas where monitoring identifies action is warranted.

A clean vehicle and equipment policy is implemented to minimise the potential of weed and *Phytophthora* dieback material being introduced or spread by plant and equipment.

1.4.4. RATIONALE FOR CHOICE OF PROVISIONS

An Objectives based EMP has been selected to meet MS810 Condition 9, (prepare and submit a Dieback and Weed Management Plan) to minimise introduction and spread of weeds and dieback, as far as practicable, to protect flora and vegetation values within the Project area.

2. ENVIRONMENTAL MANAGEMENT PLAN PROVISIONS

Table 4 provides a summary of the objective based EMP to meet legal requirements of Condition 9 of MS810.

TABLE 4: OBJECTIVE BASED EMP PROVISIONS

MANAGEMENT TARGETS	MANAGEMENT ACTIONS	MONITORING / PERFORMANCE INDICATOR	TIMING/ FREQUENCY OF ACTIONS	REPORTING
<p>Management Target 1</p> <p>Identify location of Declared or priority weed species at the Site.</p>	<p>Management Actions 1</p> <p>Annual survey of known Declared or priority weed locations to ensure appropriate control measures are planned and implemented.</p> <p>Information on Declared or priority weed species identified at Site to be included in site inductions to allow for identification and reporting by staff.</p> <p>Location data of all Declared or priority weed populations to be captured digitally.</p> <p>Ensure seed collected for use in rehabilitation is weed free.</p>	<p>Annual survey of known Declared or priority weed locations.</p> <p>WDMP updated as required.</p> <p>Location data to be updated digitally.</p> <p>Use accredited seed collectors and suppliers.</p>	<p>Annually (July– August)</p> <p>Ongoing</p> <p>Annually</p> <p>Ongoing</p>	<p>KLPL Weed Management Register</p> <p>KLPL Weed Management Register</p> <p>KLPL Weed Management Register</p> <p>Internal seed records</p>
<p>Management Target 2</p> <p>Control Declared or priority weed species identified at the Site.</p>	<p>Management Targets 2</p> <p>Implement DPIRD recommended control measures for known Declared or priority weed populations.</p> <p>Inspection of areas post control to ensure control technique has been effective.</p>	<p>Infestations are treated annually to prevent seeding.</p> <p>Annual survey of known Declared or priority weed locations.</p>	<p>Ongoing as required.</p> <p>Ongoing – as required following control implementation</p>	<p>KLPL Weed Management Register</p> <p>KLPL Weed Management Register</p>
<p>Management Target 3</p> <p>Prevent the introduction and</p>	<p>Management Actions 3</p> <p>Ensure all plant and equipment are clean,</p>	<p>Site induction includes clean on</p>	<p>Ongoing – as required</p>	

MANAGEMENT TARGETS	MANAGEMENT ACTIONS	MONITORING / PERFORMANCE INDICATOR	TIMING/ FREQUENCY OF ACTIONS	REPORTING
spread of weeds by plant and equipment	<p>inspected and certified prior to entry into KLPL area of operations.</p> <p>Clean on entry requirement is implemented by all personnel working within KLPL area of operations.</p>	<p>entry requirement and references KLPL Weed & Seed Vehicle Checklist.</p> <p>Entry into area of operations is controlled (clean on entry).</p>		KLPL Weed & Seed Vehicle Checklists
<p>Management Target 4</p> <p>Prevent the introduction and spread of <i>Phytophthora</i> dieback</p>	<p>Management Actions 4</p> <p>All personnel entering KLPL operations are informed of <i>Phytophthora</i> Dieback risk, potential impacts and key management requirements.</p> <p>Ensure all heavy plant and equipment are clean, inspected and certified prior to entry/exit.</p> <p>Clean on entry/exit requirement is implemented by all personnel working within KLPL area of operations.</p> <p>Signage to be installed at dieback identified locations to inform all personnel entering site that <i>Phytophthora</i> Dieback is present.</p> <p>Hard stand areas and internal roads to be constructed of limestone where practicable (as its high pH suppresses <i>Phytophthora</i> Dieback).</p>	<p>Site induction includes pertinent information relating to <i>Phytophthora</i> Dieback its impact and management requirements.</p> <p>Inspections upon entry/exit to Site.</p> <p>Inspections upon entry/exit to Site.</p> <p>Ensure signage is installed.</p> <p>Ensure hard stand areas are constructed with limestone.</p>	(Ongoing – as required)	<p>Induction content</p> <p>Weed & Seed Vehicle Checklists</p> <p>Induction content</p>

MANAGEMENT TARGETS	MANAGEMENT ACTIONS	MONITORING / PERFORMANCE INDICATOR	TIMING/ FREQUENCY OF ACTIONS	REPORTING
	<p>Road haul trucks collecting product and delivering sand tailings are managed so not required to be certified clean on entry and exit.</p> <p>Identify and plan for use of plant species resistant to <i>Phytophthora</i> Dieback in rehabilitation areas.</p>	<p>Entry into area of operations is controlled.</p> <p>Loading operations isolated from site extraction and processing operations.</p> <p>Rehabilitation plans identify <i>Phytophthora</i> Dieback resistant species for revegetation projects.</p>		<p>Rehabilitation Management Plan</p>

3. ADAPTIVE MANAGEMENT AND REVIEW OF THE EMP

This EMP applies the principles of adaptive management through monitoring, corrective actions and implementing changes. The EMP is intended to be dynamic and will be updated to reflect changes in management practices over the life of the Proposal. This will also allow flexibility to respond to new environmental impacts and adopt new technologies/management measures.

3.1. MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY

Triggers, thresholds and contingency for weeds and dieback are included in Table 5 based on the management targets and actions previously described.

If monitoring identifies a non-conformance/non-compliance with EMP targets, the incident will be assessed and corrective actions implemented. The corrective actions are aimed at preventing recurrences of the incident taking place.

TABLE 5: MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY ACTIONS

MONITORING PARAMETER	TRIGGER	CONTINGENCY ACTION
Introduction and/or spread of weeds	Weeds: An increase as a community component by 10%.	Investigate cause. Conduct additional weed spraying. Further restrict access to at risk weed areas. Review weed inspection protocols (i.e. clean on entry/exit) Monitor outcomes.
Introduction and/or spread of <i>Phytophthora</i> dieback	Presence of <i>Phytophthora</i> impact detected within areas previously absent of dieback.	Investigate cause. Qualified Dieback Interpreter to recheck specific area for <i>Phytophthora</i> Dieback per DBCA (2015) methodology. Further restrict access to at risk vegetation areas (dieback). Review dieback controls and management in consultation with Dieback specialist. Consider application of Phosphite with relevant environmental approvals by a Dept of Health W.A. Licensed Technician qualified to implement Dieback Treatment. Monitor outcomes.

3.2. EMP REVISIONS

This EMP will be reviewed on an annual basis during the life of the Project, or as required. The EMP review will take into account the adaptive management and continual improvement process, new or revised information relevant to weeds and dieback and/or changes to the Project.

3.3. REPORTING

This EMP will be reported annually in KLPL's Annual Compliance Assessment Report (CAR), to meet Condition 4 of MS810.

3.4. AUDITING

Doral (on behalf of KLPL) is committed to its environmental performance and has developed, implemented and continually improved its Environmental Management System (EMS) since it was established in 2001. Doral's EMS is in line with the requirements of the Australian/New Zealand Standard AS/NZS ISO 14001:1996 (ISO 14001).

Doral's EMS consists of the following key elements:

- Environmental Policy and Objectives;
- Environmental Planning;
- Implementation and Operation;
- Checking and Corrective Action;
- Management Review.

The Checking and Corrective Action component of Doral's EMS relates to the monitoring and evaluation of Doral's environmental performance and consists of the following elements:

- Monitoring and measurement;
- Non-conformance and corrective and preventive action;
- Records;
- EMS audits;
- Annual review and update of the Environmental Risk Assessment and management procedures for the Project.

Doral will achieve continuous improvement for the Project by conducting an annual review and update of the Environmental Risk Assessment, risk treatments and management plans/procedures. Any additional risks and/or alternative forms of treatment/management that result in an improved outcome for site activities will be adopted and the EMS will be updated accordingly.

4. STAKEHOLDER CONSULTATION

Commencing prior to initial approval, the Keysbrook operations has continued a program of consultation with local residents and other key stakeholders, including the Shire of Murray and the Shire of Serpentine-Jarrahdale since 2005.

The Keysbrook Community Consultation Group (CCG) was formed in 2012 as a formal means of regular information exchange with stakeholders. The CCG comprises two Shire of Murray and Shire of Serpentine Jarrahdale Councillors, two community representatives from both Shires, an independent Chairperson and two KLPL (Doral) personnel. The CCG met monthly until 2017 and continues as a quarterly schedule.

Environmental management and performance is communicated through the CCG and regulatory reporting. The regulatory reports, CCG minutes and approved environmental management plans are available on the Doral website.

Stakeholder engagement is set through a Stakeholder Interaction and Policy Procedure which provides for the program of engagement and investigation, response and closure of any community complaints.

Stakeholders who have been identified as having an interest in the environment surrounding the proposed amendment within Lot 63 have been consulted and will continue to be consulted and informed through the approvals phase. KLPL has been engaging with all stakeholders since project commencement in 2012 and startup of operations in 2015. This consultation has been in the form of regular community updates (every 6 – 12 weeks), newsletters and meetings as required for specific development or operational updates. Communications and meetings with key stakeholders specific to the proposed amendment has been undertaken subject to environmental and landholder approval.

The existing stakeholder communications database and register has been utilised for the Lot 63 amendment, including the continued documentation of stakeholders issues/ concerns raised and the outcome of the consultation.

A summary of stakeholder engagement is outlined in the following table.

TABLE 6: STAKEHOLDER ENGAGEMENT

STAKEHOLDER	DATE	TYPE OF CONSULTATION	RELEVANT DISCUSSION POINTS/KEY ISSUES	COMMENTS RECEIVED / OUTCOMES
Shire of Serpentine-Jarrahdale CEO and Planning Manager	23/02/2023	In person meeting. Receives copies of landholder updates and newsletters	45c proposal and Shire Development Application and timings	Development Application to be considered once EPA decision advised. Crossing of Elliott Road, subject to Traffic Management Plan. Query on road condition post mining completion. Commitment to ensure road condition in line with Shire's standards. Supportive of application, Council deputation planned for mid 2023.

STAKEHOLDER	DATE	TYPE OF CONSULTATION	RELEVANT DISCUSSION POINTS/KEY ISSUES	COMMENTS RECEIVED / OUTCOMES
Shire of Murray CEO and Director Planning	26/04/2023	In person meeting. Receives copies of landholder updates and newsletters	45c proposal and Shire Development Application and timings	Lot 63 sits within Shire of Serpentine Jarrahdale, conversation more broadly around future extensions into the Shire of Murray. New Councillors and staff to visit site October 2023. Supportive of project.
Hugh Jones MLA, Member for Darling Range	07/11/2022	In person meeting. Receives copies of Community Update letters and newsletters	Extension proposals	Supportive of expansion plans, noted any community feedback received would be provided
Robyn Clarke MLA, Member for Murray Wellington	07/11/2022	In person meeting. Receives copies of Community Update letters and newsletters	Extension proposals	Supportive of expansion plans and general community support to date, noted any community feedback received would be provided to Doral.
Landcare SJ	Ongoing since 2012	In person and via discussions around commercial tree planting arrangements	Regular discussion regarding revegetation planning and planting. Annual monitoring of artificial Black Cockatoo hollows.	Active involvement in the Keysbrook revegetation and fauna habitat creation
Peel Development Commission	23/03/2023 Ongoing since 2012	In person meeting. Receives copies of Community Update letters and newsletters	Discussion around expansion proposal both Lot 63 and broader extensions.	Supportive of project and expansion, keep PDC informed of any extension plans in and around the Keralup vicinity.
Keysbrook Community Consultative Group (inc Shire and community representatives)	Held quarterly since 2012	Group meeting in person Lot 63 mine plan and broader western extension provided at 3	TBA	Supportive, interested in neighbour community engagement outcomes. Advised consultation undertaken with all close proximity neighbours and highlighted concerns raised to date and mitigation measures.

STAKEHOLDER	DATE	TYPE OF CONSULTATION	RELEVANT DISCUSSION POINTS/KEY ISSUES	COMMENTS RECEIVED / OUTCOMES
		May 2023 meeting Copy of Lot 63 and western extension proposal letter dated 4 April 2023 sent		
Lot 701, Morgan	04/04/2023	Letter + phone call	Summarised letter, meeting planned for week commencing 8 May 2023 to discuss in further detail.	Landholder amenity agreement signed, concerns predominantly around dust. Meeting in progress to discuss mitigation measures to address.
Lot 12, Stewart	04/04/2023	Letter + text message	Summarised letter, meeting planned for 3 May 2023, to discuss in further detail.	Landholder amenity agreement signed, concerns predominantly around dust. Meeting in progress to discuss mitigation measures to address.
Lot 700, Allspell Nominees	04/04/2023	Letter + phone conversation	Residence is a rental	Occupant Deed signed by tenant, owners signed amenity agreement, Lot 700 is the closest residence to Lot 63. Discussion around proximity and timing, no concerns raised, agreed to discuss in August 2024, when more certainty around timing and if the tenants remain the same.
Lot 503, Elliott Road			House is vacant, owner resides in Malaysia.	Currently ascertaining ownership details through neighbours, borderline 2km distance.
Lot 501, Elliott	04/04/2023 14/04/2023	Letter plus in person meeting	Water and dust.	Sits outside of 2km, interested landholder, concerns around water and dust. Environmental Manager met with landholder on 13 April 2023 to discuss mitigation measures and address concerns.
Lot 20, Doral owned property	04/04/2023	Letter	Mine life	Doral owned property, signed Occupant Deed. Queries around length of mining and term of

STAKEHOLDER	DATE	TYPE OF CONSULTATION	RELEVANT DISCUSSION POINTS/KEY ISSUES	COMMENTS RECEIVED / OUTCOMES
				tenancy. Communications ongoing. No further comments.
Lot 211, Doral owned property	04/04/2023	Letter	-	Doral owned property, signed Occupant Deed. No comments.
Linga Holdings (Rob Guira)	04/04/2023 29/04/2023	Letter plus in person meeting	One on one tour with Mine Manager on 29/04/2023	Landholder amenity agreement signed. No comments.
Lang	04/04/2023	Letter	Meeting planned for week commencing 8 May to discuss in further detail.	Currently in consultation in regard to common drain on Doral owned Lot 211, meeting in progress to discuss Lot 63 expansion in further detail. Amenity agreement required, borderline 2km distance.
Letter to closet neighbours 42 neighbours in total	04/04/2023 Near neighbours – within 2km zone – letter specific to Lot 63, Section 45c approval	Letter to all neighbours within 2km distance, detailed Company's plans to submit a 45c to extend mine life in relation to Lot 63	Letter includes offer to meet and discuss, follow up with landholders who wish to meet. Letter also more broadly referred to western extension. Detailed mitigation measures around noise, dust, water and approvals process.	No feedback received at this time.
Closest neighbours 85 neighbours in total	14/04/2023 Ongoing since 2012, issued every 10 – 12 weeks,	Community mailing list, ~ 85 neighbours within 3km – 4km radius	Targeted information in relation to Keysbrook mining operations, letters specifically referred to Lot 63 Section 45c application and broader extension proposal.	Site contact details provided for community feedback specific to extension proposal. No feedback received at this time.
Interested community and closest neighbours	Bi-annually	Newsletter Mailing list ~ 300	General Information, next edition planned for June 2023, will include Lot 63 and broader extension information.	Site contact details provided for community feedback specific to extension proposal. No feedback received at this time.

5. CHANGES TO AN EMP

A summary of changes to the EMP are summarised in the below table.

TABLE 7: CHANGES TO EMP

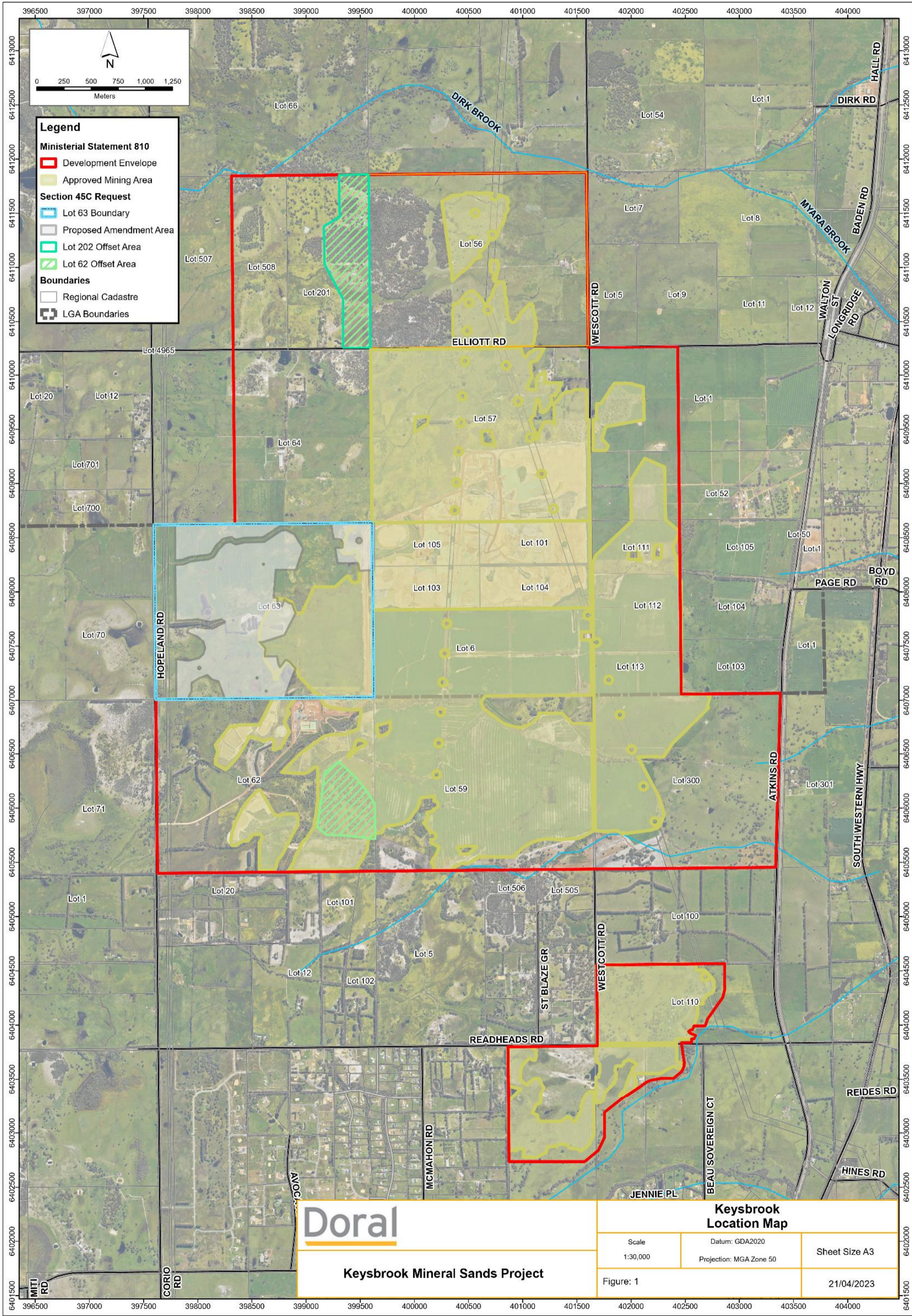
COMPLEXITY OF CHANGES		MINOR REVISIONS ✓	MODERATE REVISIONS	MAJOR REVISIONS
NUMBER OF KEY ENVIRONMENTAL FACTORS		One ✓	2-3	>3
DATE REVISION SUBMITTED TO EPA		Apr 2023		
PROPONENT'S OPERATIONAL REQUIREMENT TIMEFRAME FOR APPROVAL OF REVISION		<1 month	<6 months ✓	>6 months
ITEM NO.	EMP SECTION NO.	EMP PAGE NO.	SUMMARY OF CHANGE	REASON FOR CHANGE
1	Section 1.1	1	Updated to include proposed S45C details for Amendment Area (Lot 63)	Update EMP to include proposed Amendment Area to support submission of S45C
2	Section 1.3	2-3	Heading changes, section reworded to include proposed S45C details	Heading changes to be consistent with EPA EMP guidance, reworded to include proposed S45C. Table 3 updated to reflect changes in EMP section/layout
3	Section 1.4	3-5	Headings updated, inclusion of additional weed and dieback surveys for proposed S45C	Section updated to be consistent with EPA EMP guidance. New information included relevant to proposed Amendment Area (S45C).
4	Section 2	6-8	Table updated to conform with EPA AMP guidance	Previous table not consistent with EPA EMP guidance Rationalised management targets/actions to conform with EMP guidance
5	Section 3	9-10	Table updated to conform with EPA AMP guidance	Previous table not consistent with EPA EMP guidance

COMPLEXITY OF CHANGES		MINOR REVISIONS ✓	MODERATE REVISIONS	MAJOR REVISIONS
NUMBER OF KEY ENVIRONMENTAL FACTORS		One ✓	2-3	>3
DATE REVISION SUBMITTED TO EPA		Apr 2023		
PROPONENT'S OPERATIONAL REQUIREMENT TIMEFRAME FOR APPROVAL OF REVISION		<1 month	<6 months ✓	>6 months
ITEM NO.	EMP SECTION NO.	EMP PAGE NO.	SUMMARY OF CHANGE	REASON FOR CHANGE
6	Section 4	11	Updated Stakeholder Consultation	Updated Stakeholder Consultation required for S45C request
7	Section 5	12-13	Table of Changes to EMP	As required by EMP guidance

6. REFERENCES

- BARK Environmental (2021). *Phytophthora Dieback Occurrence Report for Lots 507, 508, 201 and 56 – Keysbrook*. Unpublished report prepared for Doral Mineral Sands Pty Ltd. August 2021.
- BARK Environmental (2023). *Phytophthora Dieback Occurrence Report for Lot 63 – Keysbrook*. Unpublished report prepared for Doral Mineral Sands Pty Ltd. August 2021.
- Bennett, E. (2004). *Vegetation and Flora of Exploration Licence 70/2407 Keysbrook Western Australia*. Unpublished report prepared by Bennett Environmental Consulting, Kalamunda.
- Conservation and Land Management (CALM) (1999). *Environmental Weed Strategy for Western Australia*. Department of Conservation and Land Management, Western Australia, Perth.
- Department of Primary Industries & Regional Development - Agriculture and Food (2017). *Declared plant surveillance plan for agricultural weeds in the South West Land Division*. Western Australian Agriculture Authority, Perth. Version 2, June 2017.
- Department of Primary Industries & Regional Development - Agriculture and Food (2017). Declared Plants; Weeds of National Significance; Declared plant control table; <https://www.agric.wa.gov.au/pests-weeds-diseases/weeds/declared-plants>
- DPaW (2015). Forest and Ecosystem Management Division 2015 (047), *Phytophthora Dieback Interpreter's manual for lands managed by the department*, Department of Parks and Wildlife, Perth, Western Australia.
- Dieback Working Group (2017). *Management of Phytophthora Dieback in Extractive Industries – Best Practice Guidelines*. <https://www.dwg.org.au/publications>
- Ecoedge Environmental (2022). Derailed, Reconnaissance and Targeted Flora and Vegetation Survey. Lots. Keysbrook, Western Australia. 29 March 2022.
- Ecoedge Environmental (2023). Derailed, Reconnaissance and Targeted Flora and Vegetation Survey. Lots 507, 508, 201 Elliot Road and Part Lot 56 Westcott Road. Keysbrook, Western Australia. 29 March 2022.
- KLPL Stakeholder Interaction and Policy Procedure. Radix Document Number: 9983
- KLPL Stakeholder Interaction Report Form. Radix Document Number: 81487
- KLPL Weed Management Register. Radix Document Number: 150241
- KLPL Weed & Seed Vehicle Inspection Checklist. Radix Document Number: 108647
- MSB Environmental (2006). "Dieback Disease" in *Keysbrook Mineral Sand Project Public Environmental Review*. Prepared for Olympia Resources Ltd. Radix Document Number: 41422
- State Weed Plan Steering Group, Department of Agriculture and Food, Western Australia (2001). *Weed Plan for Western Australia*. Department of Agriculture and Food, Western Australia, Perth. Bulletin 4490.
- Terratree (2017). *Phytophthora Dieback Risk Assessment*. Unpublished report prepared by Terratree for MZI Resources Keysbrook Operations. Radix Document Number:149007
- Terratree (2016). *Phytophthora Dieback Assessment*. Unpublished report prepared by Terratree for MZI Resources Keysbrook Operations. Radix Document Number: 154245
- Terratree (2013). *Keysbrook Mineral Sands Project Phytophthora Dieback Assessment*. Unpublished report prepared by Terratree for MZI Resources Keysbrook Operations. Radix Document Number: 45457

FIGURE 1: SITE LOCATION



Legend

Ministerial Statement 810

- Development Envelope
- Approved Mining Area

Section 45C Request

- Lot 63 Boundary
- Proposed Amendment Area
- Lot 202 Offset Area
- Lot 62 Offset Area

Boundaries

- Regional Cadastre
- LGA Boundaries

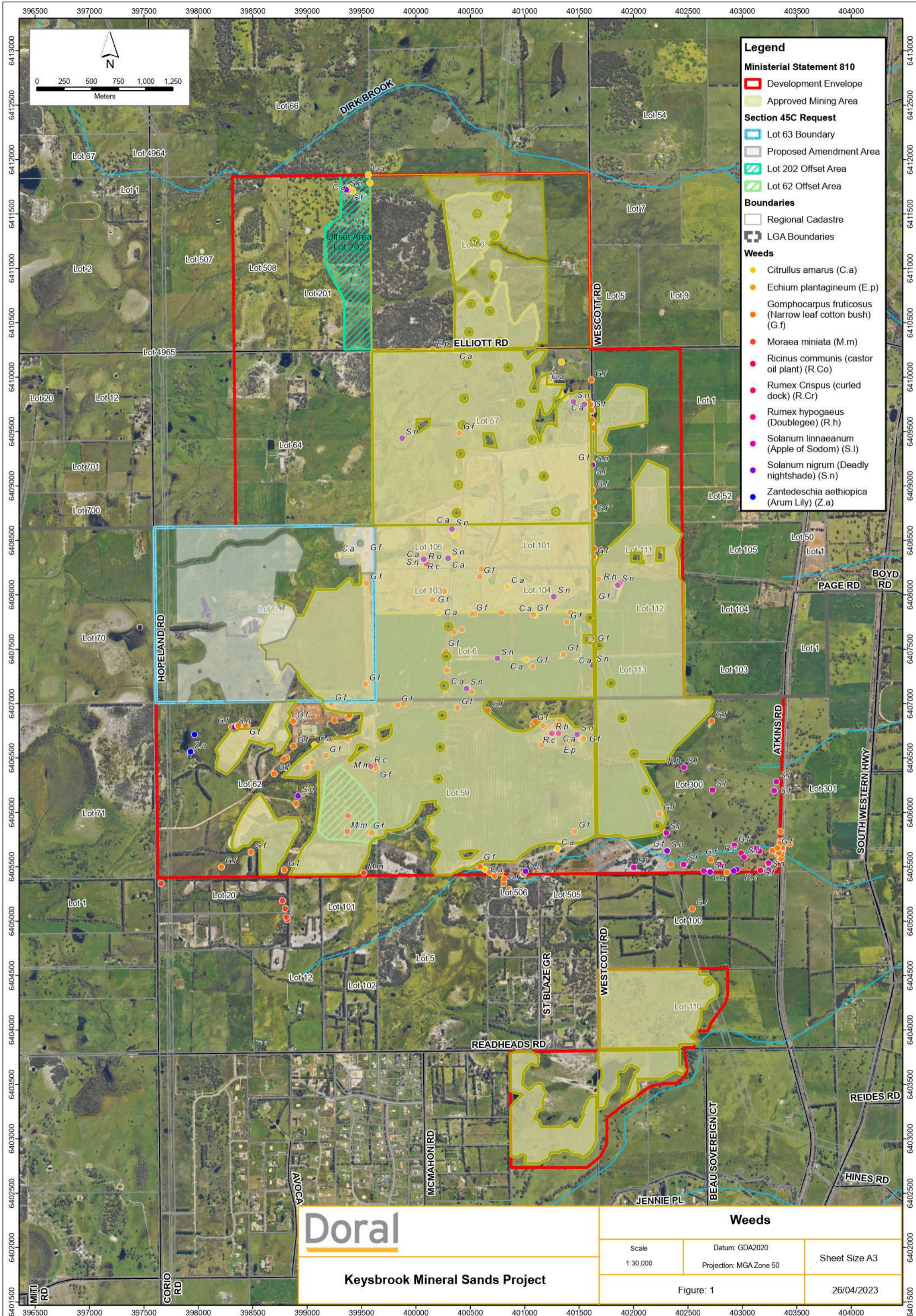
Doral

Keysbrook Mineral Sands Project

Keysbrook Location Map

Scale 1:30,000	Datum: GDA2020 Projection: MGA Zone 50	Sheet Size A3
Figure: 1	21/04/2023	

FIGURE 2: WEED LOCATIONS



Legend

Ministerial Statement 810

- Development Envelope
- Approved Mining Area

Section 45C Request

- Lot 63 Boundary
- Proposed Amendment Area
- Lot 202 Offset Area
- Lot 62 Offset Area

Boundaries

- Regional Cadastre
- LGA Boundaries

Weeds

- Citrullus amarus (C.a)
- Echium plantagineum (E.p)
- Gomphocarpus fruticosus (Narrow leaf cotton bush) (G.f)
- Moraea miniata (M.m)
- Ricinus communis (castor oil plant) (R.Co)
- Rumex crispus (curled dock) (R.Cr)
- Rumex hypogaeus (Doublegee) (R.h)
- Solanum linnaeanum (Apple of Sodom) (S.l)
- Solanum nigrum (Deadly nightshade) (S.n)
- Zantedeschia aethiopica (Arum Lily) (Z.a)

Doral

Keysbrook Mineral Sands Project

Weeds		
Scale 1:30,000	Datum: GDA2020 Projection: MGA Zone 50	Sheet Size A3
Figure: 1		26/04/2023

FIGURE 3: DIEBACK MAPPING

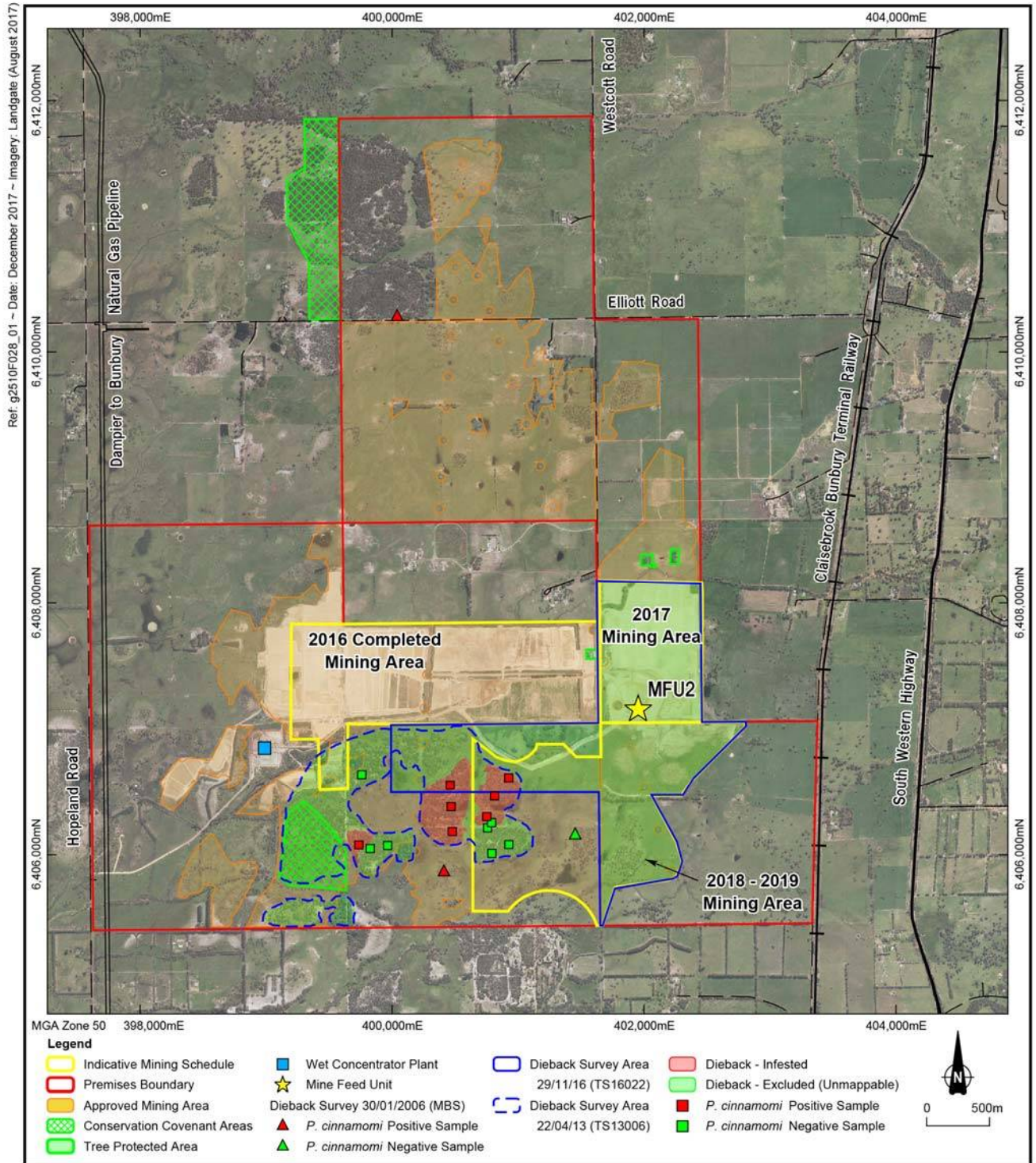
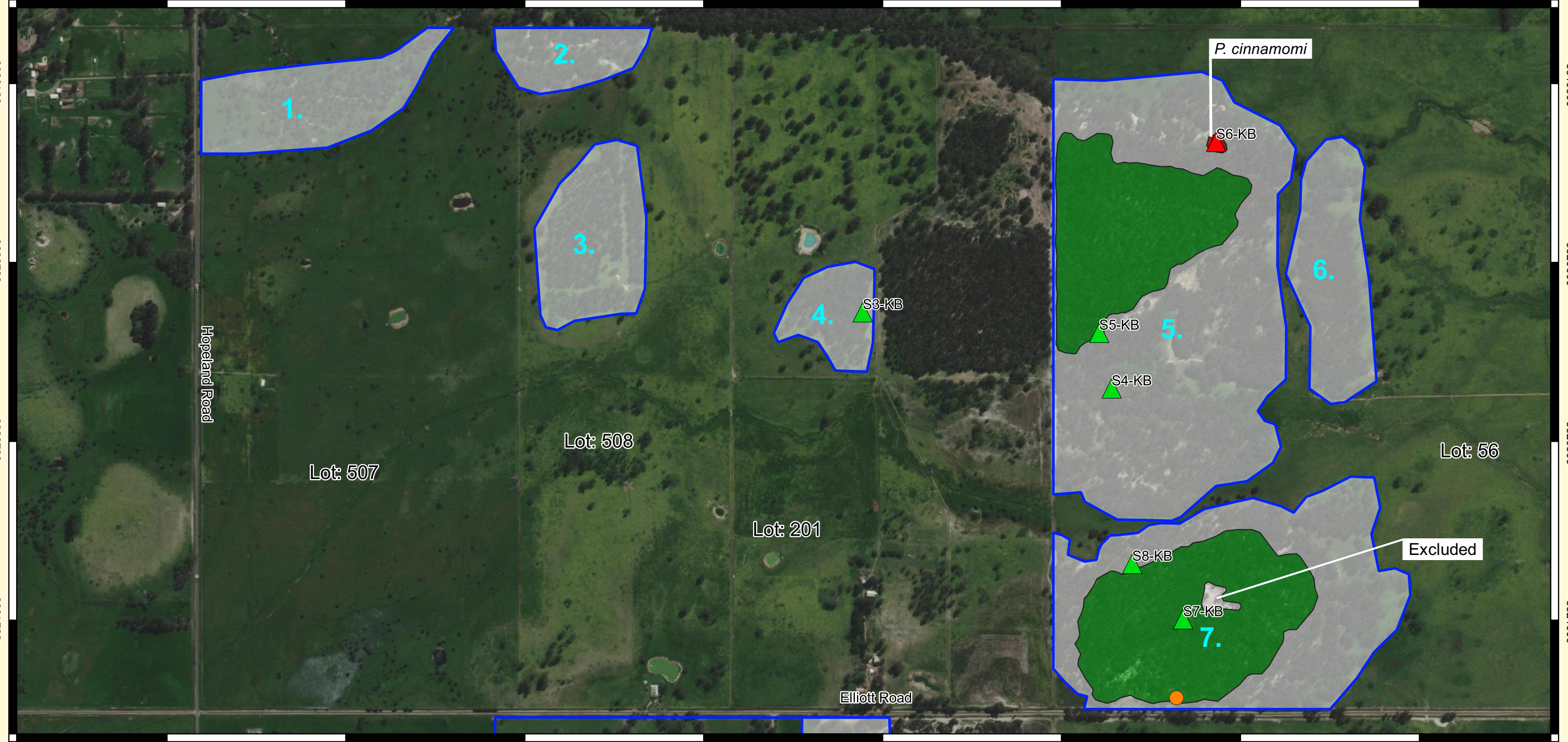


Figure 3: Phytophthora Dieback Surveys 2006 - 2016

12903000 12903500 12904000 12904500 12905000 12905500 12906000 12906500

-3819500
-3820000
-3820500
-3821000

-3819500
-3820000
-3820500
-3821000



12903000 12903500 12904000 12904500 12905000 12905500 12906000 12906500

Legend

- Assessment Boundary
- ▲ Sample Results: Positive
- ▲ Sample Results: Negative
- Infested
- Uninfested
- Uninterpretable
- Excluded
- Armillaria luteobubalina
- 1. Area Numbers

Phytophthora Occurrence Map Validity:

Pathogens can spread over time, therefore this map:

- Is only valid for 12 months to guide site disturbance activities (Expiry 02.08.2022).
- Can be revalidated for a maximum of 3 years after initial assessment (Expiry 02.08.2024).
- After 3 years, a new assessment is required by a DBCA Registered Interpreter.

Interpreter: B. Rikli
Date of Interpretation: 02.08.2021
Date of Expiry: 02.08.2022
Interpretation Method: Comprehensive

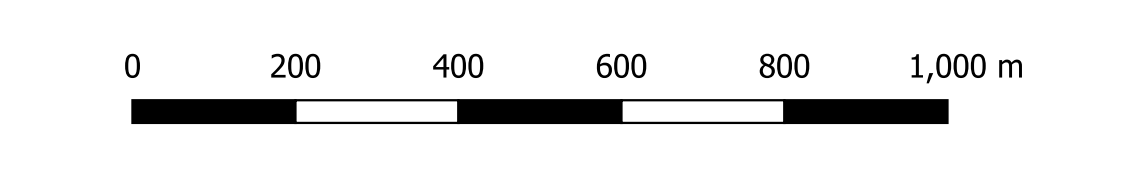
Area Statement	
Occurrence Category	Area (ha)
Infested	0.15
Uninfested	30.04
Uninterpretable	0
Excluded	93.76
Total Study Area	123.95

N

Datum: GDA 94
Projection: MGA Zone 50
Scale at A3

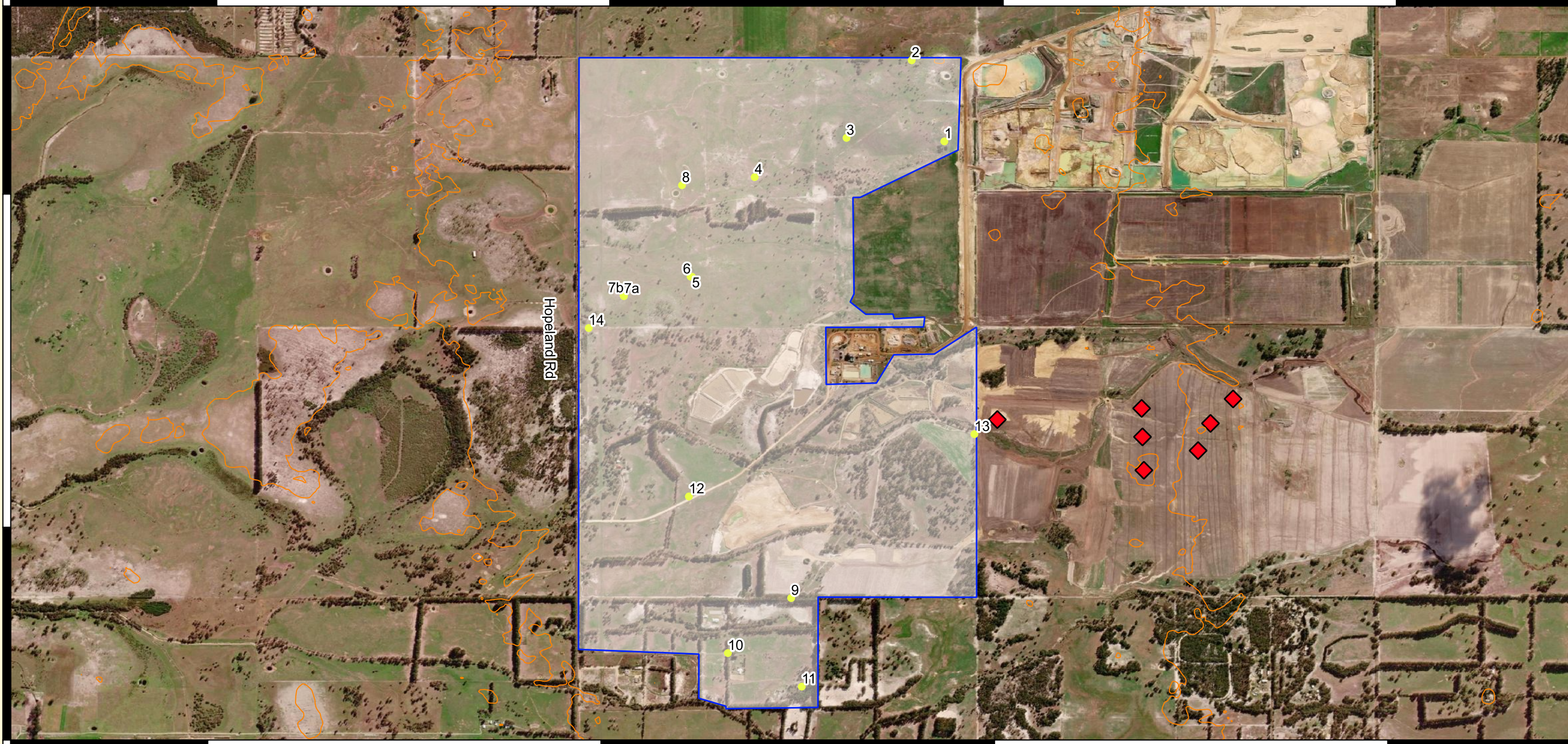
Figure 1.

**Phytophthora Occurrence Map
Keysbrook, Lots 507, 508, 201 and
56**



Bark Job: BARK_52
Revision 1





Legend

- Assessment Area
- Excluded Area
- 10m Countours
- Photos

Samples

- ◆ DIDMS (2021)

Interpreter: B. Rikli
 Assessment completion: 25/02/2023
 Interpretation Method: Comprehensive

Map Validity:
 Map revalidation due on 25/02/2024. This map should not be used for operational purposes for more than 1 year after assessment completion. Map may be revalidated after a re-check assessment for up to 3 years following initial assessment.

Map limitations:
 Information shown on this map is positioned relative to mapped features and was captured by hand-held GPS so it may not be entirely accurate. Therefore, field demarcation should be followed.

Area Statement

Occurrence categories	Area (ha)
Infested	0.00
Uninfested	0.00
Uninterpretable	0.00
Excluded	631.32
Total	631.32



Datum: GDA 94
 Projection: MGA Zone 50

Figure 1.
Phytophthora Occurrence Map:
Doral - KeysBrook

0 200 400 600 800 1,000 m



Scale @ A3 1:15,000

Bark Job:
 BARK_8_2023

Version 1



APPENDIX 1: WEED LOCATIONS

KLPL Priority Weed List

Taxonomic Name	Common Name	Declared Weed	Weed of National Significance	Treatment Priority	Baseline Survey	Observed around project area	Not recorded to date but known to occur in the Shire	Weed Strategy Rating (1999)
<i>Asparagus asparagoides</i>	Bridal creeper	Yes - C3	Yes	High			√	High
<i>Rubus</i> spp.	Blackberry	Yes - C3	Yes	High			√	Moderate
<i>Echium plantagineum</i>	Paterson's curse	Yes - C3		Very High (Treat as 1 st priority)		√		
<i>Emex australis</i>	Doublegee	Yes - C3		High			√	Low
<i>Gomphocarpus fruticosus</i>	Narrow leaf cotton bush	Yes - C3		Very High (Treat as 1 st priority)		√		Moderate
<i>Moraea flaccida</i>	Narrow leaf cape tulip	Yes - C3		High			√	
<i>Moraea miniata</i>	2 leaf cape tulip	Yes - C3		High			√	
<i>Silybum marianum</i>	Variegated thistle	Yes - C3		High			√	Low
<i>Solanum linnaeanum</i>	Apple of Sodom	Yes - C3		High		√	√	Moderate
<i>Zantedeschia aethiopica</i>	Arum lily	Yes - C3		Very High (Treat as 1 st priority)		√		High
<i>Eragrostis curvula</i>	African lovegrass			High		√		High
<i>Leptospermum laevigatum</i>	Victorian teatree			High	√			High
<i>Bromus diandrus</i>	Great brome			Medium	√			High
<i>Citrullus lanatus</i>	Pie Melon			Medium - treat opportunistically in rehabilitation areas		√		Low
<i>Ehrharta calycina</i>	Perennial veldt grass			Medium	√			High
<i>Oenothera drummondii</i>	Evening beach primrose			Medium		√		Moderate
<i>Phytolacca octandra</i>	Red inkweed			Medium – treat opportunistically		√		Mild
<i>Ricinus communis</i>	Castor oil plant			Medium – treat opportunistically		√		Low
<i>Solanum nigrum</i>	Black berry nightshade			Medium	√			Moderate
<i>Rumex crispus</i>	Curled dock			Medium	√			Mild
<i>Watsonia</i> sp.	Watsonia			Medium - treat opportunistically in rehabilitation areas		√		Moderate
<i>Aira caryophylla</i>	Silvery hairgrass			Low	√			Moderate

Taxonomic Name	Common Name	Declared Weed	Weed of National Significance	Treatment Priority	Baseline Survey	Observed around project area	Not recorded to date but known to occur in the Shire	Weed Strategy Rating (1999)
<i>Aira cupaniana</i>	Hairgrass			Low	√			Moderate
<i>Arctotheca calendula</i>	Cape weed			Low	√			Moderate
<i>Avena barbata</i>	Bearded oat			Low	√			Moderate
<i>Briza maxima</i>	Blowfly grass			Low	√			Moderate
<i>Briza minor</i>	Shivery grass			Low	√			Moderate
<i>Callitriche stagnalis</i>	Common starwort			Low	√			Moderate
<i>Carduus pycnocephalus</i>	Slender thistle			Low	√			Moderate
<i>Cucumis myriocarpus</i>	Paddy melon			Low	√	√		
<i>Cynodon dactylon</i>				Low	√			Moderate
<i>Cyperus tenellus</i>	Tiny flat sedge			Low	√			Moderate
<i>Disa bracteata</i>	South African orchid			Low	√			Moderate
<i>Ehrharta longiflora</i>	Annual veldt grass			Low	√			Moderate
<i>Hordeum leporinum</i>	Barley grass			Low	√			Moderate
<i>Hypochaeris glabra</i>	Flat weed			Low	√			Moderate
<i>Juncus bufonius</i>	Toad rush			Low	√			Moderate
<i>Juncus capitatus</i>				Low	√			Moderate
<i>Lolium rigidum</i>	Annual ryegrass			Low	√			Moderate
<i>Orobanche minor</i>	Lesser broom rape			Low	√			Moderate
<i>Parentucellia latifolia</i>	Red Bartsia			Low	√			Moderate
<i>Romulea rosea</i>	Guildford grass			Low	√			High
<i>Trifolium campestre</i>	Hop clover			Low	√			Moderate
<i>Ursinia anthemoides</i>	Ursinia			Low	√			Moderate
<i>Vulpia bromoides</i>	Squirrels tail fescue			Low	√			Moderate
<i>Vulpia myuros</i>	Silver grass			Low	√			Moderate
<i>Aira praecox</i>	Early hairgrass			Low	√			Low

Taxonomic Name	Common Name	Declared Weed	Weed of National Significance	Treatment Priority	Baseline Survey	Observed around project area	Not recorded to date but known to occur in the Shire	Weed Strategy Rating (1999)
<i>Bromus hordeaceus</i>	Soft brome			Low	√			Low
<i>Lotus suaveolens</i>	Hairy birdsfoot trefoil			Low	√			Low
<i>Ornithopus pinnatus</i>	Slender serradella			Low	√			Low
<i>Polygonum aviculare</i>	wireweed			Low		☐		Low
<i>Trifolium hirtum</i>	Rose clover			Low	√			Low

Weed Strategy Ratings (CALM, 1999) indicate the following:

High indicates this weed is prioritised for control and/or research

Moderate indicates control or research effort should be directed to it where possible, and it should be monitored

Low indicates that this species would require a low level of monitoring

C3 Weeds are defined as plant species declared under Section 22(2) of the BAM Act and are otherwise known as widespread or established weeds. They are categorised as C3 (management) control category under the BAM Act.

Prepared by:

ABEC ENVIRONMENTAL CONSULTING PTY LTD
2/17 Inverness Avenue, Dunsborough WA 6281

admin@abecenv.com.au

www.abecenvironmental.com.au



For and on behalf of:

Doral Mineral Sands Pty Ltd
ABN 18 096 342 451
ACN 096 342 451
Lot 7 Harris Road, Picton WA 6229
T: +61 8 9725 5444
F: +61 8 9725 4557
E: admin@doral.com.au
W: www.doral.com.au

The logo for Doral consists of the word 'Doral' in a large, bold, grey, sans-serif font. A thick yellow horizontal bar is positioned directly beneath the text.