GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 6323/2
Permit Holder:	Phosphate Resources Limited trading as Christmas Island Phosphates
Duration of Permit:	From 23 July 2015 to 26 June 2034

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of phosphate mining and stockpile recovery.

2. Land on which clearing is to be done

Mining Tenement MCA 70/1A, Christmas Island

3. Clearing authorised

The permit holder must not clear more than 128.53 hectares of *native vegetation* within the combined areas cross-hatched yellow in Figures 1 to 5 of Schedule 1.

4. Clearing not authorised

The permit holder must demarcate the areas approved to clear under this permit, or otherwise put in appropriate controls, prior to *clearing* and must not clear any *primary rainforest* under this permit.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the *clearing* of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of *clearing* on any environmental value.

6. Weed management

(a) When undertaking any *clearing*, or other activity under this permit, the permit holder must take the following steps to minimise the risk of the introduction and spread of weeds:

(i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(ii) ensure that no weed-affected mulch, fill or other material is brought into the area to be cleared; and

(iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

(b) Weed management activities must be undertaken by the permit holder in accordance with the *Weed Management Plan*.

7. Fauna Management - directional clearing and timing of clearing

The permit holder must:

(a) conduct *clearing* activities authorised under this permit in a slow, progressive manner, from one side of the clearing area to the other, towards adjacent *native vegetation*, to allow fauna to move into adjacent native vegetation ahead of the clearing activity; and

(b) restrict *clearing* activities to day-light hours to avoid the possibility of injury to fauna.

8. Fauna management – robber crab

The permit holder must:

(a) engage a fauna spotter to traverse the areas cross-hatched yellow in Figures 1 to 5 of Schedule 1 to identify the robber crab (*Birgus latro*) immediately prior to and for the duration of *clearing* activities; and

(b) where the robber crab is identified under *condition* 8(a), ensure the fauna spotter removes and relocates robber crabs to an area located 50 metres or more outside of the areas to be cleared, prior to commencing clearing.

9. Fauna management – giant gecko

The permit holder must:

(a) engage a *giant gecko spotter* to traverse all areas of *giant gecko suitable habitat* using transects spaced at 10 metre intervals to identify the giant gecko (*Cyrtodactylus sadleiri*) over three consecutive nights immediately prior to *clearing giant gecko suitable habitat*, where it is safe to do so.

(b) where any giant gecko(s) are identified under *condition* 9(a), ensure the *giant gecko spotter*:

(i) captures the giant gecko(s) by hand where practicable;

(ii) places the captured giant gecko(s) individually into cloth bags;

(iii) releases captured giant gecko(s) to an area located 50 metres or more outside of the area to be cleared; and

(iv) releases captured giant gecko(s) within 60 minutes of capture.

(c) where giant gecko(s) are identified under *condition* 9(a), include the following in a report submitted to the *CEO*::

(i) the number of individuals identified;

(ii) the date each individual was identified;

(iii) the location where each individual was identified, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(iv) the location of each individual relocated, using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees.

10. Fauna management – Abbott's booby

The permit holder must:

(a) engage a *fauna specialist* to undertake a survey of *Abbott's booby suitable habitat* prior to *clearing*, for evidence of Abbott's booby (*Papasula abbotti*) nesting.

(b) where evidence of Abbott's booby nesting is identified under *condition* 10(a), maintain a minimum avoidance buffer of 50 metres between any Abbott's booby nest site and any *clearing* activity authorised under this permit, unless otherwise approved by the *CEO*

(c) where Abbott's booby is identified under *condition* 10(a), include the following in a report submitted to the *CEO*::

(i) the number of nests identified;

(ii) the date each nest was identified;

(iii) the location where each nest was identified, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(iv) measures taken to provide a 50-metre buffer between any nest identified and *clearing* activities, unless otherwise approved by the *CEO* under *condition* 10(b).

11. Fauna Management – red crab

Prior to undertaking any *clearing* authorised under this permit between 1 December and 28 February of each year, the permit holder must liaise with Parks Australia regarding agreed management measures to minimise the mortality to red crabs (*Gecarcoidea natalis*) during migration and periods of high crab activity.

12. Environmental values avoidance buffers

The permit holder must maintain a 5 metre avoidance buffer between the boundary of the Christmas Island National Park and any *clearing* undertaken under this permit.

13. Drainage Management

The permit holder must not cause or allow the discharge of sediments, from within the areas cross-hatched yellow in Figure 5 of Schedule 1, into The Dales Ramsar listed wetlands.

PART III - RECORD KEEPING AND REPORTING

14. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised *clearing* activities generally	(a) the location where the *clearing* occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) actions taken to avoid, minimise, and reduce the impacts and extent of *clearing* in accordance with *condition* 5; (e) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with *condition* 6; (f) actions taken in accordance with *condition* 7, *condition* 8, and *condition* 11; (g) actions taken to manage and prevent drainage into The Dales Ramsar listed wetland in accordance with *condition* 13.
2.	In relation to fauna management (giant gecko) pursuant to *condition* 9	(a) results of the pre-clearance fauna inspection undertaken in accordance with *condition* 9; and (b) a copy of the fauna report in accordance with *condition* 9.
3.	In relation to fauna management (Abbott's booby) pursuant to *condition* 10	(a) results of the pre-clearance fauna inspection undertaken in accordance with *condition* 10; and (b) a copy of the fauna report in accordance with *condition* 10.

15. Reporting

(a) The permit holder must provide to the *CEO* on or before 30 June of each year, a written report containing:

(i) the records required under *condition* 14; and

(ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.

(b) If no *clearing* authorised under this permit has been undertaken, a written report confirming that no *clearing* under this permit has been carried out, must be provided to the *CEO* on or before 31 December of each calendar year.

(c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of this permit, a written report of records required under *condition* 14, where these records have not already been provided under *condition* 15(a).

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined below.

Table 2: Definitions

Term	Definition
Abbott's booby suitable habitat	means vegetation within, or within 50 metres of, the areas cross-hatched yellow in Figures 1 to 5 of Schedule 1, that provides suitable habitat for Abbott's booby nesting, as described in the 'Conservation Advice for Abbott's Booby – *Papasula abbotti'* Commonwealth of Australia 2020.
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the EP Act.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)(CI)
fill	means material used to increase the ground level, or to fill a depression.
fauna specialist	means a person who has appropriate training in fauna identification and surveys of fauna native to Christmas Island, or who is approved by the *CEO* as a suitable fauna specialist.
giant gecko spotter	means a person who has undertaken pre-removal training run by an expert with knowledge of effective search strategies and the safe and humane protocols used during capture, handling and release of giant geckos.
giant gecko suitable habitat	means vegetation within the areas cross-hatched yellow in Figures 1 to 5 of Schedule 1, that provides suitable habitat for the giant gecko, as described within Table 6 of the 'Supporting document for Amendment to CPS 6323/1. Christmas Island Phosphates. August 2024'.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
primary rainforest	means undisturbed closed canopy evergreen forest, as referenced in the document titled 'Supporting document for Amendment to CPS 6323/1. Christmas Island Phosphates. August 2024'.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) defined as a weed in the *weed management plan*; or (c) not indigenous to the area concerned.

Term	Definition
weed management plan	means the plan titled 'Weed Management. Approaches and Risk Reduction in Mining Areas of Christmas Island (January 2017)' as approved by the former Department of Infrastructure and Regional Development, Australian Government or any updated version of this plan approved by the *relevant federal department*.

END OF CONDITIONS

Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

13 December 2024

Schedule 1

The boundary of the combined areas authorised to be cleared is shown in the maps below (Figures 1 to 5).

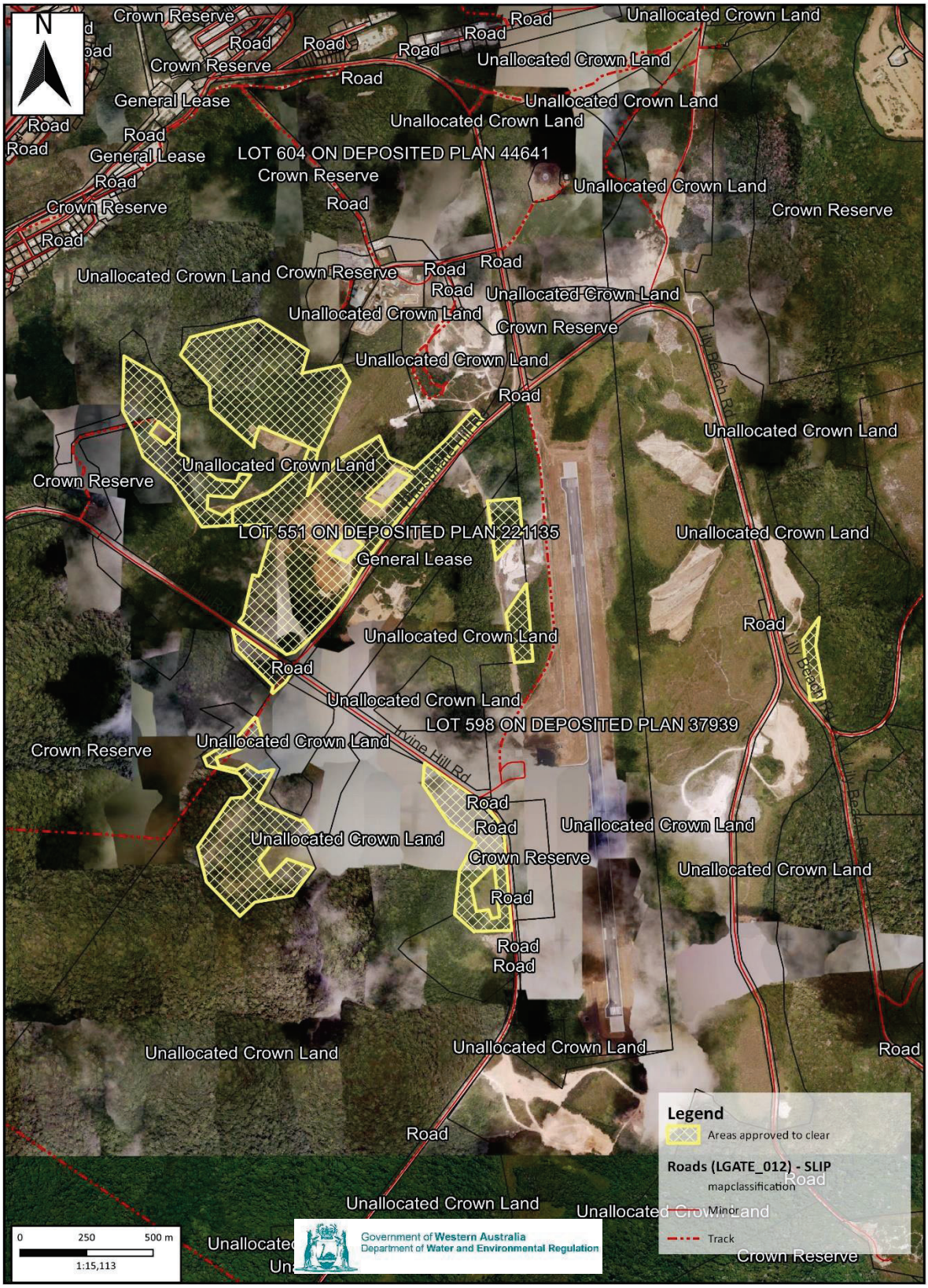

Figure 1: Map of the boundary of the area within which *clearing* may occur (cross-hatched yellow)

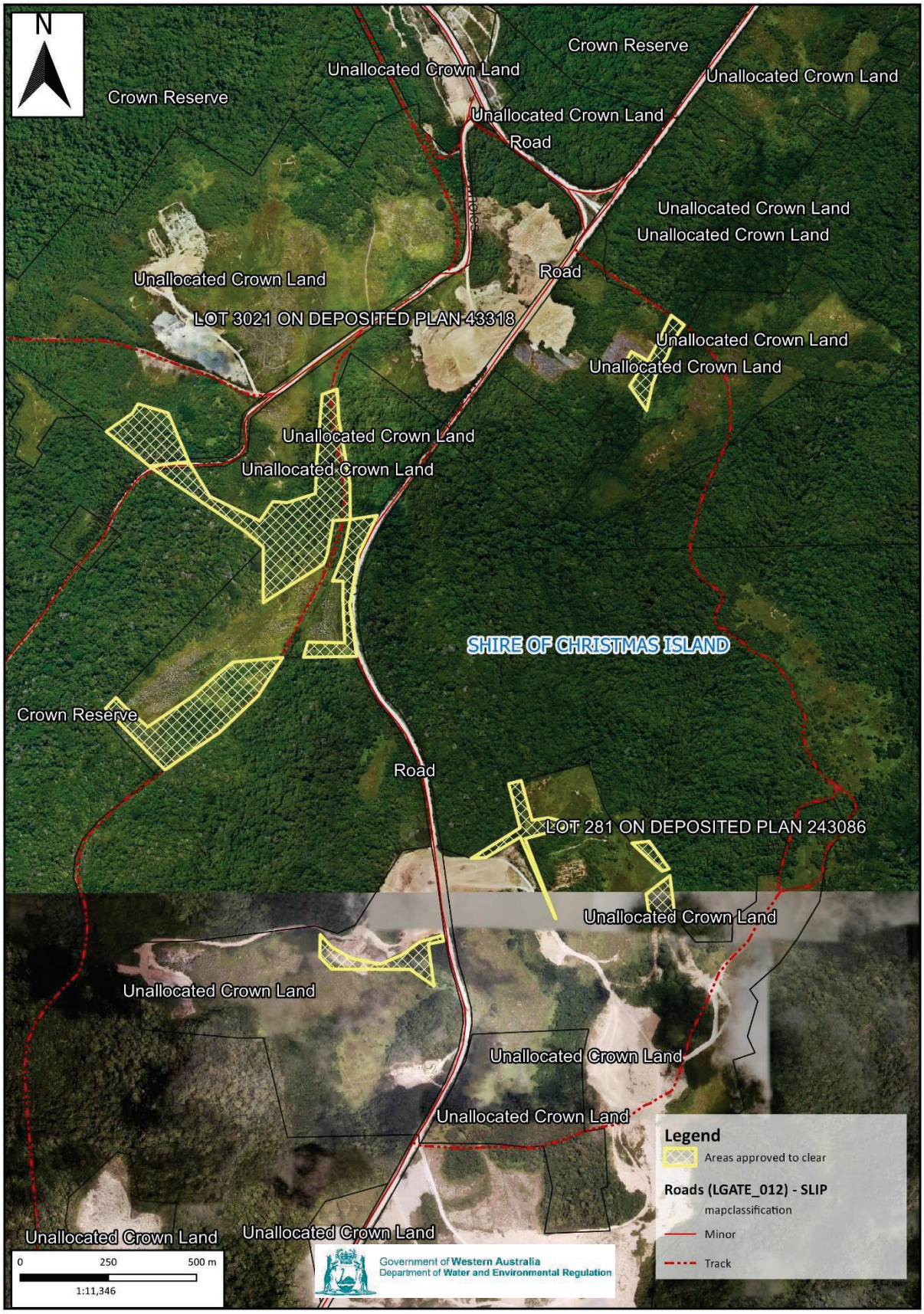

Figure 2: Map of the boundary of the area within which *clearing* may occur (cross-hatched yellow)

Figure 3: Map of the boundary of the area within which *clearing* may occur (cross-hatched yellow)

Figure 4: Map of the boundary of the area within which *clearing* may occur (cross-hatched yellow)

Figure 5: Map of the boundary of the area within which *clearing* may occur (cross-hatched yellow)

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Amendment application details

Permit number:	CPS 6323/2
Permit type:	Purpose permit
Applicant name:	Phosphate Resources Limited
Amendment Application received:	16 August 2024
Application areas:	128.53 hectares of native vegetation
Purpose of clearing:	Phosphate mining and stockpile recovery
Method of clearing:	Mechanical
Property:	Mining Lease - MC1 70/1A Christmas Island
Location (LGA area/s):	Shire of Christmas Island
Localities (suburb/s):	Christmas Island

1.2. Description of the amendment

The original clearing permit, CPS 6323/1, allowed for the clearing of up to 128.53 hectares of native vegetation across 23 areas on Christmas Island to allow for phosphate mining, subject to conditions.

This amendment application is to (Christmas Island Phosphates (CIP), 2024):

- increase the duration of the permit
- remove conditions relating to weed control (sub-condition) and fauna management (Christmas Island pipistrelle (*Pipistrellus murrayi*)) which are no longer relevant to the proposed clearing.

Clearing permit CPS 6323/1 expires on 31 December 2024, and the applicant has requested to extend the duration of the permit until 26 June 2034, to align with the expiry of the current mining lease which exists over the application areas. The applicant has either not commenced or completed its mining activities within several of the application areas, and has cleared 9.17 hectares of the 128.53 hectares approved for clearing to date (CIP, 2024).

The applicant has requested to remove a weed management sub-condition from the permit. After the approval of CPS 6323/1, the applicant commissioned a weed management plan, which was later approved by the former Commonwealth Department of Infrastructure and Regional Development. This plan sets out the applicant's commitment to undertake weed management actions associated with its mining operations on Christmas Island. The weed management sub-condition which required weed control within the application areas is therefore no longer considered necessary.

The applicant has also requested to remove the fauna management condition relating to the Christmas Island pipistrelle, noting that this species was declared extinct in 2021.

The vegetation proposed to be cleared is shown in Figures 1 to 6 within Section 1.5.

1.3. Decision on application

Decision:	Granted
Decision date:	13 December 2024
Decision area:	128.53 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit amendment application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (WA)(CI)(EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for:

- the site characteristics (see Appendix A)
- relevant datasets (see Appendix D)
- supporting information provided by the applicant, including a field reconnaissance survey by Christmas Island Environmental Services (CIP, 2024)
- a previous biological survey undertaken for the original application (Range to Reef, 2014)
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix B)
- that the amendment does not propose to undertake additional clearing beyond that previously approved
- that the application area is within the confines of the applicants mining lease, which is valid until 2034
- that the proposed phosphate mining occurs within areas that have been historically used, periodically, for phosphate mining over the last 30 years
- relevant planning instruments and any other matters considered relevant to the assessment (see Section 3.3).

Noting the time between the original assessment (2015) of CPS 6323/1 and current amendment application, DWER has deemed it appropriate to undertake a re-assessment of the proposed clearing in this instance.

The assessment identified that the proposed clearing may result in:

- the introduction and/or spread of weeds into adjacent conservation areas, including the Christmas Island National Park and Dales Ramsar listed wetland, which could impact on the quality of the adjacent vegetation and its habitat values
- sedimentation of the ‘The Dales’ Ramsar site which is adjacent to the westernmost application area (area 140-MB3)
- a risk of injury to native fauna from fauna strike during clearing operations
- potential direct impacts to adjacent areas of primary rainforest which provides high quality fauna habitat
- indirect impacts to any nearby nesting Abbott’s booby’s (*Papasula abbotti*) through noise.

The Delegated Officer has considered the available supporting information, the applicant’s minimisation and mitigation measures (see Section 3.1), that the proposed amendment would not result in additional clearing to that originally approved, and the consistency of the project with the current mining lease over the application area.

Based on the above information, the Delegated Officer determined that on balance it was appropriate to grant the amended clearing permit subject to appropriate contemporised management conditions which align with current practice. These management conditions will ensure that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

The Delegated Officer therefore decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds
- undertake weed management activities in accordance with the applicants approved weed management plan
- demarcate the proposed clearing areas and not clear any primary rainforest

- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- not undertake clearing during night time hours
- undertake pre-clearance searches for Abbott's booby nests within 50 metres of the application area, and avoid, with a 50-metre buffer, any Abbott's booby nests identified
- engage a fauna spotter to remove and relocate robber crabs (*Birgus latro*) and giant geckos from the application area ahead of clearing
- liaise with Parks Australia prior to clearing during the red crab migration period to implement any agreed management measures to minimise crab mortality
- maintain a minimum avoidance buffer of five metres to Christmas Island National Park and the Dales Ramsar listed wetland
- drainage management to prevent the inadvertent discharge of sediment into The Dales Ramsar listed wetland.

1.5. Site maps

Figure 1 Map showing all areas applied for clearing under this amendment application.

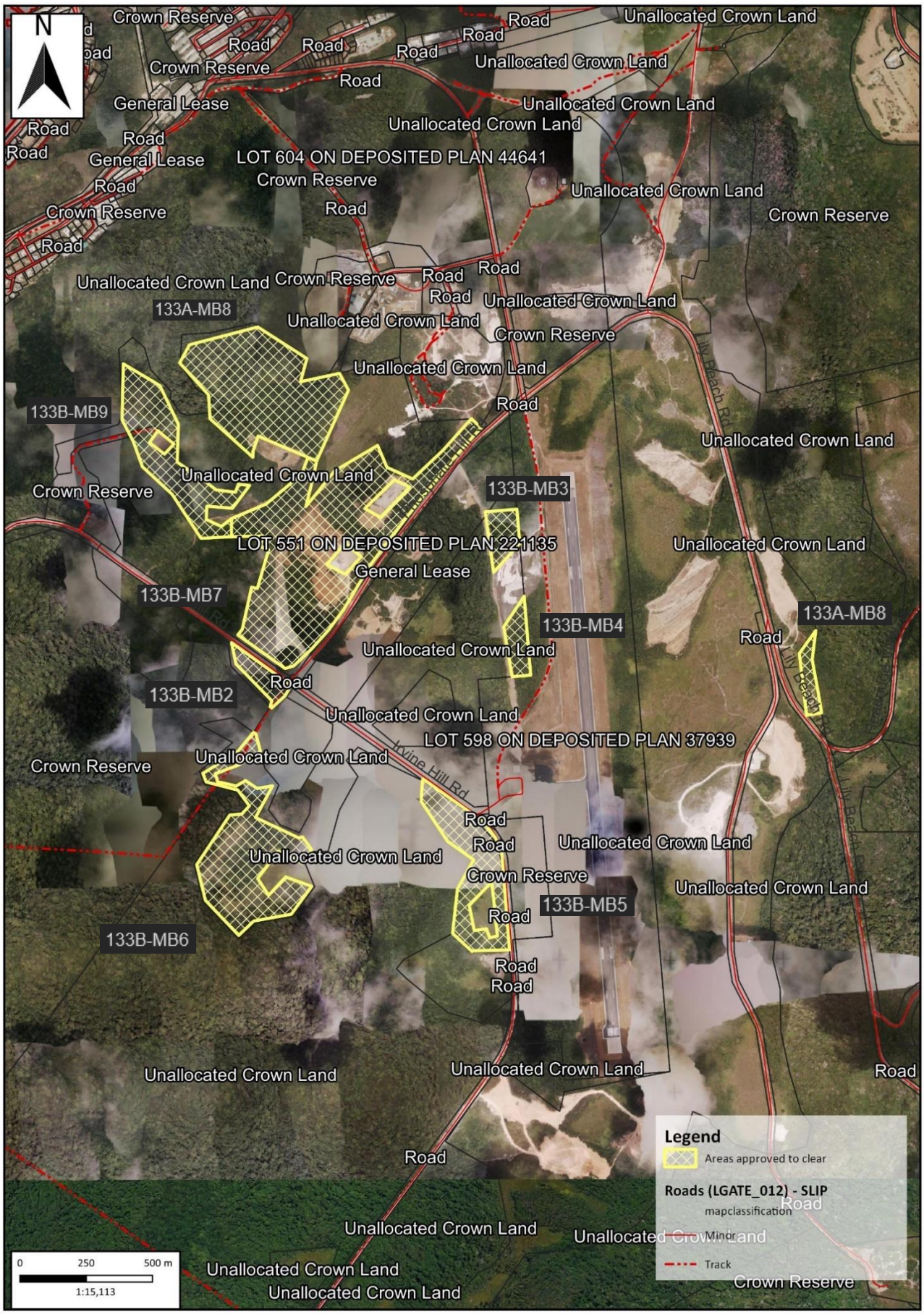

Figure 2. Map of the north eastern application areas - 133B-MB2, 133B-MB3, 133B-MB4, 133B-MB5, 133B-MB6, 133B-MB7, 133B-MB8, 133B-MB9 and 133A-MB8.

Figure 3. Map of the southern (central) application areas - 106-MB10, 106-MB11, 106-MB13, 106-MB14a, 106-MB14b, 101-MB4, 101-MB5, 101-MB6 and 101STP17A

Figure 4. Map of the southernmost application areas - 100-SPWMB2 and 100-SPWMB3.

Figure 5. Map of the central application area - 116-STP23D.

Figure 6. Map of the western application areas – 140-MB3 and 139-STP25B.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include the:

- *Mining Act 1978*
- *Environment Protection (Impact of Proposals) Act 1974*
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020).

3 Detailed assessment of application

3.1. Avoidance, minimisation and mitigation measures

The applicant has advised that the following avoidance and minimisation measures will be undertaken (CIP, 2024):

- avoidance of all high value primary rainforest
- demarcate the application areas prior to clearing to ensure no clearing beyond the boundaries of these areas is undertaken.

Regarding mitigation, the rehabilitation of mining areas post mining is undertaken as part of the Christmas Island Minesite to Forest Rehabilitation Program. The program is funded by a conservation levy paid by the applicant to the Territory Administration as a requirement of its mining lease. The program is managed by Parks Australia under a Memorandum of Understanding between the Director of National Parks and the Territory administration. The conservation levy is paid by the applicant on all mining lease areas.

The applicant must pay the conservation levy quarterly to the Commonwealth for the purpose of rehabilitating cleared areas and other high priority conservation activities on Christmas Island, as determined by Parks Australia.

The Delegated Officer was satisfied that the applicant has made an adequate effort to avoid, minimise and mitigate potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix A) has revealed that the assessment against the clearing principles has, to some extent, changed from the Clearing Permit Decision Report CPS 6323/1 regarding clearing principle (b) (fauna values) and clearing principle (h) (conservation areas). Therefore, a detailed assessment against these Clearing Principles is provided below.

The Delegated Officer considered that the extent to which the impacts of the proposed clearing present a risk to other environmental values remains largely unchanged from the original assessment (DER, 2012). However, an updated summary against the clearing principles is provided in Appendix B noting the time since CPS 6323/1 was granted.

3.2.1. Biological values (Fauna) - Clearing Principle (b)

Assessment

The application areas have been subject to the following environmental surveys (the surveys):

- a 2014 biological survey by Range to Reef Environmental (Range to Reef, 2014), undertaken to provide a description of the dominant vegetation types and vegetation condition within the application areas as well as identify the presence of any conservation listed species.
- a 2023 reconnaissance survey by Christmas Island Environmental Services, which included ground truthing to identify vegetation condition and type and the presence of native fauna, including the presence of Abbott's booby nests within and nearby the application areas (CIP, 2024).

The surveys identified that the application areas largely comprise the following vegetation types (CIP, 2024):

- areas dominated with *Nephrolepis biserrata* fernland
- areas dominated by weed species such as *Leucaena leucocephala* and *Cordia curassavica*
- areas cleared in the past ten years with vegetation regeneration comprising a mix of native and weed species. Native species commonly include *Macaranga tanarius* shrubland or woodland
- areas with secondary well-developed regrowth more than 5 metres high which may form open / closed forest.

The condition of the application area varies and largely ranges from very good to completely degraded, with many sites in a degraded condition (CIP, 2024). The highest value fauna habitat within the application areas comprises areas with secondary well-developed regrowth in good or better condition.

The surveys included a likelihood of occurrence fauna assessment and identified that 10 conservation significant fauna species were either previously recorded in, or have the potential to occur in, the application areas (see Appendix A, Section A.2) (CIP, 2024).

The surveys considered that the species at greatest risk of impact from the proposed clearing are the Abbott's booby (*Papasula abbotti*) (Endangered; EPBC Act) and red crab (*Gecarcoidea natalis*) (keystone species – not conservation listed) (CIP, 2024). DWER also considers that the coconut crab (*Birgus latro*) (not conservation listed) and giant gecko (*Cyrtodactylus sadleiri*) (Endangered; EPBC Act) are at risk of impact from the proposed clearing.

Abbott's booby

This species only known extant nesting colony is on Christmas Island. Key threats to the Abbott's booby include the modification and destruction of breeding habitat from new vegetation clearing and edge effects from previous clearing (DEH, 2004).

Most Abbott's booby nests are situated on the central and western areas of the island, in tall plateau forest within Christmas Island National Park. Abbott's booby prefers nest sites on the lee side of slopes and gullies, with a clear area below and immediately downwind to facilitate take-off and landing (DEH, 2004). Abbott's Booby must fly into the wind to land, and mostly nests on the north-western side of trees in parts of the island offering shelter from the prevailing southeast trade winds (Commonwealth of Australia, 2020). A variety of tree species are used for nesting, most often open-crowned *Syzygium nervosum* and *Planchonella nitida*, and *Tristiropsis acutangula* and *Celtis timorensis* where they become emergent (Commonwealth of Australia, 2020).

Critical habitat for the Abbott's booby is defined in the Approved Conservation Advice for this species and comprises (Commonwealth of Australia, 2020):

- all known nesting trees, and all forest vegetation with a 200-metre radius of known nesting trees for Abbott's booby to protect known nesting trees from indirect impacts
- all forest vegetation within 100 metres of habitat critical to the survival of Abbott's bobby, noting that clearing vegetation within 300 metres of a nest can cause breeding pairs to abandon nests due to increased wind turbulence from southeast trade winds.

Regarding the second point above, strong southeasterly trade winds prevail between April and November on Christmas Island. Wind tunnel experiments have shown that clearing forest increases turbulence in the surrounding canopy, lowering fidelity, and increasing adult mortality of Abbott's booby (Commonwealth of Australia, 2020). Studies indicate that birds nesting within 300 metres downwind of areas cleared for mining activities had lower breeding success and increased mortality due to greater wind turbulence (Commonwealth of Australia, 2020).

No nesting trees were identified in the application areas (CIP, 2024; Range to Reef, 2014). The application areas do include some *Syzygium nervosum* and *Planchonella nitida*. However, these trees are unlikely to provide nesting habitat for Abbott's booby as they comprise regrowth vegetation not at a preferred height for nesting, within historically cleared mining areas that do not afford the same protection from trade winds (CIP, 2024).

The reconnaissance survey did however identify three Abbott's booby nest sites nearby the application areas; adjacent to the 133B-MB2 application area, around 15 metres from the 101-MB5 application area, and around 50 metres from the 133B-MB6 application area (CIP, 2024). Further, there are historical records of Abbott's booby nest sites within 300 metres of a further 11 of the application areas.

The greatest risk of impact to Abbott's booby nest sites from wind turbulence is from clearing upwind of a nest site. The application areas within 300 metres and upwind of a recorded nest site include 140-MB3, 116-STP23D, 101-MB4, 106-MB14B, and 133B-MB6. These areas largely comprise regrowth between 5 and 20 metres high (Range to Reef, 2014; CIP, 2024). The height of the regrowth vegetation within these upwind application areas is substantially lower than that typically occurring within primary rainforest on the island (comprising closed canopy of 40 metres high). Therefore, the proposed clearing of these areas is not likely to impact on nesting Abbott's booby through increased wind turbulence.

There is also the risk that clearing native vegetation nearby nest sites may (Commonwealth of Australia, 2020):

- cause edge effects to adjacent primary rainforest containing nest sites; and
- cause high levels of noise which may lead to birds abandoning nests, leaving chicks or eggs exposed to predation.

To reduce the risk of edge effects and noise impacts, the applicant has committed to

- identifying Abbott's booby nest sites nearby the application areas prior to clearing
- maintaining a 50-metre avoidance buffer to all Abbott's booby nest sites.

DWER considers that the commitment to maintain a 50-metre buffer around nest sites is adequate to minimise the risk of noise and edge effects to Abbott's booby nesting activity and nesting habitat, respectively. Selective rehabilitation of mined areas post mining, as determined by the Commonwealth, will also assist in minimising long-term impacts to nest sites over subsequent years.

Noting the above, the proposed clearing is not likely to significantly impact on Abbott's booby nesting individuals or critical habitat for this species.

Red crab

Red crabs are a keystone species on Christmas Island, responsible for maintaining the structure and composition of the island's rainforest. Red crabs are common in the moist environment of the rainforest, however, inhabit a variety of other habitats, including areas of primary and secondary regrowth (Director of National Parks 2015).

Red crabs were identified within application areas 106-MB13, 106-MB14, 133B-MB5, 133B-MB6, 133B-MB7 and 133B-MB8 (CIP, 2024; Range to Reef, 2014). Based on mapped crab burrow densities across Christmas Island, the application areas are not in areas of high red crab burrow density relative to the coastal terraces. Application area 140-MB3 is nearby an area of high burrow density, however this site is dominated by weeds and is not considered significant habitat for this species.

At the beginning of the wet season (October to December) every year adult red crabs migrate from the forest to the coast to breed and spawn (Director of National Parks 2015). An island wide study of red crab migration routes has previously been undertaken to identify the most strategic locations for red crab migration fencing and infrastructure points. Based on that study, and burrow densities, the application areas are unlikely to occur along important red crab migration pathways. The applicant has advised that mine haul routes are discussed between it and Parks Australia prior to the migration, to identify measures to minimise the extent of impact to this species.

Noting the above, the proposed clearing is not likely to impact on significant habitat for this species, or impact on its future breeding success. However, the proposed clearing will likely impact on individual red crabs using the application area at the time of clearing and may lead to an increase in red crab mortality during its migration period. The applicant has committed to liaising with Parks Australia prior to clearing during the red crab migration period to identify appropriate measures to minimise crab mortality.

Robber crab

Robber Crabs are found on most parts of Christmas Island, from the shore terrace to the highest plateau areas. Robber Crabs are habitat generalists, and all areas of previously uncleared rainforest are considered high quality habitat for this species (Director of National Parks, 2015).

This species was recorded in the 133B-MB5, 133B-MB5 and 106-MB14 application areas. While this species was recorded on site, given the extent of higher quality habitat that exists for this species within surrounding areas of primary rainforest in Christmas Island National Park, the habitat within the application areas is not considered significant for this species.

There is however the risk of mortality to this species through fauna strike during clearing operations. Measures to remove and relocate robber crabs from within the application areas during clearing will assist to minimise this risk.

Giant gecko

The giant gecko is endemic to Christmas Island. This species is found in all Island habitats, except for areas lacking trees and shrubs. Evergreen tall, closed primary forest on the plateau is considered the most important habitat for this species and is where the highest density of occurrence has been recorded (Director of National Parks, 2015; TSSC, 2014). While the surveys did not identify this species within the application areas, available databases (2015) indicate that this species has previously been recorded within the 106-MB14a application area.

Conservation advice for this species indicates that habitat loss has been a significant threat to this species in the past, however currently this is considered a potential future threat rather than a current threat given the protections in place to preserve the remaining primary forest areas within the Christmas Island National Park (DotE, 2013).

Some of the application areas contain dense secondary regrowth, therefore suitable habitat for this species occurs within the application area. However, this habitat is not considered significant noting the extent of higher quality habitat within the closed primary forest of Christmas Island National Park, which encompasses 64 per cent of Christmas Island (around 8,505 hectares).

The proposed clearing may however impact on this species through fauna strike should it be using the application area during clearing. Engagement of a fauna spotter to remove and relocate giant geckos from the application areas prior to clearing would assist to minimise this risk.

Other Species

The application areas also include suitable habitat for the below conservation listed species:

- Christmas Island emerald dove (*Chalcophaps indica natalis*) (EN; EPBC Act)
- Christmas Island goshawk (*Accipiter hiogaster natalis*) (EN; EPBC Act)
- Christmas Island hawk-owl (*Ninox natalis*) (Vulnerable); EPBC Act)
- Christmas Island thrush (*Turdus poliocephalus erythropleurus*) (EN; EPBC Act)
- golden bosunbird (*Phaethon lepturus fulvus*) (EN; EPBC Act)
- Christmas Island flying fox (*Pteropus melanotus natalis*) (Critically endangered); EPBC Act)

The surveys did not identify any evidence of nesting or roosting by the above species within or adjacent to the application areas (Range to Reef, 2014; CIP, 2023).

The habitat within the application area is unlikely to be significant to the above species given the presence of higher value habitat comprising primary rainforest and coastal terraces within the surrounding vegetated areas of Christmas Island, of which 75% is vegetated (comprising around 10,125 hectares) (Commonwealth of Australia 2013a, 2014, 2014a, 2016, 2016a). Of this vegetation, around 84% (8,505 hectares) occurs within the Christmas Island National Park.

The above species are highly mobile and are unlikely to be at risk of fauna strike if using any of the application areas at the time of clearing.

Conclusion

The application areas provide suitable habitat for conservation significant fauna. However, this habitat is not considered significant noting the below:

- the application areas have been historically cleared and do not contain primary rainforest

- the application areas comprise around 1.6% of the total vegetated portions of Christmas Island, much of which are protected within Christmas Island National Park and comprises higher quality fauna habitat in the form of primary forest
- the application areas do not contain any current nesting habitat for conservation listed birds, including the Abbott's booby.

The proposed clearing may however impact directly on conservation significant fauna through fauna strike. Species most at risk of fauna strike are the red crab (particularly during its migration period), robber crab and giant gecko. Several application areas are also within 50 metres of previously recorded Abbott's booby nest sites, and the proposed clearing has the potential to indirectly impact on nesting individuals and nesting habitat through noise and exacerbating edge effects, respectively. Appropriate management measures would assist in minimising these risks.

Conditions

To address the above impacts, the following management measures will be required as conditions on the permit:

- undertake pre-clearance searches for Abbott's booby nests within 50 metres of the application area, and avoid with a 50-metre buffer, any Abbott's booby nests identified
- engage a fauna spotter to remove and relocate robber crabs and giant geckos from the application area ahead of clearing
- liaise with Parks Australia prior to clearing during the red crab migration period to implement any agreed management measures to minimise crab mortality
- undertake slow progressive directional clearing to allow fauna to disperse ahead of clearing
- not clear during night time hours
- undertake weed management activities in accordance with the applicants approved weed management plan

The Delegated Officer also notes that, as required by the applicant's mining lease, the application areas will be relinquished post mining and considered for rehabilitation by Parks Australia as part of the Christmas Island Minesite to Forest Rehabilitation Program. The rehabilitation program is funded by a conservation levy paid by the applicant to the Territory Administration.

3.2.2. Conservation Areas - Clearing Principle (h)

Assessment

Christmas Island National Park covers around 64 per cent of Christmas Island. The National Park was established to conserve primary rainforest with the highest environmental values. Twelve of the application areas are within 50 metres of the National Park and several are connected to the National Park through continuous vegetation.

The 140-MB3 application area is also largely adjacent to the mapped Dales Ramsar site boundary. The site was listed as a Ramsar site in 2002, recognised for its high conservation values given it supports a variety of wetland species, communities and habitats including marine, terrestrial and freshwater dependant species (Butcher and Hale, 2010). The boundary of the Dales Ramsar site at this location mimics the boundary of the National Park.

The Dales Ramsar site covers an area of around 580 hectares and comprises a system of seven watercourses collectively known as 'The Dales'. Three of the Dales support permanent springs, and all support intermittent streams during the wet season. At its closest point, the 140-MB3 application area is around 200 metres from the closest Dales watercourse, which is a permanent spring.

Key threats to the Ramsar wetland include groundwater extraction, invasive yellow crazy ants, increased disturbance from recreation and climate change. DWER notes that phosphate mining on Christmas Island does not intercept groundwater.

While the proposed clearing will not directly impact on vegetation within the National Park or Ramsar site, the proposed clearing may result in the introduction and spread of weeds into these areas if appropriate management measures are not adhered to.

The applicant has committed to maintaining a 5-metre buffer around the National Park and Ramsar site. The applicant has advised that most of the approved mining lease boundaries have been established around 10-15 metres from areas previously cleared for mining operations, resulting in mine leases being surrounded by regrowth vegetation. Therefore, the applicant notes that a commitment to a 5-metre avoidance buffer generally results in a 20-metre buffer being maintained.

Additional information provided to support CPS 6323/1 notes that the above buffer is adequate to minimise direct and indirect impacts to the National Park and Ramsar site noting most weeds on Christmas Island cannot survive in primary rainforest due to low light and consumption by red crabs (Range to Reef, 2014a).

Potential weeds of intact rainforest must possess two key traits, the ability to establish and grow under heavy shade, and to tolerate, evade, or resist consumption by red crabs (Green et al., 2003). Most weeds on Christmas Island do not have these key traits and are therefore unable to penetrate primary rainforest. However, there are some shade tolerant species that can spread into forested areas without appropriate management.

Conclusion

The proposed clearing will not directly impact on vegetation within the National Park or Ramsar site, however it may result in the introduction and spread of weeds into these areas without appropriate management.

Conditions

To address the potential risk of weed spread into the National Park and Ramsar site, the following management measures will be required as conditions on the clearing permit:

- maintain a minimum five metre buffer to Christmas Island National Park and the Dales Ramsar site. This is considered adequate to minimise indirect impacts from clearing to these areas noting that –
    - the 140-MB3 application area (adjacent to the Ramsar site) was previously cleared and mined between 1982 and 1987, and the site is now covered by weedy regrowth to a maximum height of around 15 metres;
    - the application areas within 50 metres of the National Park have been historically cleared, and the proposed future clearing of these areas will not significantly increase the risk of weed spread into the National Park
    - most weeds on Christmas Island cannot survive in primary rainforest due to low light and consumption by crabs, except for shade tolerant weed species which can be appropriately managed; and
    - weed management measures will be required as a condition of the permit, as referred to below.
- undertake weed hygiene measures for machinery entering and leaving the proposed clearing areas; and
- undertake weed management activities in accordance with its weed management plan, as previously approved by the now Commonwealth DITRDCA.

3.3. Relevant planning instruments and other matters

The applicant operates phosphate mining, processing and shipping operations from Christmas Island over approximately 1636 hectares of the island (CIP, 2024). The applicant was issued a Mining Lease (MCI 70/1A) on 4 August 1997, under the *Mining Act 1978* (WA). In 2013, the lease was extended until 2034. All applications areas are contained within the approved mining lease.

The EPBC Act applies on Christmas Island. Mining was approved within MCI 70/1A in 1997 under the former *Environment Protection (Impact of Proposals) Act 1974*.

Under conditions of the mining lease, no primary rainforest can be cleared for mining operations. The applicant must comply with the requirements of an approved Environmental Management Plan (2018 – 2023), with the 2024 to 2029 plan in the process of being formalised.

Under the mining lease the applicant must implement a dust suppression program and pay a conservation levy to DITRDCA for the rehabilitation of mining leases and other priority conservation activities on Christmas Island. The applicant is required to maintain a mining lease area relinquishment schedule, where relinquished sites are made safe by the applicant and then transferred to DITRDCA. Once transferred, DITRDCA provides Parks Australia with a list of relinquished sites which are added to Parks Australia's portfolio and considered for rehabilitation under the Christmas Island Mine Site to Forest Rehabilitation Program.

The applicant has a prescribed premises licence issued to it by DWER under Part V of the EP Act, for the control and abatement of pollution from the loading and unloading activities and processing activities (beneficiation of metallic or non-metallic ore) on Christmas Island.

The Shire of Christmas Island was notified of the amendment application and did not provide comment. Local government approvals are not required for the proposed mining operation.

End

Appendix A. Site characteristics

A.1 Site characteristics

Characteristic	Details
Local context	Christmas Island retains approximately 75 per cent native vegetation, of which 84 per cent (64 per cent of total island area) is protected within the Christmas Island National Park. The 128.53 hectares of vegetation proposed for clearing occurs within 23 application areas and is largely surrounded by intact primary rainforest. The application areas have previously been cleared for phosphate mining.
Ecological linkage	The application areas do not form part of a known ecological linkage.
Conservation areas	Several of the application areas are within 50 metres of Christmas Island National Park. None of the application areas encroach on the National Park.
Vegetation description	Christmas Island was subject to an island wide vegetation mapping project between 2011 and 2014 (Geoscience Australia, 2014). The project largely mapped the application areas as: • Fern field – comprising expanse of low-lying ferns (typically *Nephrolepis biserrata)* often growing on limestone pinnacles • Mixed weed and pioneer species – regrowth vegetation with a mean tree height of less than 5 metres, typically containing a higher proportion of weeds than the below 'Regrowth' category • Regrowth – generally well-developed regrowth over 5 metres mean tree height, which may include weed species. All areas proposed for clearing have been previously cleared and contain varying extents of regrowth vegetation (CIP, 2024). A summary of the survey information indicates that the application areas largely comprise (CIP, 2024): • areas dominated by *Nephrolepis biserrata* fernland • areas dominated by weed species such as *Leucaena leucocephala *Cordia curassavica and *Clausena excavata* • areas cleared in the past 10 years with vegetation regeneration comprising native and weed species. Native species commonly include *Macaranga tanarius* shrubland *or woodland* • areas with secondary well-developed regrowth more than 5 metres high and may be up to 30 metres high. Commonly include *Macaranga tanarius*, *Arenga listeri, Pandanus elatus, Barringtonia racemosa, Arenga listeri, Dysoxylum gaudichaudianum, Syzygium nervosum,* and *Planchonella nitida*, which may form open or closed forest. A full description of the vegetation types present within each of the application areas is available within the publicly available 'Appendix 1 – Site Attributes' of the Range to Reef (2014) biological survey undertaken to support the original clearing permit application CPS 6323/1. A summary of the vegetation type and condition based on a ground truthing reconnaissance survey undertaken by Christmas Island Environmental Services in 2023, is publicly available within Table 4 of the 'Supporting Document for Amendment to CPS 6323/1' (supporting document) (CIP, 2024). Recent photographs of the vegetation within the application areas undertaken as part of the reconnaissance survey is publicly available within the document titled 'Appendix II Field Site Photos, Waypoints, and Condition Survey Score' (CIP, 2024). The above publicly available documents are available here - https://ftp.dwer.wa.gov.au/permit/6323/

Characteristic	Details
Vegetation condition	Photographs supplied by the applicant indicate that the vegetation within the application areas largely ranges from a completely degraded to very good (Keighery, 1994) condition, with the majority in a good to degraded condition. The full Keighery (1994) condition rating scale is provided in Appendix C. This scale had been adopted for use in the rainforest (Range to Reef, 2014). The specific vegetation condition of each application area based on the reconnaissance survey is publicly available within Table 4 of the 'Supporting Document for Amendment to CPS 6323/1' (CIP, 2024).
Climate and landform	Christmas Island is the summit of a submarine mountain. It rises steeply to a central plateau dominated by stands of rainforest. The plateau reaches heights of up to 361 metres and consists mainly of limestone with layers of volcanic rock. The Island's 80-kilometre coastline is an almost continuous sea cliff, ranging in height to 20 metres. Christmas Island has a tropical monsoonal climate with a distinct wet season occuring from December to April. The average rainfall is around 2,000 millimetres per annum.
Soil description	The application areas comprise a layer of phosphate-rich soil covering limestone. Marine sediments and guano deposition have formed the Island's phosphatic soils.
Land degradation risk	Christmas Island soils are generally highly permeable and there is little runoff, water or wind erosion. During the wet season runoff can occur during heavy rainfall causing some risk of soil erosion and sedimentation, however this is usually short lived.
Waterbodies	Perennial surface water on Christmas Island is limited to spring fed streams on coastal or sloping areas of the Island. Such areas are confined to Hosnie Springs and The Dales wetland areas, which are both listed as Ramsar wetlands and are listed in the Directory of Important Wetlands in Australia. The closest mapped wetland or watercourse to the application areas is 'The Dales' Ramsar wetland which is partly adjacent to the 140-MB3 application area. The Dales comprise 7 watercourses, of which the closest is ~200 metres from this application area.
Flora	Christmas Island is home to 242 native plant species, including 18 endemic species. Three threatened flora species (under the EPBC Act) are known from Christmas Island. These are *Asplenium listeri*, *Tectaria devexa* var. *minor* and *Pneumatopteris truncata*. These species have not been previously recorded within the application areas (Range to Reef, 2014; CIP, 2024). Two priority flora species are known to occur on Christmas Island, both listed as Priority 1 by DBCA. These species are *Clerodendrum inerme* and *Acalypha lanceolata* Willd. Var. *lanceolata*, which have been recorded around 1.8 kilometres and 270 metres from the application areas respectively. The closest known record of any of the above species to the application areas is *Tectaria devexa* var. *minor,* recorded around 145 metres from the 100-SPWMB2 application area.
Ecological communities	No threatened or priority ecological communities occur on Christmas Island.
Fauna	Christmas Island provides habitat for 14 land bird species and nine seabird species. Four seabird and nine land bird species are endemic to the island. A further 108 migratory or vagrant bird species have been recorded on the island. Six of the island's endemic birds are listed as threatened under the EPBC Act. One endemic native mammal, the Christmas Island flying fox and five endemic reptiles, also occur on Christmas Island. Christmas Island also supports 20 crab species with three species considered locally significant, being the red, robber and blue crabs. The giant gecko and Abbott's booby have both historically been recorded within the application areas (106-MB14A and 106MB14B). The applicant has since confirmed that no nest sites for the Abbott's booby currently occur any of the application areas (CIP,

Characteristic	Details
	2024). The fauna species with the potential to occur within the application areas based on habitat suitability are listed in Section A.2 below.

Species name	Conservation status	Suitable habitat features? [Y/N]	Identified within the application area? [Y/N]
Abbott's Booby (*Papasula abbotti*)	Endangered; EPBC Act	N	N – identified within 50 metres
Giant Gecko (*Cyrtodactylus sadleiri*)	Endangered; EPBC Act	Y	Y – historical (2015) record
Robber Crab *(Birgus latro*)	Not conservation listed	Y	Y
Red Crab (*Gecarcoidea natalis*)	Not conservation listed (keystone species)	Y	Y
Christmas Island Thrush (*Turdus poliocephalus erythropleurus*)	Endangered; EPBC Act	Y – foraging	Y – individuals foraging, no nest sites
Christmas Island emerald dove (*Chalcophaps indica natalis*)	Endangered; EPBC Act	Y	Y – individuals foraging, no nest sites
Christmas Island Goshawk (*Accipiter fasciatus natalis*)	Endangered; EPBC Act	Y	N
Christmas Island hawk-owl (*Ninox natalis*)	Vulnerable; EPBC Act	Y – foraging	N
Golden bosunbird (*Phaethon lepturus fulvus*)	Endangered; EPBC Act	Y – foraging	N
Christmas Island flying fox (*Pteropus melanotus natalis*)	Critically endangered; EPBC Act	Y - foraging	N

A.2. Fauna analysis table

With consideration of the site characteristics set out above, relevant datasets (see Appendix D), and biological survey information, the following conservation significant fauna species may occur within the application area.

A.3 Flora analysis table

There are three threatened flora species and two priority flora species known from Christmas Island, as shown below.

Species name	Conservation status	Suitable habitat present? [Y/N]
Tectaria devexa var. minor	Endangered; EPBC Act	N
Asplenium listeri	Critically endangered; EPBC Act	N
Pneumatopteris truncata	Critically endangered; EPBC Act	N
Clerodendrum inerme	Priority 1; listed by DBCA	N
Acalypha lanceolata Willd. Var. *lanceolata*	Priority 1; listed by DBCA	N

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): ***"Native vegetation should not be cleared if it comprises a high level of biodiversity."*** Assessment: A total of 75 flora species from 52 families have been recorded in the proposed clearing areas, this included 53 native species (three endemic) and 22 introduced species (Range to Reef, 2014; CIP, 2024). All 23 sites proposed for clearing have been previously cleared and contain regrowth vegetation, much of which is in a good to degraded (Keighery, 1994) condition. The applicant has committed to not disturbing any primary rainforest or areas of high environmental value within the Christmas Island National Park. The application areas are unlikely to contain any of the three threatened flora species, or two priority flora species recorded on Christmas Island, and do not contain high value fauna habitat relative to the extent of pristine primary rainforest in the surrounding National Park. Given the above, the application areas are not likely to contain a high level of biodiversity.	Not likely to be at variance	No
Principle (b): ***"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."*** Assessment: The application areas contain habitat for conservation significant fauna. Impacts to these species are assessed in detail under Section 3.2.1.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): ***"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."*** Assessment: Three threatened flora (EPBC Act) are known to occur on Christmas Island: • *Asplenium listeri* (Christmas Island Spleenwort) (critically endangered) – occurs in limestone rock crevices in dry exposed areas. Habitat critical to this species includes all limestone rock crevices nearby known occurrences and taller vegetation on the island side of cliff-top sites. • *Pneumatopteris truncata* (Christmas Island fern) (critically endangered) – is known from only two localities on the south west side of the island where it occurs on permanently moist sites associated with groundwater seepage in semi-deciduous closed forest. • *Tectaria devexa var. minor* (cave fern) (endangered) – occurs on the plateau in primary rainforest (tall and largely undisturbed) above 80 metres elevation. The species is limited to cave entrances, where wind is diminished, and moisture conserved. Habitat critical to this species survival is considered to include all areas within 50 metres of the area occupied by the species. (Butz, 2004; Butz, 2004a; CIP, 2024; Commonwealth of Australia 2014b; Range to Reef, 2014). The closest known threatened flora record to the application area is *Tectaria devexa* var. minor located around 150 metres from the 100-SPWMB2 application area within Christmas Island National Park.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
The biological survey of the application areas undertaken by Range to Reef (2014), and the reconnaissance survey undertaken by Christmas Island Environmental Services (CIP, 2024), did not identify any of the above species, or any suitable habitat for these species within or nearby the application areas. Noting the above, the proposed clearing is not likely to impact on the above threatened flora species or their habitat.		
Principle (d): ***"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."*** Assessment: No threatened ecological communities have been recorded on Christmas Island.	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): ***"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."*** Assessment: The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30% of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Christmas Island retains around 75 per cent native vegetation of which 84% (64% of the total island area) is protected within the Christmas Island National Park. The extent of native vegetation on Christmas Island is therefore consistent with the national objectives and targets for biodiversity conservation in Australia.	Not likely to be at variance	No
Principle (h): ***"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."*** Assessment: Twelve of the application areas are within 50 metres of Christmas Island National Park and one application area is adjacent to the Dales Ramsar site. Impacts to these conservation areas are assessed in detail under Section 3.2.2.	May be at variance	Yes *Refer to Section 3.2.2, above.*
Environmental value: land and water resources		
Principle (f): ***"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."*** Assessment: The 140-MB3 application area is largely adjacent to the mapped Dales Ramsar site boundary. At its closest point, the 140-MB3 application area is around 200 metres from the closest Dales watercourse, which is a permanent spring. The surveys did not identify riparian vegetation within the application areas (Range to Reef, 2014; CIP, 2024). Noting the distance of the application areas to the closest watercourse, the proposed clearing is not likely to directly impact on any riparian vegetation and is therefore not likely to be at variance to this principle. Indirect impacts to this Ramsar site are discussed under Section 3.2.2.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (g): ***"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."*** Assessment: The phosphatic soils within the application area are not typically prone to wind erosion. Around 70 per cent of the island's annual rainfall is taken up by its flora. The remaining infiltrates through the soil to recharge groundwater (CIP, 2024). The soil and underlying limestone rock on the island is very porous and there is minimal runoff except during torrential wet season downpours. Infiltration tests indicate that soil infiltration rates are typically substantially higher than hourly rainfall intensities. Therefore, the risk of erosion and sedimentation is generally localised to compacted areas such as roads and stockpile pads during high rainfall. Noting the above, the proposed clearing is not likely to cause appreciable land degradation.	Not likely to be at variance	No
Principle (i): ***"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."*** Assessment: The 140-MB3 application area is around 200 metres from the closest watercourse, a permanent spring, which is the closest watercourse to any application area. There is limited surface drainage on Christmas Island due to the high infiltration rates, and erosion and sedimentation is generally localised to compacted areas. Noting the distance to the nearest watercourse, and vegetative buffer that exists between the140-MB3 application area and the permanent Dales spring, it is unlikely that the proposed clearing will impact on the quality of surface water. This is also noting that this application area largely comprises fern fields in a degraded to completely degraded (Keighery, 1994) condition (CIP, 2024). As a precautionary measure, the applicant will be required to ensure that sediments are not discharged from the application area into the Dales Ramsar site, as a condition of the clearing permit. One of the major threats to the Dales is groundwater extraction which causes a decrease in groundwater flow and loss of permanent surface water (Butcher and Hale, 2010). Phosphate mining on Christmas Island does not intercept groundwater. The proposed clearing is not likely to deteriorate the quality of groundwater noting the extent of surrounding vegetation and high groundwater infiltration rates.	Not likely to be at variance	No
Principle (j): ***"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."*** Assessment: The proposed clearing is not likely to cause or exacerbate flooding noting the presence of highly permeable soils on Christmas Island, absence of watercourses within the application areas, and presence of extensive surrounding vegetation.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering the location of the application area, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from:

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Note: The field survey used the condition rating scale developed by Keighery (1994), but adapted for use in the Rainforest (Range to Reef, 2014).

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated trees/shrubs.

Appendix D. GIS Databases and References

D.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Cadastre (LGATE-218)
- Contours (DPIRD-073)
- Environmentally Sensitive Areas (DWER-046)
- Ramsar Sites (DBCA-010)

Restricted GIS Databases used:

- Abbott Booby Nests (2012)
- Christmas Island Vegetation (2014)
- Compiled Abbott's Booby Nest Sites (2017)
- Known Giant Gecko locations (2015)
- Known Abbotts Booby Locations (2015)
- National Park Boundary
- RAMSAR Wetlands (2013)
- Red Crab Burrow Density Grid
- Red Crab Migration Infrastructure
- Red Crab Migration Fencing
- Tectaria devexa var minor (2015)
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna

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