



Report and recommendations of the Environmental Protection Authority



Yilgarn Operations - Deception Deposit

Cliffs Asia Pacific Iron Ore Pty Ltd

Report 1426

January 2012

Assessment on Proponent Information Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
16/05/11	Level of assessment set	
23/06/11	Scoping guideline issued by EPA	5
26/10/11	Proponent's Final API document received by EPA	17
09/01/12	Publication of EPA report (3 days after report to Minister)	10
23/01/12	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.



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Chairman
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Contents

	Page
1. Introduction and background	1
2. The proposal	2
3. Consultation	5
4. Key environmental factors	6
4.1 Vegetation and flora	6
4.2 Fauna	12
4.3 Mine closure and rehabilitation	16
5. Recommended conditions	19
5.1 Recommended conditions	19
6. Other advice	19
7. Conclusions	20
8. Recommendations	21

Tables

1. Summary of key proposal characteristics	2
2. Summary of issues raised during stakeholder consultation	5
3. Mine closure objectives	16

Figures

1. Regional setting	3
2. Project footprint and location of key components	4
3. Priority 1 and potential new flora species	10

Appendices

1. References	
2. Recommended Environmental Conditions	

1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal by Cliffs Asia Pacific Iron Ore Pty Ltd (Cliffs) to develop the Deception Deposit open cut iron ore mine, waste rock landform, ore stockpile, haul road and associated infrastructure, 150 kilometres (km) north of Southern Cross.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- The key environmental factors identified in the course of the assessment; and
- The EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

The proponent has submitted a referral document setting out the details of the proposal, potential environmental impacts and proposed commitments to manage those impacts.

The EPA considers that the proposal, as described, can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding.

The EPA has therefore determined under Section 40 of the EP Act that the level of assessment for the proposal is Assessment on Proponent Information (API), and this report provides the EPA advice and recommendations in accordance with Section 44 of the EP Act.

2. The proposal

Cliffs Asia Pacific Iron Ore Pty Ltd (Cliffs) proposes to develop an iron ore mine, known as the Deception Deposit, approximately 150 kilometres (km) north of Southern Cross. The Deception Deposit is proposed to be incorporated into Cliffs's existing Yilgarn Operations, which comprises iron ore mines at Koolyanobbing, Mount Jackson and the Windarling Ranges, an ore processing plant at Koolyanobbing and road and rail transport network between these operations and the Port of Esperance (Figures 1 and 2).

The Deception Deposit proposal includes a mine pit, a waste rock landform, an ore stockpile, other supporting infrastructure and a 22.3 km haul road to connect to the existing Cliffs's haul road network. The deposit is estimated to contain 9.2 million tonnes of ore and the mine life is expected to be eight years. The proposal will require the dewatering of 0.7 gigalitres of water per annum under an existing licence from the Department of Water.

The supporting infrastructure includes water storage dams that will be used for holding dewatering water before it is used for dust suppression on the haul road and at the mine site.

The main characteristics of the proposal are summarised in the table below.

Table 1: Summary of key proposal characteristics

Element	Description
General	
Mining method	Open cut
Total disturbance	Up to 550 hectares (ha)
Mine pit	
Area	118 ha
Depth	254 mAHD
Waste rock landform	
Area	258 ha
Elevation	550 mAHD
Ore Stockpile	
Area	53 ha
Support infrastructure	
Area	32 ha
Haul road	
Area	89 ha
Length	22.3 km
Width	Approximately 40 m

The potential impacts of the proposal are discussed by the proponent in the API document (Cliffs, 2011).

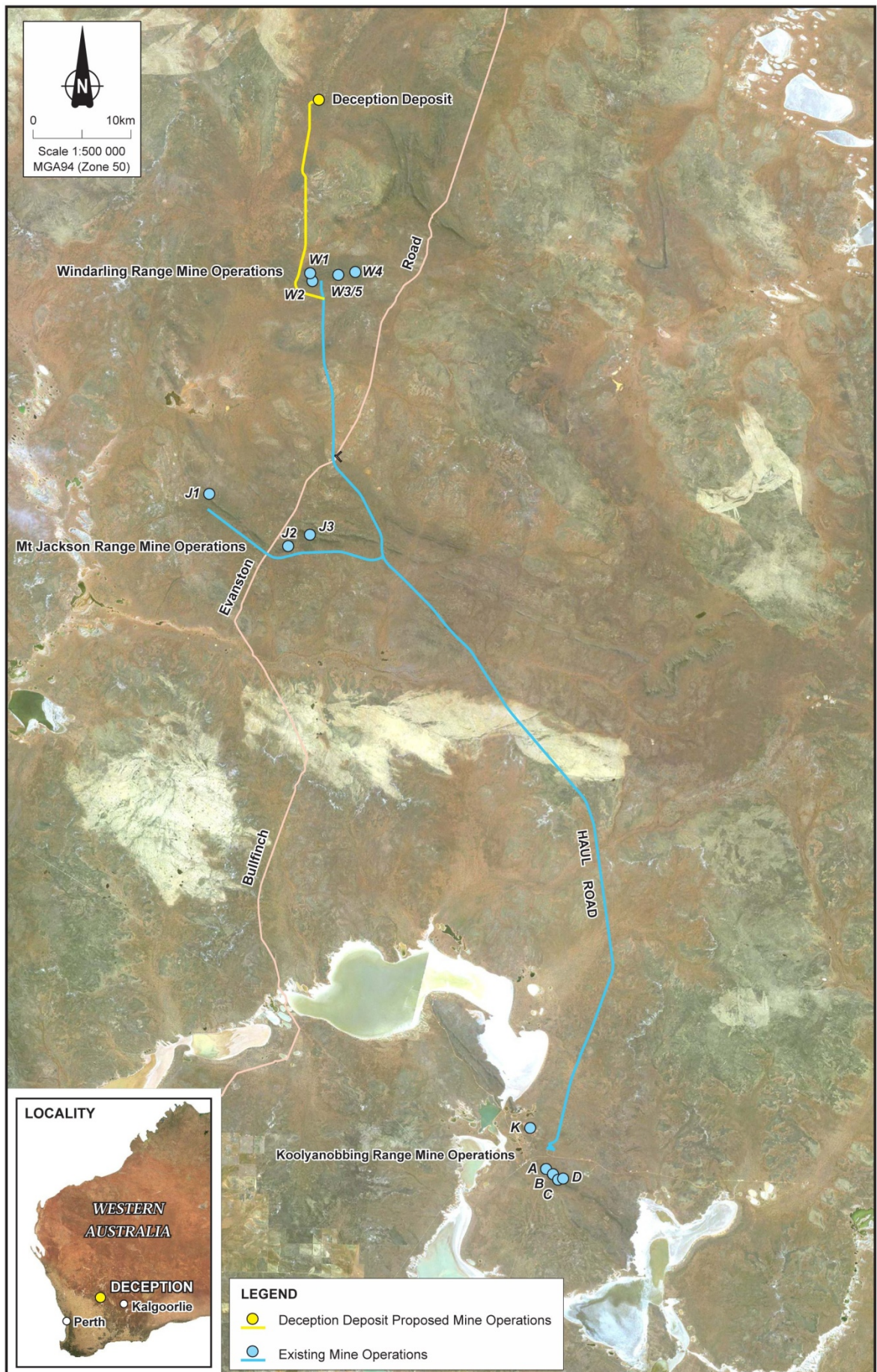


Figure 1 Regional setting

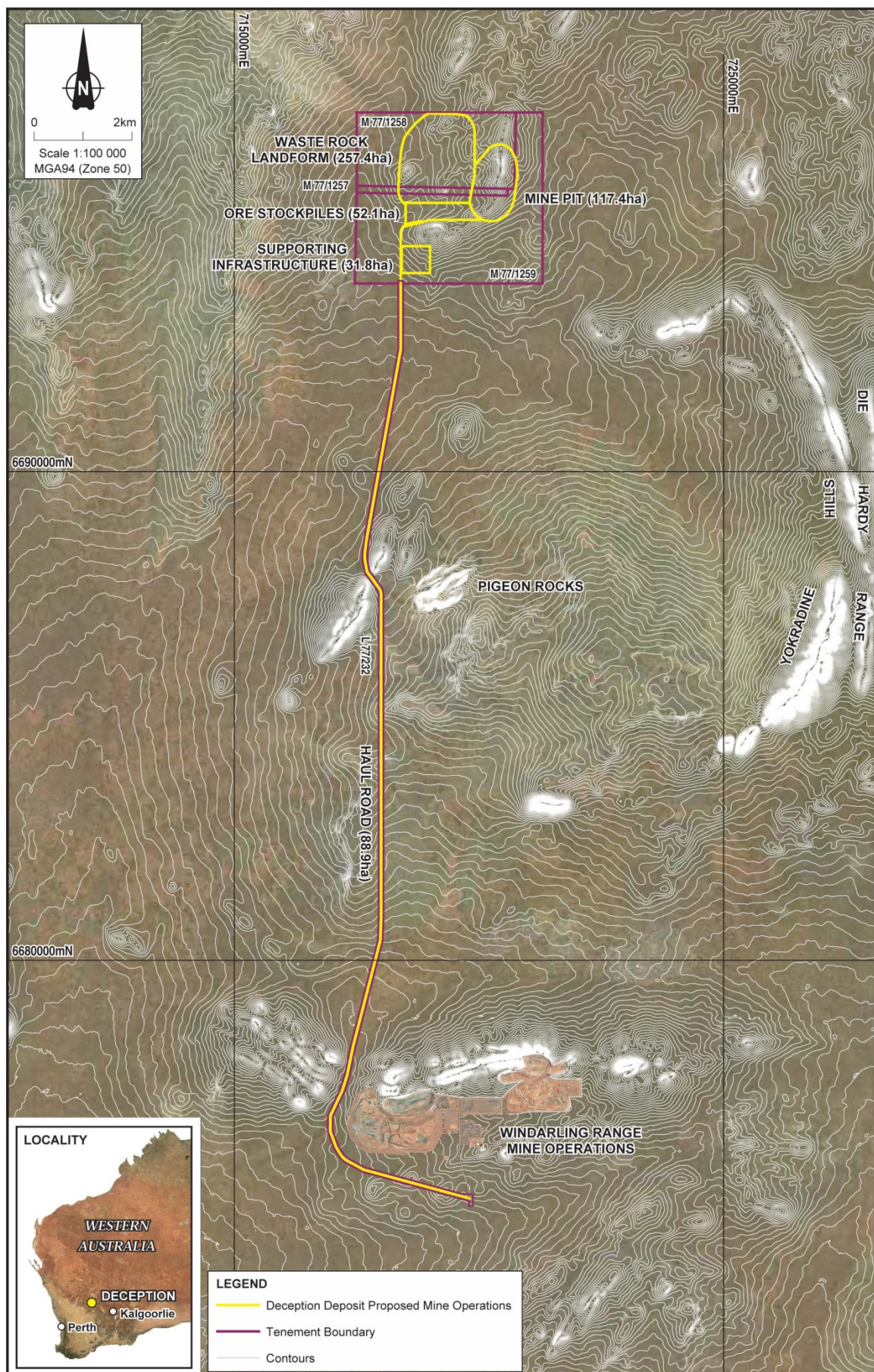


Figure 2 Project footprint and location of key components

3. Consultation

During the preparation of the API, the proponent has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted, the comments received and the proponent's response are detailed in the proponent's referral document (Cliffs, 2011).

A number of environmental issues were raised by the stakeholders during the consultation. Table 2 summarises the main issues raised and details the actions taken by the proponent to address the issues.

Table 2: Summary of issues raised during stakeholder consultation

Issue raised	Stakeholder	Response
<ul style="list-style-type: none"> Impacts on Priority 1 flora species. Impacts on proposed Mount Manning Conservation and Mining Reserve. Visual impact on nearby ranges of proposal. Mine closure including development of completion criteria and creation of a permanent surface waterbody within the pit. 	Department of Environment and Conservation (DEC)	Cliffs committed to ensuring matters raised by the DEC were addressed in the API document.
<ul style="list-style-type: none"> Groundwater dewatering and modelling. Land use planning. Post-mining permanent surface water within the mine pit Process for groundwater licensing. 	Department of Water (DoW)	DoW notes the relevant water aspects of the proposal and advises that they can be managed under the existing groundwater licence.
<ul style="list-style-type: none"> Mine closure planning 	Department of Mines and Petroleum (DMP)	Cliffs prepared draft mine closure plan consistent with DMP and EPA <i>Guidelines for preparing mine closure plans</i>

In addition Cliffs undertook consultation with the Shire of Menzies and the Shire of Yilgarn who raised no significant issues with the proposal. The Cliffs Yilgarn Operations Community Reference Group also meets twice a year to allow Cliffs to consult with interested non-government organisations on the environmental aspects of Cliffs's Yilgarn Operations.

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

4. Key environmental factors

It is the EPA's opinion that the following key environmental factors relevant to the proposal require evaluation in this report:

- (a) Vegetation and flora
- (b) Fauna
- (c) Mine closure and rehabilitation

The key environmental factors are discussed in Sections 4.1 – 4.3. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

4.1 Vegetation and flora

Description

The potential impacts to vegetation and flora from the proposal are the direct clearing of 550 ha for the construction of the mine pit, waste rock landform, ore stockpiles, haul road and associated infrastructure. Potential indirect impacts to vegetation could occur through the introduction of weeds, fires that are started due to mining operations and smothering from dust. Cliffs also proposes to use saline water taken from the mine pit for dust suppression which could lead to indirect impacts on vegetation and flora, and affect the success of rehabilitation. Water taken from the pits during dewatering is estimated to have a salinity of around 25,000 mg/L.

The Deception Deposit is located within the Coolgardie Bioregion as classified by the Interim Biogeographic Regionalisation of Australia framework. Typical vegetation in the bioregion consists of mallees and scrubs on sandplains associated with lateritised uplands, playas and granite outcrops and diverse woodlands rich in endemic eucalypts, on low greenstone hills, valley alluvials and broad plains of calcareous earths. In the west of the bioregion, the scrubs are rich in endemic Proteaceae and in the east they are rich in endemic acacias (Environment Australia, 2000).

The Deception Deposit study area lies within the Coolgardie Botanical District of the South Western Interzone as defined by Beard (Biota, 2011a). Vegetation of the interzone is described as being dominated by York Gum (*Eucalyptus loxophleba*) and Salmon Gum (*Eucalyptus salmonophloia*) woodlands and Acacia thickets containing numerous Acacia species (Payne et al. 1998; Biota, 2011a).

Cliffs commissioned Biota Environmental Sciences (Biota) to conduct a vegetation and flora survey of the Deception Deposit proposal area. The survey work was carried out across five periods in 2010 and 2011 and was consistent with the requirements of EPA Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004a). The Biota survey built on previous work carried out by Western Botanical between 2008 and 2010 associated with mineral exploration drilling being conducted by Cliffs. The Biota vegetation and flora survey report is included as an appendix to the Deception Deposit API document.

Vegetation units

The vegetation and flora surveys identified 33 vegetation units within the Deception Deposit area of which 28 are expected to be impacted by this proposal. The vegetation units that are expected to be impacted and the area of impact are listed in Table 3-2 of the proponent's API document (Cliffs, 2011).

Many of the vegetation units recorded at the Deception Deposit (19 of the 33) have also been recorded by Cliffs during surveys carried out as part of the company's Windarling Range operations. None of the vegetation units identified are considered Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs).

Survey work identified four vegetation units of local conservation significance of which disturbance should be avoided or minimised during mine planning. These vegetation units are:

- Unit 4.01 *Ptilotus obovatus* var. *obovatus* low shrubland, which is considered analogous to a component of the Priority 1 Windarling Ranges vegetation complex (BIF) PEC. There are two stands of this unit in the mine area which are analogous to the PEC.
- Units 1.07 and 1.08 *Acacia effusifolia* tall open shrublands over mixed shrubs, often containing Myrtaceae species, which support a large number of the records of Priority flora and other species of interest. These two units occur mainly in the southern part of the haul road corridor and extend to the east and west of the corridor.
- Unit 1.06 *Dryandra arborea* tall shrubland on an outcropping BIF rise. This unit is found in the mine area and is dominated by the Priority 4 *D. arborea* and is a relatively small area. Vegetation dominated by *D. arborea* on banded ironstone hills in the Menzies area has been classified as a PEC.

Cliffs has avoided disturbing these vegetation units where possible in the mine area throughout the design of the mine layout, however opportunities to avoid these units have been limited in the haul road area due to the alignment of the tenements for the haul road.

Biota identified that there are limited signs of grazing and weeds and disturbance from past mining activities in the study area and surrounds. As a

result all of the vegetation in the area is considered in pristine to excellent condition (Biota, 2011a).

Flora

Biota (2011a) identified 324 native species of flora in the study area, from 146 genera and belonging to 54 families. The Biota survey also identified 11 species of weeds in the study area.

Two species of Declared Rare Flora (DRF) were identified as potentially occurring in the area, however, none of the species found during the surveys were listed as DRF under the *Wildlife Conservation Act 1950* (WA) or threatened flora under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The surveys also identified seven species of flora classified as priority species by the DEC. They are:

- *Baeckea ochropetala* (P1);
- *Baeckea* sp. Parker Range (P3);
- *Philotheca coateana* (P3);
- *Spartothamnella* sp. Helena & Aurora Range (P3);
- *Banksia arborea* (P4);
- *Eucalyptus formanii* (P4); and
- *Grevillea erectiloba* (P4).

Baeckea ochropetala was originally thought to be a widespread species. However a recent review of previously collected specimens of this species at the WA Herbarium found that only one of these samples actually matched the type specimen. This specimen was recorded as being found between Ullaring and Mount Jackson, meaning it was collected within the Deception/Windarling locality. As the species was only known from two locations it was listed as a Priority 1 species by the DEC in early 2011 (Biota, 2011a; Cliffs, 2011).

The species is now known from the specimen at the WA Herbarium and the specimens collected during survey worked carried out for the environmental impact assessment of the Deception Deposit. The survey identified 9740 individuals of *Baeckea ochropetala* in the area of the Deception Deposit proposal, of which an estimated 1217 individuals would be directly impacted by the proposal.

Since the preparation of the API document further flora surveys of the area have been undertaken to provide further information on the abundance of *B. ochropetala*. Identification of more individuals of *Baeckea ochropetala* has increased the population size to approximately 13,000 individuals.

The original Biota survey also identified two new potential species or subspecies, being *Philotheca deserti* subsp. nov and *Calytrix* sp. nov.. Biota (2011a) indicated that *Philotheca. deserti* subsp. nov. may be considered a new subspecies that is likely to be nominated as a Priority flora species. *Calytrix* sp.

nov. is considered likely to be a new species (Biota, 2011a) which has been recorded in the Deception Deposit area and at six locations at Mount Jackson, approximately 45 km south of the Deception Deposit mine area, by Western Botanical during vegetation and flora survey work associated with other Cliffs operations. The Mount Jackson samples are informally described by the name *Calytrix* sp. Jackson Range duricrust affin. *Glutinosa* (Biota, 2011a).

Malcolm Trudgen and Associates have inspected specimens of *Calytrix* sp. nov. and *Calytrix* sp. Jackson Range duricrust affin. *Glutinosa* for Cliffs in October 2011 and confirmed that the *Calytrix* species found at the Deception Deposit area is the same species as the *Calytrix* found at Mount Jackson. Further counts of the populations at Mount Jackson have identified a total of 1020 plants across seven populations (Cliffs 2011).

Further taxonomic work by Cliffs in consultation with the WA Herbarium has determined that the potential new subspecies is not *Philotheca deserti* subsp. nov. but is an existing subspecies being *Philotheca deserti* spp. *brevifolia*. *Philotheca deserti* spp. *brevifolia* is classified as a Priority 1 flora species. The Deception Deposit proposal will directly impact on 300 of the 1003 individuals surveyed in the proposal area. Cliffs has previously recorded a population of 1400 individuals of *Philotheca deserti* spp. *brevifolia* adjacent to its Koolyanobbing-Windarling haul road and this species has a recorded regional distribution of approximately 140 km.

Table 3-1 of the Deception Deposit API document shows the number of individuals of each of the priority and potential new species of flora that will be impacted by the proposal. Figure 3 below shows the location of populations of *Calytrix* sp. nov, *Baeckea ochropetala* and *Philotheca deserti* spp. *brevifolia* in the project area.

Cliffs has proposed a number of management measures to reduce the impacts of the proposal on vegetation and flora. Cliffs has focussed on developing management plans to reduce the impacts. The Land Clearing Management Plan outlines the management actions proposed to reduce the impacts. These measures include:

1. Minimising vegetation clearing;
2. An internal site disturbance permit system to control clearing;
3. Monitoring of land clearing;
4. Annual auditing of clearing against the site disturbance permit;
5. Rehabilitation of disturbed areas;
6. Reporting to government of land clearing areas; and
7. Education and training of mine personnel.

To manage the indirect impacts, Cliffs has also developed a Dust Management Plan, Weed Management Plan and Fire Management Plan. All of these management plans have been included as appendices to the API document.

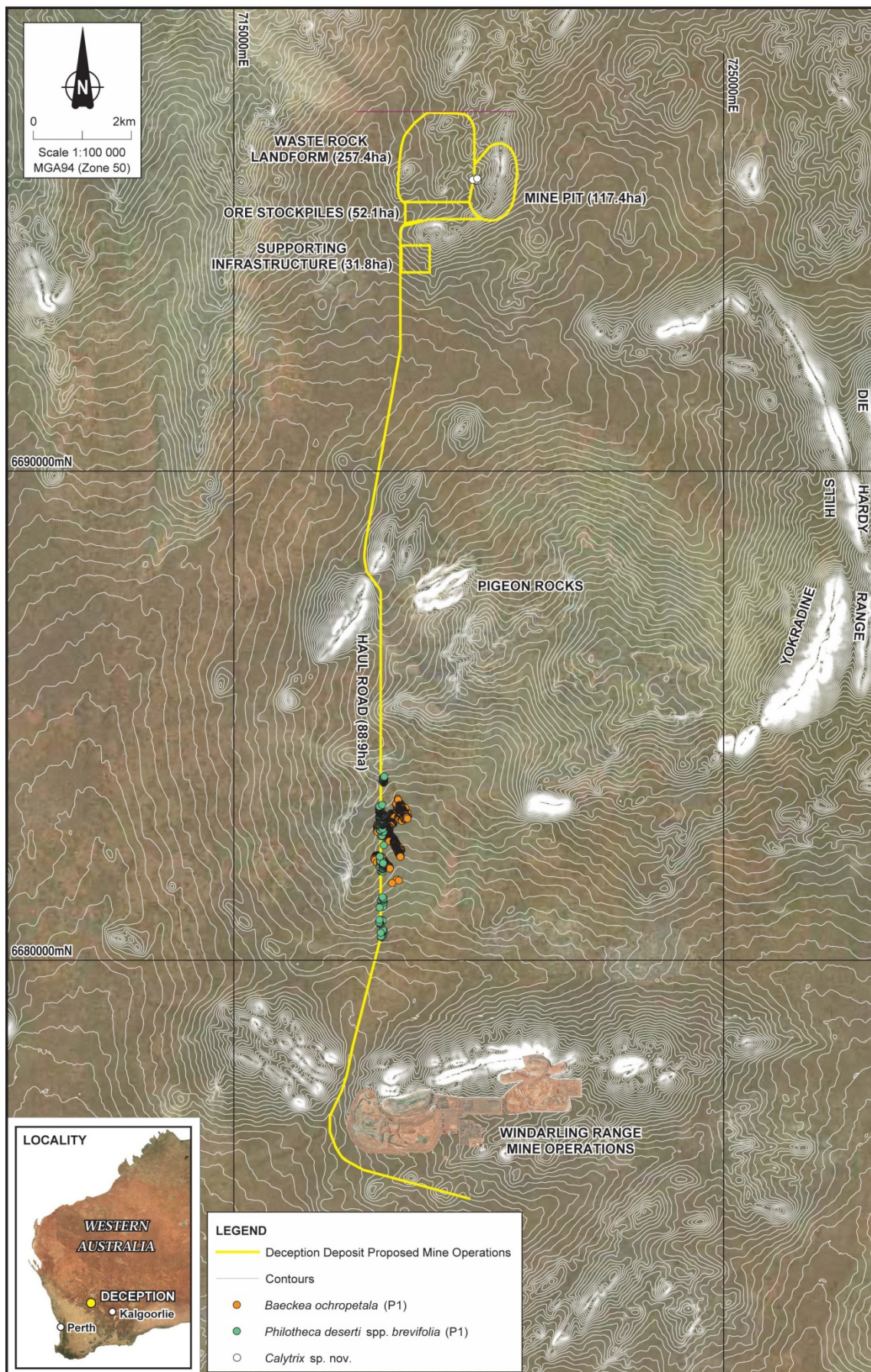


Figure 3 Priority 1 and potential new flora species

Assessment

The EPA's environmental objectives for this factor are to:

- maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge; and
- ensure that native flora are conserved consistent with the *Wildlife Conservation Act 1950* and the *Environment Protection and Biodiversity Conservation Act 1999*.

The EPA notes that the vegetation units surveyed in the proposal area are also found at locations outside the area of disturbance for the Deception Deposit proposal. The EPA is aware that the proponent has taken measures to minimise its impact on vegetation units recognised in vegetation surveys of the area as being of local conservation significance. The EPA notes that no TECs or PECs will be impacted by the proposal.

The proponent has undertaken additional targeted survey work to identify further samples of *Baeckea ochropetala* that are not within the area of direct impact of the Deception Deposit proposal.

The EPA notes that the direct impact of disturbance will be on 9.4% of the identified individuals of the P1 species *Baeckea ochropetala* in the Deception Deposit proposal area. The EPA accepts the conclusion that further surveying in the region is likely to yield additional populations of *Baeckea ochropetala*. As additional surveys are likely to yield additional populations and less than 10% of the population is to be disturbed, the EPA does not consider the impact on *Baeckea ochropetala* to be significant.

The EPA notes that the local direct impact on *Philothea deserti* spp. *brevifolia* is 30% of the population that has been identified in the proposal area. As this species has a distribution outside of the project area, with a known population of 1400 individuals that are not currently under threat, the impact to the species on a whole is not considered significant by the EPA.

The EPA notes that taxonomic work has indicated that the potential new *Calytrix* species found at Deception is also found at Mount Jackson. The EPA considers that the clearing of one whole population for the Deception Deposit proposal will not compromise the viability of the species. In coming to this conclusion the EPA notes that the populations at Mount Jackson are not currently under direct threat by mining activities in the Mount Jackson area.

In view of the potential impact on these species and the limited regional information about the location and extent of these species, the EPA has recommended a condition to ensure a targeted regional survey is undertaken to confirm that additional populations and individuals are to be found in the region.

The EPA notes that the Deception Deposit proposal may have indirect impacts on vegetation through dust, fire, weed introduction and use of saline water for dust suppression.

The EPA notes that management plans have been developed to manage the indirect impacts of this proposal on flora. The EPA considers that the indirect impacts can meet the EPA's objective for this factor, provided the Minister applies recommended conditions 6 and 7. These conditions require the monitoring of vegetation outside the area of direct disturbance to ensure that the proponent is successfully managing its project to avoid indirect impacts and has management measures that can be implemented should the proposal be causing unexpected indirect impacts.

The EPA considered whether the residual impact from clearing the population of *Calytrix* sp. nov. found at Deception Deposit required an environmental offset, as this represents the entire population of a newly described species. The EPA concluded that recommended condition 7 requiring further targeted survey work to identify more populations of *Calytrix* sp. nov. is sufficient to address any significant residual impact and therefore the need for offsets.

The EPA has recommended in condition 7 that the scope and extent of the targeted regional survey is appropriate to the risk of the impacts on *Baeckea ochropetala*, *Philothea deserti* spp. *brevifolia* and *Calytrix* sp. nov. based on their conservation status.

Summary

Having particular regard to the:

- identification of further samples of *Baeckea ochropetala* and *Calytrix* sp. nov. outside the project footprint;
- recommended condition 7-3 requiring that the haul road alignment minimise the disturbance of P1 flora species.
- expert taxonomic assessment that *Calytrix* sp. nov. found at Deception is the same species as *Calytrix* sp. Jackson Range duricrust affin. *Glutinosa*; and
- recommended conditions 6 and 7 to ensure the indirect impacts of the project are being managed appropriately.

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

4.2 Fauna

Description

Biota were also commissioned to undertake a number of fauna studies in the area in 2010 and 2011. Fauna studies completed were on vertebrate fauna, short range endemic (SRE) invertebrate species and troglobitic fauna. Reports

from these surveys are included as appendices to the API document for the project.

The survey work identified five main fauna habitats. They are plains supporting shrubland on loams, plains supporting shrubland on yellow sand, plains supporting woodlands on loam, rocky slope of deposit with mallee and/or shrubs and granite outcropping (Biota, 2011b).

The dominant granite outcropping locally is Pigeon Rocks, which falls within the study area but is not part of the area that would be disturbed by the Deception Deposit proposal.

The vertebrate fauna survey identified 99 species, comprising 51 species of birds, 26 reptile species, 20 mammals and 2 amphibians.

Fauna species of conservation significance recorded in the project area were the Malleefowl *Leipoa ocellata* and the Rainbow Bee-Eater *Merops ornatus* which are protected under the EPBC Act and the *Wildlife Conservation Act 1950* (WA) and the Crested Bellbird (Southern) *Oreoica gutturalis gutturalis* and White-Browed Babbler (Wheatbelt) *Pomatostomus superciliosus ashby* which are listed as Priority 4 fauna by the DEC.

Malleefowl have the potential to be impacted by the Deception Deposit proposal as the vegetation descriptions from surveying described a range of tall shrublands which contain Casuarina species and associated shrubs which provide the closed canopy that Malleefowl are known to utilise in the local area. The potential impacts to Malleefowl are considered in more detail below.

The availability of large amounts of habitat outside the proposal area and the mobility of these birds species, means that significant impacts to the Rainbow Bee-Eater, Crested Bellbird and White-Browed Babbler are not expected as a result of this proposal.

Cliff's engaged Biota to carry out a Level 2 survey to identify any SRE fauna that may be impacted by the proposal. The survey identified 26 taxa that contain groups known to support SRE of which 20 were thought to be SRE. The survey did not identify any taxa of SRE that are listed under *Wildlife Conservation (Specially Protected Fauna) Notice 2010*. The Biota report also states that "the majority of taxa are either undescribed or tentatively identified, and all are poorly known, hence establishing the broader distribution and likely SRE status of any taxon of the taxa is therefore very difficult" (Biota, 2011c).

Cliffs asserts that all SRE taxa recorded within the proposal area have also been recorded in contextual sites outside of the proposal area or are considered likely to occur outside the proposal area based on suitable habitat. This position is also noted in the Biota report associated with the SRE survey (Biota, 2011c).

Surveys did not identify any troglofauna being present in the vicinity of the proposal (Biota, 2011d). The proponent has not undertaken any surveys for

stygo fauna in the vicinity of the Deception Deposit. The proponent asserts that surveys at the Windarling Range, Mount Jackson Range and Koolyanobbing Range did not identify any stygo fauna and that these sites are of sufficient proximity (between approximately 20 to 100 km away) to the Deception Deposit that the results of these surveys can be used to conclude that stygo fauna species are unlikely to be found in the proposal area (Cliffs, 2011).

Therefore Cliffs contends that no species of conservation significant SRE, troglo fauna or stygo fauna are expected to be impacted by this proposal.

Malleefowl

Malleefowl are listed as vulnerable under the EPBC Act and as a Specially Protected Fauna under the *Wildlife Conservation Act 1950*. Malleefowl were once broadly distributed across the southern half of Australia, but have had a significant range reduction as a result of habitat loss and fragmentation due to clearing for agriculture or pastoral activities (Cliffs, 2011; Department of Sustainability, Environment, Water, Population and Communities, 2011).

Inactive Malleefowl nest mounds were found within the study area for the proposal. One of the nest mounds was recorded within the mine pit area and will be directly impacted, whilst two were found adjacent to the southern end of the haul road, outside the area of direct impact. Cliffs has indicated that active nest mounds may occur beyond the survey area in proximity to the Deception Deposit and that Malleefowl could utilise the proposal area for foraging (Cliffs, 2011).

The DEC has provided comment that Malleefowl are likely to be present in the proposal area. The Office of the Environmental Protection Authority (OEPA) advises that previous surveys for Malleefowl by the Malleefowl Preservation Group for Cliffs predecessor Portman Iron Ore Ltd have found recordings of active Malleefowl mounds in similar habitat as can be found in the Deception Deposit proposal area. However the OEPA also advises that the proposal area is unlikely to have significant numbers of Malleefowl based on the low number of sightings and the low number of old inactive nest mounds compared to other areas where these mounds are more abundant such as Parker Range.

Cliffs has developed a fauna management plan for the Deception Deposit. The management plan details what actions Cliffs will undertake to minimise the impacts to native fauna and assist in reducing the abundance of introduced fauna. The fauna management plan is included as an appendix to the API document.

Assessment

The EPA's environmental objectives for this factor are:

- protect Threatened Fauna and Priority Fauna species and their habitats, consistent with the provisions of the *Wildlife Conservation Act 1950*; and

- maintain the abundance, species diversity, geographic distribution and productivity of terrestrial fauna at species and ecosystem levels through the avoidance or management of adverse impacts and the improvement of knowledge.

The EPA notes that no conservation significant SRE species were identified in the proposal area. The EPA considers that the use of available habitat as a surrogate for determining distribution of an SRE is acceptable in accordance with EPA Guidance Statement 20 *Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia*. The EPA notes that habitat for SRE taxa sampled in the Deception Deposit area is found outside the proposal area and the proposal is unlikely to cause significant impact to the 20 SRE taxa identified.

The EPA also notes that due to the availability of habitat outside the project area and the mobility of the Rainbow Bee-Eater, the Crested Bellbird and the White-Browed Babbler these species are unlikely to suffer any significant impact from this proposal.

Malleefowl are the most likely fauna at risk of significant impacts. Whilst survey work did not record any live Malleefowl individuals or active nests, the EPA notes the OEPA advice that whilst Malleefowl may utilise the Deception Deposit area, the proposal area is unlikely to have significant numbers of Malleefowl and that the small numbers of nest mounds in comparison to other areas in the region indicate that the area is not key Malleefowl habitat.

The EPA has, however, recommended condition 8 to confirm that the proposal is not having a significant impact on Malleefowl populations, through the reporting of any Malleefowl fatalities associated with this proposal.

The EPA notes that the proponent has prepared a fauna management plan that details how the project will be managed to reduce the likelihood of significant impacts to fauna.

The EPA considers that as the habitat that would be disturbed as a result of this proposal is not key Malleefowl habitat and that the area contains low numbers of nest mounds in comparison to other areas, then implementation of the project will not result in a significant residual impact that requires an environmental offset.

Summary

Having particular regard to the:

- advice that the proposal area does not contain significant Malleefowl habitat;
- that the proposal will disturb one inactive Malleefowl nest mound; and
- the Cliffs Yilgarn Operations Fauna Management Plan.

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

4.3 Mine closure and rehabilitation

Description

The Deception Deposit mine life is estimated at eight years over which time total disturbance for the proposal is estimated at 550 ha. The proposal area has had minimal historical disturbance from mining and pastoral activity.

The Deception Deposit proposal is situated within the Yilgarn Craton and in an area of low rise in the landscape. Across the proposal area, the elevation of the landscape ranges from 460 mAHD to 510 mAHD, with the elevation of across the pit area ranging between 480 mAHD to 510 mAHD.

Cliffs has subdivided the Deception Deposit proposal into five different management units which will require mine closure planning and rehabilitation management specific to the five units.

The Deception Deposit API document contains a table which specifies the mine closure objectives for the different components of the Deception Deposit proposal. This table has been reproduced below.

Table 3: Mine closure objectives

Management Unit	Mine Closure Objective
Mine pit	Abandonment bunding installed
Waste rock landform	Safe, stable and non-polluting
	Rehabilitated with native vegetation
Ore stockpiles	Rehabilitated with native vegetation
Support infrastructure	Infrastructure removed
	Contamination remediated
	Rehabilitated with native vegetation
Haul road	Rehabilitated with native vegetation

Mine void

It is Cliffs' intention to leave an open mine void once mining is complete and not conduct any backfilling of the pit. The final pit is estimated to be 230 m below ground level and 170 m below the natural groundwater level. It is proposed to install an abandonment bund around the mine void that is 2 m high, 5 m wide and within 10 m of the footprint of the pit to provide safety for fauna and humans.

Groundwater modelling carried out by the proponent has predicted that water will begin to fill the pit once mine dewatering ceases and within 12 years the water will have reached a depth of 65 m from the pit floor. The pit is predicted to act as a groundwater sink and increase with salinity over time due to

evaporation concentrating salt levels within the void. The proponent has predicted that the salinity will remain within the natural range of salinity in the area once it begins to stabilise.

Geochemical characterisation of the mine pit walls identified that no potentially acid forming (PAF) material will be found in the walls. There is some PAF material located several metres below the base of the pit and Cliffs has predicted that this will not impact water quality in the pits post-mining. The proponent has asserted that should mine pit water quality change as a result of PAF material (against predictions) then there will be no impact on the surrounding groundwater as the change in water quality will be confined to the Deception Deposit mine pit.

The proponent has proposed no mine closure management measures for water quality in the mine pit because it believes there are no management actions Cliffs could implement to control water quality and it does not consider them necessary because water quality changes would be confined to the mine pit.

Waste rock landform

The proposal is to create a waste rock landform that would contain an estimated 57 million bank cubic metres of waste rock across an area of 255 ha. The waste rock landform will also be used to store cleared vegetation and topsoil for use in mining rehabilitation. Geochemical characterisation of the waste rock carried out by the proponent has predicted that the majority of the waste rock (99%) is classified as non potentially acid forming and is non-saline material (Soil Water Consultants, 2011). Cliffs has proposed to use the waste rock landform to dispose of inert and putrescible waste as well as any contaminated waste such as hydrocarbon contaminated soil.

The waste rock landform will have an outer capping and will have stockpiled topsoil and subsoil returned to provide growth media for rehabilitation. Cliffs has proposed progressive rehabilitation of the landform with rehabilitation predicted to commence in 2016 on construction of the first lift of the landform.

Infrastructure including haul roads

At the completion of mining operations Cliffs has proposed to remove all above ground infrastructure, which will then be re-used, recycled or disposed of as deemed appropriate. Once any infrastructure has been removed the support infrastructure and ore stockpile areas will be rehabilitated with native vegetation according to Cliffs's internal rehabilitation standards (Cliffs, 2011).

Cliffs believes the haul road may have suitable post mining land uses, such as for other mining operations, conservation purposes, tourism or for pastoral lease purposes. Cliffs has proposed to make decisions about the retention or closure of the haul road, and internal mine roads, closer to the time of mine closure. Cliffs intend on conducting consultation with the relevant landowners, tenement holders, the DMP and the EPA when making this decision.

Cliffs has prepared a mine closure plan for the Deception Deposit to address the requirements of the EPA/DMP *Guidelines for Preparing Mine Closure Plans*. Input from the OEPA into the draft mine closure plan has been sought by Cliffs and Cliffs has indicated that improvements and changes to the draft plan recommended by the OEPA will be incorporated into the final version of the plan.

Cliffs has proposed interim completion criteria for mine closure. These interim criteria are contained in Table 3-4 of the proponent's API document.

Assessment

The EPA's environmental objectives for these factors are to ensure that:

- as far as practicable, rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values;
- mine closure planning and rehabilitation are carried out in a coordinated, ecologically sustainable, progressive manner and are treated as an integral part of mine development, consistent with the ANZMEC/MCA *Strategic Framework for Mine Closure* and the EPA/DMP *Guidelines for Preparing Mine Closure Plans*;
- the visual amenity of the area and adjacent surrounds are not unduly affected by the proposal; and
- regionally significant landforms and geo-conservation values are protected.

The EPA notes that the proponent prepared a draft mine closure plan which is consistent with the DMP/EPA *Guidelines for Preparing Mine Closure Plans*.

The EPA notes the proponent's prediction that the open void will act as a groundwater sink, which will become more saline over time. The EPA also notes that a bund will be erected to prevent fauna from accessing the open void. It is the EPA's preference that mine voids are backfilled to reduce the overall project footprint and the potential for ongoing environmental impacts. Should the Deception Deposit proposal be implemented, the EPA encourages Cliffs to continue to explore opportunities for backfilling the mine void above the water table, noting that the project is in area set aside as a future conservation reserve to be managed by the DEC.

The EPA notes that closure and rehabilitation of the haul road will be subject to further consideration at a later date based on the agreed post mining use of the haul road by relevant stakeholders.

The EPA acknowledges that the proponent has committed to progressive rehabilitation and post-closure monitoring. The proponent has developed a set of interim completion criteria which would be revised, based on additional data

collected during proposal implementation, and made more specific to the closure issues for each management unit.

In view of the statutory requirements of the *Mining Act 1978*, the EPA is satisfied that rehabilitation and, mine closure and decommissioning can be managed by the DMP consistent with the *DMP/EPA Guidelines for Preparing Mine Closure Plans*. Key matters to be considered by the DMP in approving the mine closure plan have been discussed in other advice in Section 6.

Summary

Having particular regard to the:

- Yilgarn Operations Deception Deposit mine closure plan; and
- closure and rehabilitation being managed by the DMP in accordance with the requirements of the *Mining Act 1978*.

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

5. Recommended conditions

In developing recommended conditions for each project, the EPA's preferred course of action is to have the proponent provide an array of commitments to ameliorate the impacts of the proposal on the environment.

5.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Cliffs Asia Pacific Iron Ore Pty Ltd to develop the Deception Deposit iron mine and associated infrastructure is approved for implementation. These conditions are presented in Appendix 2. Matters addressed in the conditions include:

- Vegetation and flora – monitoring of vegetation health and abundance and management of indirect impacts of the project;
- Conservation significant and recently described flora – delineation of disturbance areas to minimise impact, monitoring and management and additional targeted regional survey work; and
- Fauna – limiting disturbance to one inactive Malleefowl mound.

6. Other advice

Mine closure and rehabilitation

The EPA recommends that the following key issues be addressed in the mine closure plan for the Deception Deposit:

- If the proposal results in an water filled open mine void, the void does not compromise the conservation values of nature conservation reserves;
- Consultation with the DEC to determine if further geochemical testing, including kinetic testing, is required to improve predictions on the possibility for non-acid metalliferous drainage, giving consideration to the results of static tests already undertaken and the risk that metalliferous drainage will occur;
- Ensure that the timeframes for post closure monitoring to assess whether completion criteria are being met are appropriate given the unpredictable rainfall in the project area; and
- Consultation with the DEC as the responsible land manager of the area post mine closure on revised completion criteria and other closure issues for the Deception Deposit proposal.

7. Conclusions

The EPA has considered the proposal by Cliffs Asia Pacific Iron Ore Pty Ltd to construct and operate an open cut iron ore mine, waste rock landform, ore stockpile, haul road and associated infrastructure, 150 km north of Southern Cross.

In conducting its assessment of the proposal the EPA has determined that the key environmental factors of vegetation and flora, fauna and mine closure and rehabilitation required detailed assessment in this report.

The EPA notes that the proponent conducted a number of flora and fauna surveys across the proposal area in accordance with the relevant EPA Guidance Statements on surveying.

The EPA also notes that the survey identified one new species of flora and eight species of conservation significant flora. The potential new species of *Calytrix* has been verified by relevant experts as being the same species of *Calytrix* previously found at Mount Jackson.

The EPA considers that the impact to conservation significant flora will not be significant due to the identification of populations of these flora species outside the area of impact for this proposal. However the EPA has recommended a condition to ensure that further targeted survey work is undertaken to validate the expectation that further populations and individuals of conservation significant will be found in the region.

The EPA considers that the proposal area contains some potential Malleefowl habitat but that this is not considered key Malleefowl habitat compared to other areas in the region and therefore the proposal is unlikely to have significant impacts on Malleefowl populations through the clearing of one inactive nesting

mound. The reporting of any Malleefowl fatalities due to this project is addresses in condition 8.

The EPA also notes that an open mine void is proposed to be left at the end of mining. The EPA prefers mine voids be backfilled and encourages the proponent to continue exploring opportunities to backfill the void. The EPA notes that the proponent has prepared a draft mine closure plan for the proposal in accordance with the DMA/EPA *Guidelines for Preparing Mine Closure Plans*. The EPA considers that mine closure and rehabilitation can be managed by the DMP through the mine closure plan. However the EPA has provided advice on mine closure matters to be considered by the DMP.

The EPA has therefore concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.

8. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. That the Minister notes that the proposal being assessed is for the development of the Deception Deposit iron ore mine and associated infrastructure, 150 km north of Southern Cross;
2. That the Minister considers the report on the key environmental factors as set out in Section 3;
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

References

Biota Environmental Sciences (2011a). *Deception Deposit Vegetation and Flora Survey* (Unpubl). June 2011, Perth, WA.

Biota Environmental Sciences (2011b). *Deception Deposit Vertebrate Fauna Survey* (Unpubl). June 2011, Perth, WA.

Biota Environmental Sciences (2011c). *Deception Deposit Short Range Endemic Invertebrate Fauna Survey* (Unpubl). March 2011, Perth, WA.

Biota Environmental Sciences (2011d). *Deception Deposit Troglobitic Fauna Assessment* (Unpubl). February 2011, Perth, WA.

Cliffs Asia Pacific Iron Ore Pty Ltd (2011), *Yilgarn Operations Deception Deposit – Environmental Impact Assessment (Assessment on Proponent Information)*, Cliffs Asia Pacific Iron Ore Pty Ltd, August 2011.

Department of Sustainability, Environment, Water, Population and Communities (2011), *Leipoa ocellata* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>. Accessed Mon, 17 Oct 2011.

Environment Australia (2000). *Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the Development of Version 5.1. - Summary Report*. Department of Environment and Heritage, Canberra, November 2000.

EPA (2004a) *Terrestrial Flora and Vegetation Surveys for Environmental Impact in Western Australia*. Guidance Statement 51, Environmental Protection Authority, Perth, Western Australia, June 2004.

EPA (2004b) *Terrestrial Fauna Surveys for Environmental Impact in Western Australia*. Guidance Statement 56, Environmental Protection Authority, Perth, Western Australia, June 2004.

EPA (2009) *Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact in Western Australia*. Guidance Statement 20, Environmental Protection Authority, Perth, Western Australia, May 2009.

Payne, A. L., Van Vreeswyk, A. M. E., Pringle, H. J. R., Leighton, K. A. & Henning, P. (1998) *An Inventory and condition survey of the Sandstone-Yalgoo-Paynes Find area, Western Australia*, Technical Bulletin No. 90, Agriculture Western Australia, South Perth, Western Australia, March 1998.

Appendix 2

Identified Decision-making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the *Environmental Protection Act 1986* (EP Act) specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Water	Water extraction licence under the <i>Rights in Water and Irrigation Act 1914</i>
2. Minister for Mines	<i>Mining Act 1978</i> approvals
3. Minister for Indigenous Affairs	<i>Aboriginal Heritage Act 1972</i> – section 18 clearances
4. Department of Environment and Conservation	Works Approval and Licence under Part V of the <i>Environmental Protection Act 1986</i>
5. Shire of Yilgarn	Planning approval under the <i>Planning and Development Act 2005</i>
6. Shire of Menzies	Planning approval under the <i>Planning and Development Act 2005</i>

Note: In this instance, agreement is only required with DMA #1 – 3 since these DMAs are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

Yilgarn Operations Deception Deposit iron ore mine

Proposal: The proposal is to construct and operate an open cut iron ore mine, waste rock landform, ore stockpile, haul road and associated infrastructure, 150 kilometres north of Southern Cross.

The proposal is further documented in schedule 1 of this statement.

Proponent: Cliffs Asia Pacific Iron Ore Pty Ltd

Proponent Address: Level 12, The Quadrant, 1 William St,
PERTH WA 6000

Assessment Number: 1887

Report of the Environmental Protection Authority: Report 1426

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Office of the Environmental Protection Authority (CEO) of any change of the name and

address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

- 3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.
- 3-2 The proponent shall provide the CEO with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.
- 4-2 The proponent shall submit to the CEO the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

- 1. the frequency of compliance reporting;
 - 2. the approach and timing of compliance assessments;
 - 3. the retention of compliance assessments;
 - 4. the method of reporting of potential non-compliances and corrective actions taken;
 - 5. the table of contents of compliance assessment reports; and
 - 6. public availability of compliance assessment reports.
- 4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.
 - 4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the CEO.
 - 4-5 The proponent shall advise the CEO of any potential non-compliance within seven days of that non-compliance being known.

- 4-6 The proponent shall submit to the CEO an annual compliance assessment report by 30 April each year for the preceding calendar year.

The compliance assessment report shall:

1. be endorsed by the proponent's Managing Director or a person delegated to sign on the Managing Director's behalf;
2. include a statement as to whether the proponent has complied with the conditions;
3. identify all potential non-compliances and describe corrective and preventative actions taken;
4. be made publicly available in accordance with the approved compliance assessment plan; and
5. indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Public Availability of Data

- 5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

- 5-2 If any data referred to in condition 5-1 contains particulars of:
- i. A secret formula or process; or
 - ii. Confidential commercially sensitive information

The proponent may submit a request for approval from the CEO to not make this data publically available. In making such a request the Proponent shall provide the CEO with an explanation and reasons why the data should not be made publically available.

6 Vegetation and flora

- 6-1 The proponent shall implement the proposal in accordance with the "*Yilgarn Operations Land Clearing Management Plan* Cliffs Asia Pacific Iron Ore Pty Ltd, April 2011, or subsequent revisions approved by the CEO.
- 6-2 At all times the proponent shall ensure that threatening processes such as fire, weed introduction, disease and feral animals arising from its operations are managed and controlled.

- 6-3 Prior to ground disturbing activity, the proponent shall prepare and commence implementation of a vegetation and flora monitoring plan for the life of the mine to the satisfaction of the CEO. The plan shall include the:
1. the provision of baseline data;
 2. identification of baseline and control sites within 100 metres of the proposal area;
 3. definition of monitoring frequency, timing, intensity and replication;
 4. definition of health and abundance;
 5. identification of what and how parameters will be used to measure decline or rate of decline in health or abundance; and
 6. definition of management responses required should a 25 percent (or greater) decline in health or abundance be recorded.
- 6-4 Should the potential impact sites show a 25 percent (or greater) decline in health or abundance compared with the reference sites, the proponent shall provide a report to the CEO within 21 days of the decline being identified which:
1. describes the decline; and
 2. provides information which allows determination of the likely root cause of the decline.
- 6-5 If the decline in health or abundance identified in 6-4 is determined by the CEO to be caused by activities undertaken in implementing the proposal the proponent shall, implement the actions identified in 6-3-6 and continue to implement such actions until the CEO determines that the remedial actions may cease.
- 6-6 The proponent shall implement the proposal in accordance with the “Yilgarn Operations Weed Management Plan”, dated April 2011, or subsequent revisions approved by the CEO.
- 6-7 Prior to ground disturbance, the proponent shall update the “*Yilgarn Operations Weed Management Plan*” such that the plan includes the identification of and monitoring of weeds at three reference sites on nearby land chosen in consultation with the Department of Environment and Conservation and established within the proposal area and outside the impact area. The reference sites are to be monitored every 2 years to determine whether any changes in weed cover and type are as a result of project implementation or broader regional changes.

7 Conservation significant and recently described flora species

7-1 The proponent shall undertake a targeted regional flora survey to the satisfaction of the CEO to determine the presence and abundance outside of the proposal area (as shown in Figure 2 of Schedule 1) of the following flora species:

- *Baeckea ochropetala* (Priority 1 flora);
- *Philotheca deserti* ssp. *brevifolia* (Priority 1 flora); and
- *Calytrix* sp. nov.

and submit the results of the survey to the CEO within 18 months of impact to each of the respective species.

7-2 The survey shall be conducted in accordance with Environmental Protection Authority Guidance Statement 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (June 2004) or its revisions.

7-3 During construction of the haul road, the proponent shall ensure that the haul road is aligned to minimise disturbance to, or loss of, individual plants of *Baeckea ochropetala* and *Philotheca deserti* ssp. *brevifolia* and that there is also a system to delineate the area of works in order to meet the outcome of minimising the disturbance to, or loss of, these two species identified in the proposal area as shown in Figure 3 of Schedule 1.

7-4 Within a 100 metre distance from the haul road, the proponent shall monitor impacts due to dust deposition, saline water application for dust control; fire; and feral species, on the *Baeckea ochropetala* and *Philotheca deserti* ssp. *brevifolia* Priority 1 flora species referred to in condition 7-1. This monitoring is to be carried out to the satisfaction of the CEO.

7-5 In the event that monitoring required by condition 7-4 indicates a decline in the health or abundance of *Baeckea ochropetala* and *Philotheca deserti* ssp. *brevifolia* outside the areas to be cleared:

1. the proponent shall report such findings to the CEO within 21 days of the decline being identified;
2. provide information which allows determination of the cause of the decline;
3. if determined by CEO to be a result of activities undertaken in implementing the proposal, the proponent shall submit actions to be taken to remediate the decline to the CEO; and
4. the actions to remediate the decline of *Baeckea ochropetala* and *Philotheca deserti* ssp. *brevifolia* shall be undertaken upon approval of the CEO.

7-6 Prior to ground disturbing activities required for the implementation and operation of the proposal, the proponent shall collect seed and plant material

of the *Calytrix* sp. nov. population that will be cleared as a result of this proposal. The seed and plant material will be stored in an appropriate facility that maximises viability of seed and plant material for use in restoration works to the satisfaction of the CEO.

8 Malleefowl

- 8-1 The proponent shall record and report the death or injury of Malleefowl *Leipoa ocellata* as a result of the implementation of this proposal to the CEO within seven days of that death or injury being known.

Notes

1. Where a condition states “on advice of the Office of the Environmental Protection Authority”, the Office of the Environmental Protection Authority will provide that advice to the proponent.
2. The Minister for Environment will determine any dispute between the proponent and the Office of the Environmental Protection Authority over the fulfilment of the requirements of the conditions.
3. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

Schedule 1

The Proposal (Assessment No. 1887)

The proposal is to construct and operate:

- an open cut iron ore mine approximately 150 km north of Southern Cross; and
- a waste rock landform, an ore stockpile, other supporting infrastructure and a 22.3 km haul road to connect to the existing Cliffs' haul road network.

The location of the various project components is shown in Figures 1 and 2.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in sections 1.1 to 1.11 of the project referral document, *Yilgarn Operations – Deception Deposit: Assessment on Proponent Information*, Cliffs Asia Pacific Iron Ore Pty Ltd, Perth, Western Australia (August 2011).

Table 1: Summary of Key Proposal Characteristics

Element	Description
General	
Mining method	Open cut
Total disturbance	550 hectares (ha)
Mine pit	
Area	118 ha
Depth	254 mAHD
Waste rock landform	
Area	258 ha
Elevation	550 mAHD
Ore Stockpile	
Area	53 ha
Support infrastructure	
Area	32 ha
Haul road	
Area	89 ha
Length	22.3 km
Width	Approximately 40 metres

Figures

Figure 1 Regional setting

Figure 2 Project footprint and location of key components

Figure 3 Priority 1 and potential new flora species

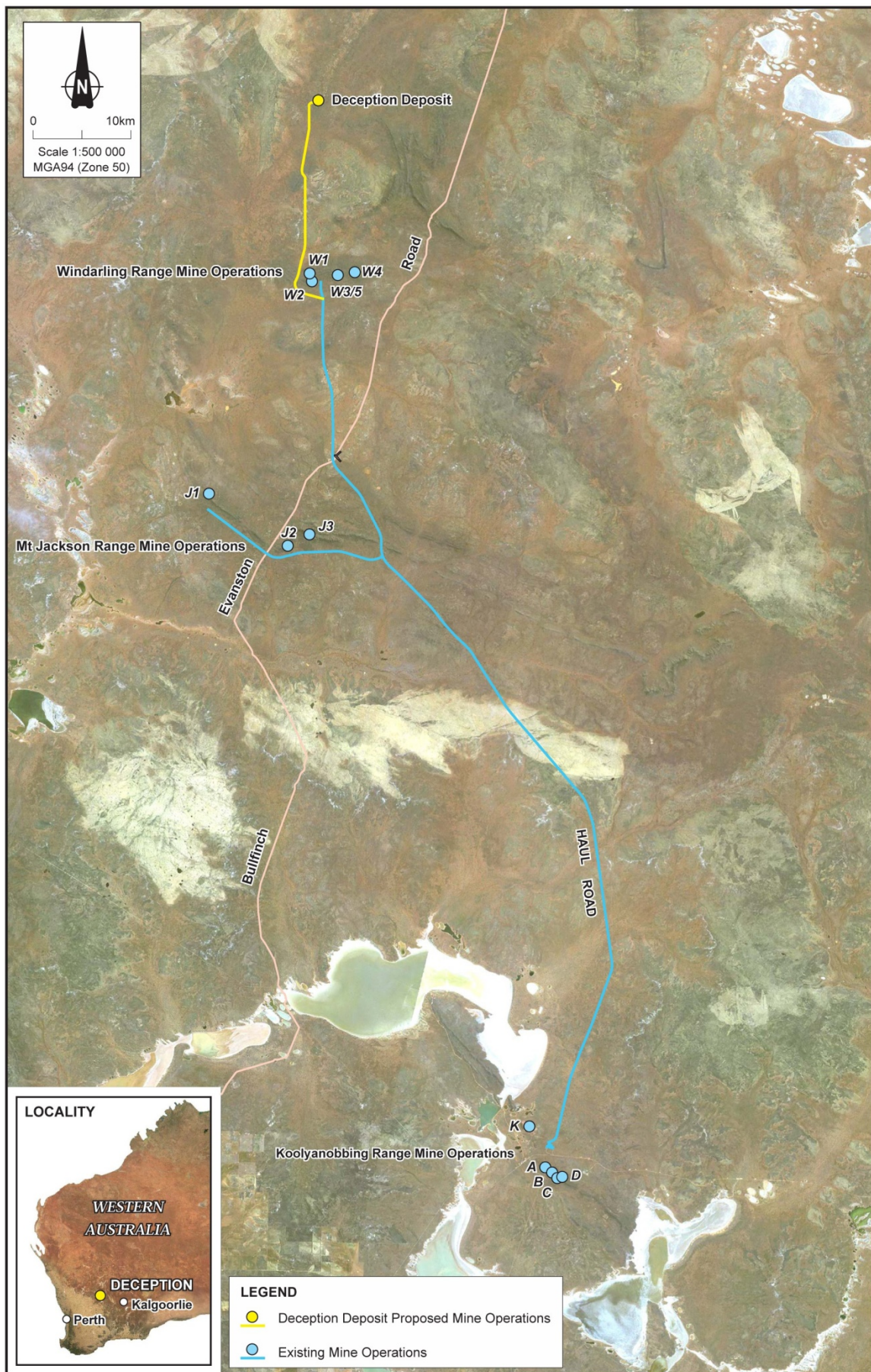


Figure 1 Regional setting

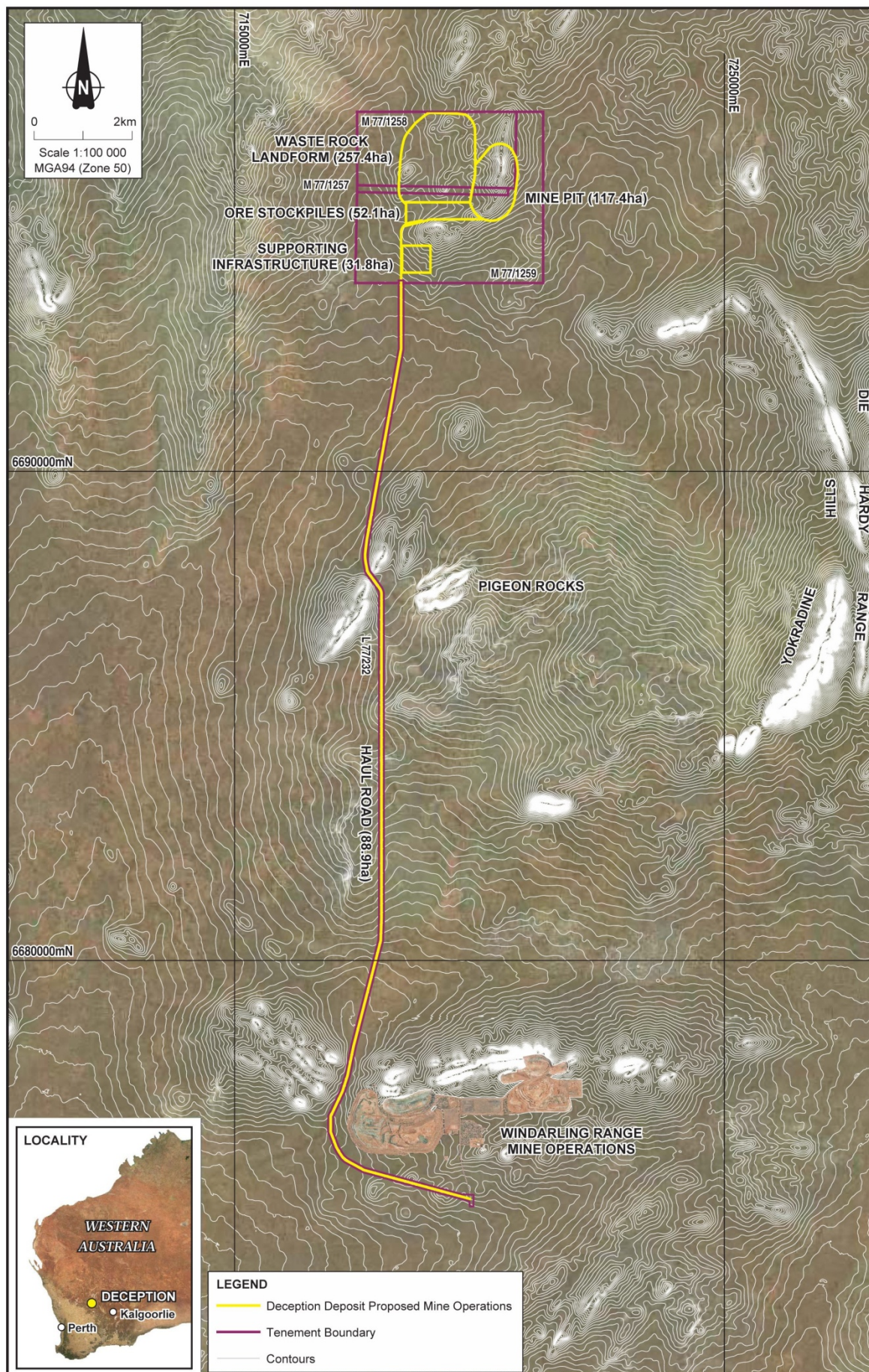


Figure 2 Project footprint and location of key components

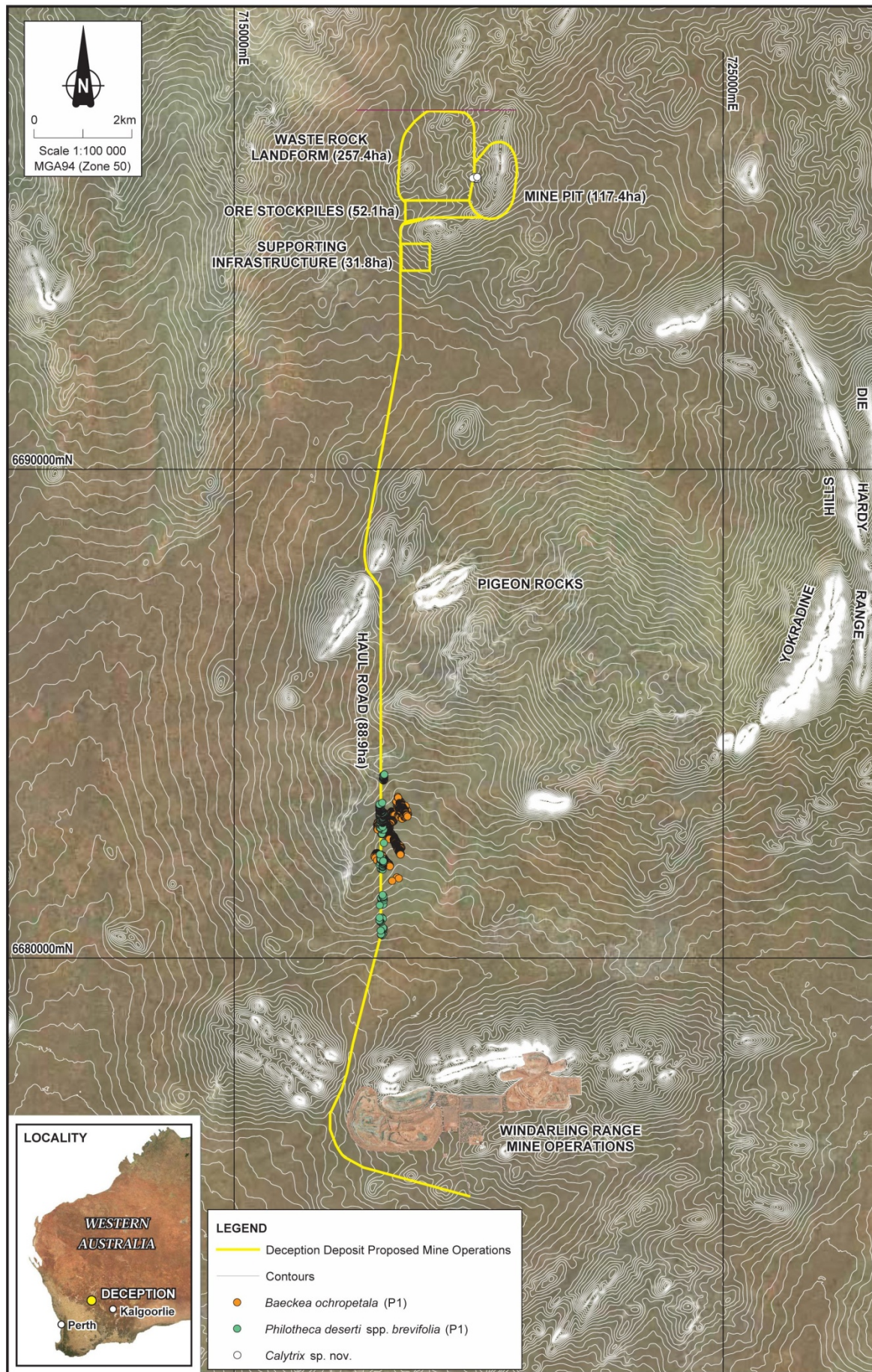


Figure 3 Priority 1 and potential new flora species