Supporting Document for Amendment to CPS 3290/3

Christmas Island Phosphates
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CHRISTMAS ISLAND PHOSPHATES

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Introduction

Phosphate Resources Limited (PRL) operates phosphate mining, processing and shipping operations from Christmas Island under the trading name of Christmas Island Phosphates (CIP). PRL were provided with a mining lease and environmental approval to mine in 1997 and operated under this basis until the application of Western Australian legislation required the company to apply for clearing permits under the *Environmental Protection Act 1986* (WA) (CI) (EP Act) for all future clearing. The original lease granted was for 10 years, with a second lease provided in 1997 for a further 21 years, and a lease amendment in 2013 taking the current lease term until 2034. PRL have progressively applied for and obtained approval for clearing in target sites over mining lease MCI 70/1A.

Background

CPS 3290/1 was originally approved in 2009 under section 51E of the EP Act 1986. This permit authorised CIP to clear no more than 173.1 hectares (ha) within 12 approved blocks. In April 2014, CPS 3290/2 was granted, extending the duration of the permit for the purpose of in situ mining and stockpile recovery until 2019. CPS 3290/3 was then granted in July 2017, to further extend the duration of the permit with no additional condition changes. CPS 3290/3 is valid until 31 August 2025.

Location

Christmas Island is located in the Indian Ocean, 10°30' South, 105°40' East, and approximately 2,600 km north-west of Perth, Western Australia. Christmas Island is 500 km south of the Indonesian capital Jakarta (Figure 1).

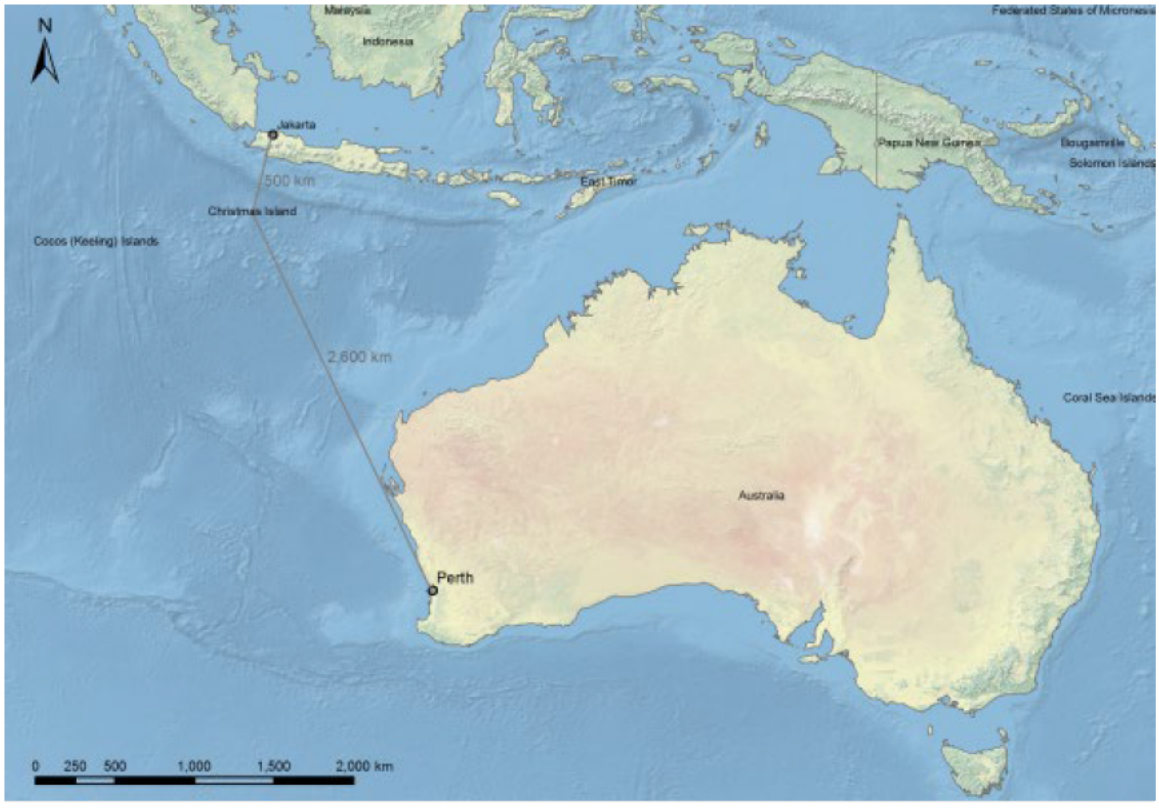

Figure 1: Location of Christmas Island (PRL, 2014)

Legislative Framework

The *Christmas Island Act 1958* outlines the governance arrangements for the Island. Sections 8 and 8E of the Act make provision for the laws of Western Australia and the Commonwealth to apply in Christmas Island. The Minister lists selected Western Australian laws to be applied in the *Applied Laws (Implementation) Ordinance 1992*. The Island is governed under Commonwealth legislation and administered by the Department of Infrastructure, Transport, Regional Development, Communication and the Arts (DITRDCA). Applied Western Australian laws are administered by the relevant Commonwealth Minister, by Commonwealth officers acting under ministerial delegations, or by State officers exercising delegated power and acting pursuant to inter-government service agreements under Section 8h of the act.

CIP operations (mining, processing, transport, and shiploading) are regulated through the Licence for Prescribed Premises issued under the *Environmental Protection Act 1986* (WA) (CI) (EP Act). The licence specifies monitoring and reporting requirements.

Clearing of native vegetation is regulated under provisions in the EP Act (Section 51) and under current governance arrangements any clearing within MCI 70/1A must be assessed and approved under this legislation.

Tenure

CIP was granted approval to re-mine and/or remove existing stockpiles of low-grade ore over approximately 2,000 hectares (14% of the Island) of previously cleared areas outside the National Park in 1990 by a lease with the Commonwealth issued under the *Lands Ordinance 1987*. Mining Lease, MCI 70/1, was granted to CIP by the Commonwealth in 1997 under the *Mining Act 1978* (WA) (CI) following approval under the *Environment Protection (Impact of Proposals) Act 1974* (Commonwealth) (EPIP Act). The approval for disturbance was carried over to the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) when the EPBC Act came into effect in 2000. In June 2013, MCI 70/1A was renewed until 2034 as part of a rewriting of the mining lease undertaken largely to clarify and update the royalty and conservation levy provisions and rehabilitation obligations.

MCI 70/1A is the principal lease for the Christmas Island operation. The lease outlines conditions that must be met by Phosphate Resources Ltd and includes the payment of royalties, rainforest protection, mine management and road maintenance and lease Covenant 8.3, which requires that the Lessee 'shall undertake to comply with all the requirements of the Environmental Management Plan' (EMP). The EMP is revised every five years, and the most recent EMP covers the 2024 – 2029 period (currently under assessment). The lease is administered by DITRDCA and expires in 2034.

All CPS 3290/3 areas fall within the MCI 70/1A lease with the exception of the southern most portion of block 100-MCP-SP-SOUTH-MB2 which has been relinquished back to the Commonwealth. The Commonwealth have requested for areas that have been relinquished to remain within PRL's CPS boundaries to facilitate and support the Parks Australia rehabilitation. A letter from the Commonwealth giving written authority to PRL to access the land for clearing can be found in Appendix III.

Conservation Levy

The rehabilitation of former mining areas is undertaken as part of the Christmas Island Minesite to Forest Rehabilitation Program. The program is funded by a conservation levy paid to the Territory Administration by Phosphate Resources Limited as a provision of Mining Lease MCI 70/1A. The program is operated by Parks Australia under a Memorandum of Understanding between the Director of National Parks and the Territory Administration. The conservation levy is paid on all lease areas for all rock and dust exported.

PRL must pay the Conservation Levy quarterly to the Department for the purpose of rehabilitating cleared areas and other high priority conservation activities on Christmas Island as the Commonwealth sees fit.

Ownership

Phosphate Resources Ltd (PRL) was established in 1990 to reopen the Christmas Island phosphate mine, first established in 1891, which had been shut down in 1987. PRL trades as Christmas Island Phosphates (CIP) which is one of PRL's subsidiaries (Figure 2). CIP is the current operator of the phosphate mine which exports phosphate rock predominantly throughout the Southeast Asian market.

Figure 2: Corporate Structure

Proposed Amendment

Christmas Island Phosphates was granted Clearing Permit 3290/3 on 28 July 2017, which approved clearance of a total of not more than 173.1 hectares of native vegetation over 12 blocks for the purposes of stockpile recovery and insitu phosphate mining.

CIP does not seek to make any changes to the areas to be cleared in this application. All the proposed clearing within CPS 3290/3 will be undertaken in historically cleared areas within MCI 70/1A in blocks outlined on Plans 3290/3a and 3290/3b. No primary rainforest will be cleared for mining operations.

Areas within the Permit fall into the following categories:

- Stockpiles built by CIP;
- Areas dominated with fern vegetation which was previously considered a weed due to the low environmental values of these areas;
- Areas dominated by weed species;
- Areas with secondary regrowth;
- Areas which have been cleared in the past ten years but have had vegetation regeneration; and
- Areas with high value vegetation which will be protected.

Extension of Permit

Currently, CPS 3290/3 expires 31 August 2025. PRL request that the permit expiry is extended to align with MCI 70/1A tenure expiry, that is 26 June 2034, to ensure continuation of operations.

Conditions

PRL request to amend Condition 6(b): *Weed management activities will be undertaken by the Permit Holder in accordance with a Weed Management Plan approved by the General Manager responsible for Territories Department of Infrastructure and Regional Development.* ~~*This plan is to be developed by the Permit Holder within 12 months of this permit being granted.*~~ As the CIP Weed Management Plan was approved in May 2017 by the then Department of Infrastructure and Regional Development this sub condition as well as Condition 6(c) are no longer current.

PRL request to remove Condition 6(c); *At least once in each 3-month period prior to the Weed Management Plan required in condition 6(b) being approved, the Permit Holder must remove or kill any weeds growing within areas cleared under this permit.*

PRL request to amend Condition 7(a): *The Permit Holder shall maintain 50 metre buffers to the National Park boundary when clearing native vegetation* to specify a 5m buffer (instead of 50m) to align with boundary conditions on recently issued permits.

PRL requests to amend Condition 7(b): *The Permit Holder shall identify the following listed flora species and shall maintain the buffer around each species in accordance with the following table:* ~~*Where the species is found outside of the mine lease, the buffers shall be maintained to ensure clearing does not occur within these buffer areas.*~~ The permit holder can apply to the CEO for access to clear vegetation within the buffer zones stated within Condition 7(b) on a case by case.

PRL additionally request on behalf of the Commonwealth for clearing for the purpose of rehabilitation to be included for areas within tenure which have been relinquished.

Clearing to Date

Approximately 21 hectares (ha) has been cleared under CPS 3290 to date. Table 1 presents clearing undertaken per block within CPS 3290 (Table 1; Figure 3; Figure 4).

Table 1: Clearing under CPS 3290 as of 1 July 2024

CPS 4506/3 Block	Block Use	Area Cleared (ha)	Notes
ML133A-MCP-STP9A	Stockpile/Insitu	-	
ML133A-MCP-FIELD9MB1	Stockpile/Insitu	0.9787	
ML133A-MCP-STP23P	Stockpile/Insitu	2.8396	
ML133A-MCP-STP22P	Stockpile/Insitu	2.8957	
ML133A-MCP-STP9C	Stockpile/Insitu	2.0925	
ML100-MCP-SP-CENTRAL-MB1	Stockpile/Insitu	0.5313	
ML100-MCP-SP-CENTRAL-MB2	Stockpile/Insitu	1.0441	
ML100-MCP-SP-CENTRAL-MB3	Stockpile/Insitu	0.1417	
ML100-MCP-SP-SOUTH-MB1	Stockpile/Insitu	10.8009	
ML100-MCP-SP-SOUTH-MB2	Stockpile/Insitu	-	Southern portion relinquished
ML100-MCP-SP-EAST-MB3	Stockpile/Insitu	0.0099	
ML100-MCP-SP-EAST-MB4	Stockpile/Insitu	-	
	TOTAL(ha)	**21.3343**	

Relinquished Areas

Revegetation activities undertaken under the Christmas Island Minesite to Forest Rehabilitation Program by Parks Australia ensures that lands which have been mined and are subsequently relinquished to Parks Australia can be quickly returned to a vegetated state with some habitat value for wildlife. The Commonwealth have requested for areas that have been relinquished to remain within our CPS boundary to facilitate and support the Parks Australia rehabilitation. PRL have been issued a letter from the Commonwealth giving written authority to PRL to access the land for clearing (Appendix III). To date, only the southern portion of block 100-MCP-SP-SOUTH-MB2 has been relinquished.

Compliance

Non-compliances to CPS 3290/3 are outlined in Table 2 below. The incidents were picked up in a clearing audit completed in 2019 and reported in the subsequent annual report dated June 2019.

Table 2: Non-compliance Incidents

Date	Block	Non-compliance
2017 & 2018	ML133A-STP23	Condition 2: "Land on which clearing is to be done…"

In 2019, CIP identified historic clearing incidents that were backdated to 2017 and 2018 whereby 0.2424ha of clearing in Block ML133A-STP23 had exceeded beyond the southeastern permit boundary.

Mitigation measures taken since to prevent recurrence are outlined in the section on Clearing Activities.

Existing Environment

Climate

Christmas Island lies on the southern edge of the inter-tropical convergence zone and the climate is dominated by a low-pressure trough that seasonally circles the equator. The Island has a tropical monsoonal climate with distinct wet and dry seasons and little seasonal variation in temperature. The dry season (May to November) is dominated by low and sporadic rainfall with consistent south-east trade winds. The wet season generally occurs from December to April with the island receiving most of its rainfall during this period. Christmas Island's average annual rainfall over 30 years is around 2,000mm but may vary considerably from year to year; with the island's lowest recorded annual rainfall being 1,067mm in 1987, and the highest 5,121mm in 2016 (BOM, 2023). Temperatures remain relatively uniform throughout the year, with an average daily maximum of 28°C in March/ April and average daily minimum of 22°C in August/ September. The Island has high humidity (80-90%) throughout the year.

During the wet season, Christmas Island is subject to the influence of north-west monsoons, which typically cause high swells and high winds, with gusts of over 100 km/h. Many cyclones have passed nearby the Island, resulting in strong winds and heavy rainfall on the Island. The last cyclone to cause any real damage to the island was Cyclone Gillian, which caused significant damage to rainforest communities in 2014, with trees blown over and foliage stripped from many areas.

The island has distinct microclimates due to the island's geography, with rainfall measurements indicating that there are significant variations in rainfall (Falkland, 1999) across the island. Average rainfall at Rocky Point (Settlement), Jedda Cave and South Point (1,931, 2,375, & 1,907mm respectively) for example shows the significant variation across the Island. Daily evaporation generally exceeds rainfall between July and October.

The Christmas Island Aero weather station (Station Number 200790) has operated from 1972 to present and is situated on the plateau near the airport at an elevation on 261m above sea level.

Hydrology

A major feature of the Christmas Island geomorphology is the lack of surface drainage. Rainfall mostly infiltrates the land surface and is utilised by plants, contributes to soil water stores or recharges to groundwater. There is therefore no significant surface drainage network except down gradient of springs that arise at the interface between limestone and basalt formations (Hollingsworth, 2003).

Christmas Island's soils are generally highly permeable and there is consequently little runoff or erosion. In the Wet Season when the soils are saturated runoff can, during heavy rainfall, induce some risk of erosion and sedimentation. However, given the high natural infiltration rates the risk of erosion and sedimentation is generally localised to compacted areas such as roads and stockpile pads. Infiltration tests by Puhalovich et al. (2003) indicate that soil infiltration rates are typically substantially higher than hourly rainfall intensities.

Perennial (permanent) surface aquatic habitats (freshwater) on Christmas Island are limited to a number of spring-fed streams found along coastal or sloping areas of the Island. Hosnie's Spring and The Dales (Figure 6) are both listed as a Wetland of International Importance under the Convention on Wetlands of International Importance, Water Fowl Habitat 1971 (known as the 'Ramsar Convention', with the sites referred to as Ramsar sites within internal documents) and are listed in the Directory of Important Wetlands in Australia.

Hydrogeology

There are three key hydrogeological units on the Island; shallow, residual soils, which overlie fractured, unconfined – semi-confined aquifers within the karstic limestone rocks, which in turn overlie relatively impermeable volcanic basement rocks (Puhalovich et al., 2003). Groundwater levels on the Island are reflected by the location of the unconfined water table within the karst limestone aquifers. Limestone aquifers can be recharged when rainfall permeates through the soil zone into the underlying aquifers or by direct runoff of

rainfall into karst features such as dolines and sinkholes that occur across the Island (Puhalovich et al., 2003). Assessments suggest that approximately half of all incident rainfall passes through the soil zone and recharges the underlying limestone aquifers (Hollingsworth, 2003; Falkland, 1999). Groundwater discharge occurs at surface springs such as Hosnie's Spring and offshore springs such as those found at Flying Fish Cove (Puhalovich et al., 2003). The complex behaviour and extent of weathered/fractured rock aquifers on the Island are not well understood.

Geology, Soils and Landforms

Christmas Island is one of a series of submarine seamounts that rise above the 5,500 m deep abyssal areas of the West Australian Basin. At the core of the island are volcanic rocks, mainly composed of basalt with a layer of limestone generally covering these volcanic rocks, with occasional outcrops, particularly along the present coastline. A series of geological uplifts and successive layering of coral reefs over the basalt core of the island have led to the eruption of new cliffs and terraces from the ocean, forming stepped terraces and inland cliffs.

The oldest (Upper Eocene) limestones are found near present sea level and the youngest (Pliocene) near the island summit, 330 m above sea level. The limestone is mixed with dolomite sediments, basalts, and tuffs. Marine sediments and guano deposition have formed a layer of phosphate-rich soil material that covers the limestone over about half of the island. The island is characterised by sea cliffs that rise via a series of terraces to a central plateau. The shoreline is dominated by cliffs and extensive shore platforms with a few small beaches including Flying Fish Cove which has a relatively large beach and shallow platform being the only safe harbour for much of the year. The island's natural landscape is dominated by karstic surface landforms and cave systems (Grimes, 2001). Figure 11 shows a cross section of Christmas Island (exaggerated vertical scale) showing volcanic core, limestone capping, water flow lines and typical cave development (source Grimes 2001).

Terrace areas on the Island reflect the height above sea level in different geologic periods. Renewed vulcanism and a series of geological uplifts at different periods have resulted in a tiered effect. The oldest limestones near the peak of the Island formed during the Eocene period (Grimes, 2001). Most the Island's limestone deposits were formed during the Tertiary (late Oligocene to mid Miocene age), with the youngest limestones deposited on the lowest terrace in the late Quaternary (Grimes, 2001).

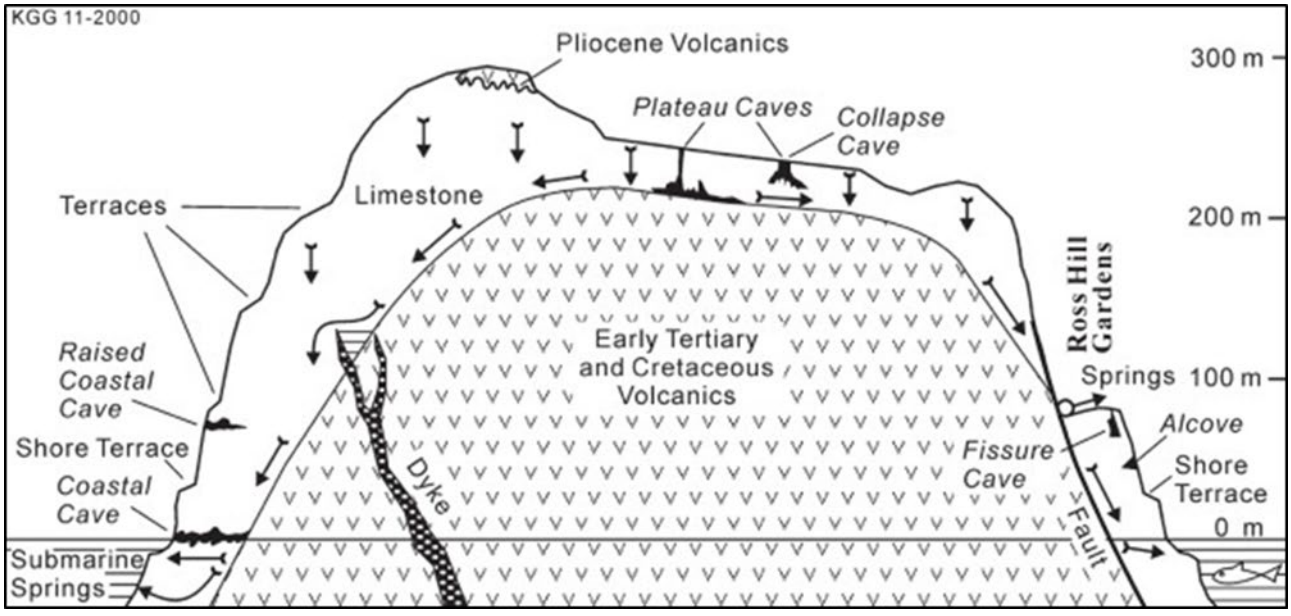

Figure 5: Diagrammatic cross-section of Christmas Island (Grimes 2001)

Land Use

There are a range of current land uses on Christmas Island with the largest land use by area being nature conservation in the form of the Christmas Island National Park (CINP), occupying 63% of the island. Other land uses include residential housing, tourism, recreation (e.g. golf course), transport and the provision of utility services Numerous businesses and services have been developed on the island to support the phosphate mine, detention centre, tourism industry and the island population, including construction, retail/hospitality, training/education, Government and maritime services, agriculture, sport/recreation, maintenance, arts, and the airport.

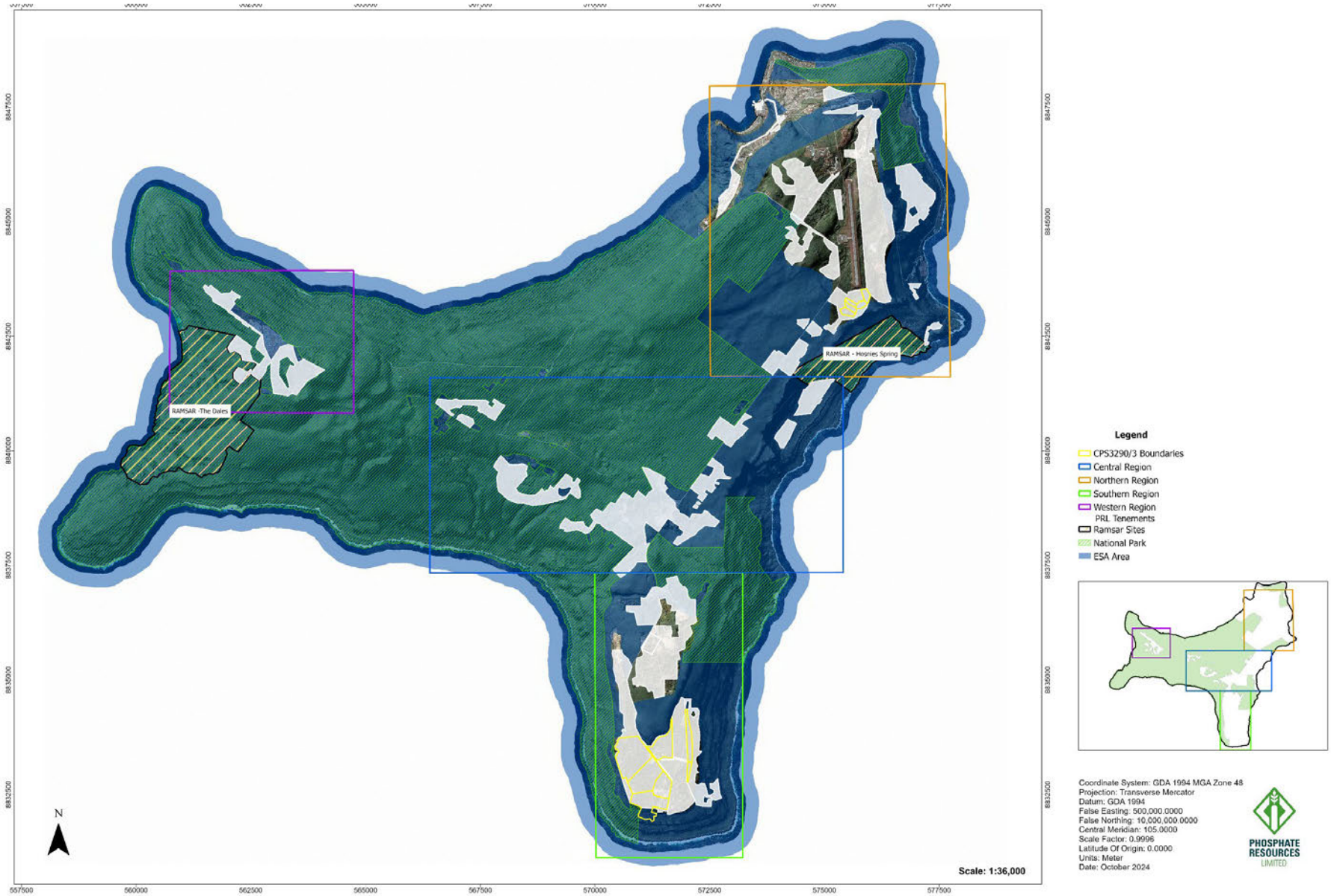

Figure 6: PRL Land Tenure and Environmentally Sensitive Areas

Land Systems

The national and regional planning framework for the systematic development of a comprehensive, adequate and representative 'CAR' National Reserve System is provided by the Interim Biogeographic Regionalisation for Australia (IBRA). IBRA was developed in 1993-94 and is endorsed by all levels of government as a key tool for identifying land for conservation under Australia's Strategy for the National Reserve System 2009-2030. The nationally agreed regionalisation was published in Thackway and Cresswell 1995, An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves.

As per the Bioregion map for IBRA, managed by DCCEW, Christmas Island is in the Interim Biogeographic Regionalisation of Australia (IBRA7) as part of ITI (Indian Tropical Islands, ITI01) (Australia's Bioregions - DCCEEWc 2023).

Environmental Sensitive Areas

An Environmentally Sensitive Area (ESA) means an area declared in Regulation 6 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* to be an Environmentally Sensitive Area. These areas are protected under legislation (EP Act).

The ESA on Christmas Island covers areas including:

- The National Heritage Listed "Christmas Island Natural Areas"
- The Ramsar listed nationally important wetlands Hosnie's Springs and The Dales

The "Christmas Island Natural Areas" ESA on Christmas Island was put in place under the EPBC Act but has subsequently been repealed; however, the gazetted *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* ruling is still in place. The "Christmas Island Natural Areas" is applicable across a large part of the island ruled to be "natural", including previously cleared areas, and areas immediately adjacent to CIP infrastructure. This prohibits CIP conducting any works which would ordinarily be allowed as exemptions for clearing native vegetation for certain reasons (i.e. maintenance requirements) within the ESA. A number of blocks within the permit fall outside of the ESA in the Dogs Head and South Point Regions.

CPS 3290/3 does not intersect or adjoin either of the Ramsar listed wetlands (Figure 6).

A Protected Matters Search using the DCCEEW tool did not identify any additional areas requiring specific management (DCCEEWc, 2024).

Flora and Vegetation

The flora of Christmas Island has very strong taxonomic relationships with those of the Indo-Malayan and Malesian regions. Some species (e.g. *Terminalia catappa*, *Inocarpus fagifer* and *Gyrocarpus americanus*) are more widely distributed, and largely unremarkable, tropical Indo-Pacific littoral flora that extends as far east as the islands of Polynesia. Despite its isolated location, estimated 10-million-year history above sea level, and diverse 'high-island' landscape, only eighteen species are known to be endemic (denoted by §) to Christmas Island.

The flora comprises about 420 species of vascular plants with approximately 242 species indigenous to the island and a further 177 species introduced since human occupation (Director of National Parks, 2014b). The general taxonomic status and affinities of the flora are relatively well known but detailed records of population distributions across the island (and its range of habitats) are limited for many species. Some additional species of ferns, herbs and shrubs continue to be added to the flora from further collections, especially from poorly accessible terrace areas on the island.

Christmas Island National Park (CINP), which covers some 63% of the island, is assigned to IUCN reserve category II, most of which is uncleared primary rainforest; approximately 25% of the island's original vegetation has been cleared for mining and infrastructure.

Three features of the ecology of the island's native vegetation are notable:

- The occurrence of many of the widespread Indo-Malesian species in habitats that would be considered extremely atypical elsewhere in their natural ranges, and associated with this, the exceptionally large stature of some of these species.

- The low diversity of canopy and sub-canopy species and the lack of structural complexity (e.g. relatively poor development of robust woody vines and rattans, the absence of aroids and of gingers in the understorey) in the Island's rainforests; and the very low diversity and lack of speciation amongst plant genera that elsewhere in the region is characteristic of early successional, and frequently disturbed, rainforest environments (e.g. *Macaranga*, *Claoxylon* and *Pipturus*).

- The geology, geomorphology and climate on Christmas Island create the biophysical environment and constraints for the vegetation communities. These factors determine the soil nutrient status, the seasonal availability of moisture and the degree of exposure to wind, which in turn control the distribution, structure and functioning of the natural vegetation.

Vegetation Types

Vegetation mapping of the Island was initially undertaken by Mitchell (1985) for the Australian Nature Conservation Agency. This mapping had limited use due to its broad scale and spatial inaccuracy. Flora of Australia Volume 50 (Du Puy, 1993a) listed eight vegetation types for the Island.

An island wide vegetation mapping project was undertaken from 2011 to 2014 to attempt to map vegetation with better spatial accuracy, to determine height categories and to apply these consistently across the Island. The process included a Light Detection and Ranging (LiDAR) survey, review of historic aerial photography which captured past clearing, and ground truthing. Additional categories were added to include wetland vegetation and regrowth in cleared areas. The Christmas Island Vegetation and Clearing Map was developed through a collaborative project by Geoscience Australia, CIP, CINP and the Commonwealth Department of the Environment (Geoscience Australia, 2014).

The mapping classified the full extent of Christmas Island into vegetation and land cover classes (Table 3), though boundaries are not always perfectly geographically accurate. Flora of Australia's vegetation types, which are still referred to in some documents, were recategorized to the following:

- 'Primary rainforest' - closed canopy evergreen forest,
- 'Marginal rainforest' - semi-deciduous forest,
- 'Areas with surface water' - perennial wetland forest,
- 'Open forest, scrubby forest and vine forest' and 'inland cliffs' - semi-deciduous scrub,
- 'Coastal fringe' and 'shore cliffs and spray zone' - coastal fringe vegetation, and
- 'Mined areas' - rehabilitation, regrowth and weed dominated veg and pioneer regrowth.

There are seven major structural types of secondary vegetation (i.e. vegetation that has established in areas that have been cleared of the original natural forest) on Christmas Island. The occurrence of these secondary vegetation types in specific disturbed areas on Christmas Island reflects the influence of four main factors:

- The areal extent and the severity /intensity of the original disturbance (especially whether the soil profile has been disrupted or removed),
- Proximity to the nearest forest boundaries and/ or to weed-infested areas,
- The subsequent disturbance or management history of the area (especially the frequency and intensity of further disturbances including fire), and
- The time since the last major disturbance occurred.

Whether or not the soil profile has been removed or disturbed, the proximity to forest and/or to weed infested areas and the occurrence of further disturbance are the major environmental determinants of secondary vegetation type and successional pathways. There are four main successional pathways, as defined by Bennett in 2010:

- Arrested successions dominated by ferns,
- Stagnant successions dominated by thickets of exotic shrubs and vines,
- Reconstructive successions dominated by *Macaranga tanarius*, and
- Retrogressive successions leading to fernlands.

Within CPS3290/3 permit areas, approximately 21% is free from vegetation, classed under “Bare Ground”, “Infrastructure” or “Mining”. Of the vegetated areas, there are two main types of vegetation:

- **Regrowth (~25%); and**
- **Weed dominated vegetation and pioneer regrowth (~53%).**

Table 3: Vegetation Types of Christmas Island (Du Puy 1993, and Geoscience Australia 2014)

Vegetation Type	Geoscience Australia			Indicator Species
	Level 1	Level 2	Description	
Primary Rainforest	Closed canopy evergreen forest	Closed canopy evergreen forest (tall or moderate)	Generally found on the plateau and terraces, with a closed uneven canopy up to 40 m in height. Some trees emerge up to 10 m above the canopy. Often supports ferns and orchids, young palms and lilies in the understory.	*Bolbitis heteroclita, Syzygium nervosum, Hernandia ovigera, Planchonella nitida, Pisonia umbellifera, Corymborkis veratrifolia, Ehretia javanica*
Marginal Rainforest	Semi-deciduous forest	Semi-deciduous forest	Generally found on the slopes and terraces down to the coast - and some plateau areas. Higher occurrence of semi-deciduous trees compared to Closed Canopy Evergreen, which lose a portion of leaves during the dry season. Tree height generally 10-25m	*Terminalia, Gyrocarpus, Erythrina variegata, Premna serratifolia, Pisonia grandis, Ochrosia ackeringae*
Inland Cliffs and Open Forest, scrubby forest and vine forest	Semi-deciduous scrub	Semi-deciduous scrub	Found on the terraces, steep slopes and inland cliffs. Semi-deciduous canopy with vines and shrub understory Tree height generally <10m.	*Colubrina pedunculata*[§] *Canavalia cathartica, Carmona retusa, Cycads*
Areas with Surface Water	Perennial wetland forest	*Inocarpus fagifer* dominant	Areas of fresh water runoff on the lower terraces dominated by *Inocarpus fagifer.*	*Inocarpus fagifer*
		Hibiscus tiliaceus dominant	Areas of fresh water runoff on the shore terrace dominated by *Hibiscus tiliaceus*.	*Hibiscus tiliaceus*
		Bruguiera dominant	A single patch of vegetation dominated by *Bruguiera* at Hosnie's Spring. Occurring in an area of fresh water runoff on the shore terrace.	*Bruguiera gymnorhiza*
Coastal Fringe OR Shore cliffs and spray zone, and Mined Areas	Coastal fringe vegetation	Coastal herbland	Found between the coastal scrub and coastal cliffs in exposed areas. Class is dominated by low-lying herbs, sedges and grasses.	*Portulaca tuberosa, Ischaemum nativitatis*[§] *, Oplismenus compositus, Sporobolus virginicus*
		Coastal shrubland	Dense salt-tolerant vegetation growing between the coastal herbland and the terrace cliffs.	*Pandanus christmatensis*[§]*, Scaevola, Pemphis, Argusia argentea, Cordia cordata, Guettarda*

Vegetation Type	Geoscience Australia			Indicator Species
	Level 1	Level 2	Description	
Coastal Fringe OR Shore cliffs and spray zone, and Mined Areas	Rehabilitation	Rehabilitation	Areas where forest rehabilitation has taken place. The standard of forest varies depending on the type of rehabilitation completed, species planted and management regime.	A mix of up to 30 native tree species when initially planted, dependent on characteristic of the site and year of rehabilitation. *Macaranga, Dysoxylum, Ficus, Pittosporum, Tristiropsis*
	Regrowth	Regrowth	Generally, well developed regrowth vegetation >5 m mean tree height. May include some introduced or weed species.	Various species – dependent on adjacent vegetation
	Weed dominated vegetation and pioneer regrowth	**Leucaena leucocephala*	Monoculture of **Leucaena leucocephala*. Often occurring as regrowth in previously cleared areas.	**Leucaena leucocephala*
		Fern field	Expanse of low-lying ferns often growing on limestone pinnacles.	*Nephrolepis biserrata, Microsorum scolopendria, Psilotum nudum*
		Mixed weed and pioneer regrowth	Regrowth vegetation with a mean tree height of <5m. Can vary between native and introduced species depending on the location and time since clearing. Tends to have a higher occurrence of weed species compared to the 'Regrowth' category.	**Muntingia calabura, *Psidium sp. (Guava), *Mimosa, Passionfruit, Macaranga*

Note: Endemic flora taxa are denoted by §, foreign introduced weed species are denoted by*

Vegetation Condition

A field ground truthing assessment was undertaken by Mr Leonard Stapp (BSc Environmental Management – major in Conservation Biology) of Christmas Island Environmental Services to determine if there was significant change to information provided for the previous CPS application. Mr Stapp has extensive experience in botanical surveying, as well as considerable local knowledge of the flora and fauna of Christmas Island. He has been providing environmental services such as botanical field surveys and assessments, species identification, in addition to monitoring and weed management programs for Parks Australia on Christmas Island. Mr Stapp has worked as a Field Supervisor/ Technical Coordinator; and as sole proprietor at Christmas Island Environmental Services. Additionally, he has widespread experience working in Environmental Advisor and Bushland Regeneration roles on mainland WA.

The ground truthing assessments for CPS 3290/3 blocks were conducted by ranking the vegetation condition of each site based on the Keighery Condition Scale (Keighery, B.J. 1994), with some allowances and modifications made to accommodate the unique tropical environment on Christmas Island (Table 4).

Table 4: Modified Vegetation Condition Score (Keighery, B.J. 1994)

Condition Rating	Keighery Definition	Christmas Island Definition
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance	Mature, undisturbed rainforest or very advanced secondary regrowth. Disturbance is limited to cyclone damage. Climax species dominate and full structural complexity is present with epiphytic orchids and ferns, terrestrial orchids and ferns, §*Pandanus*, pals, buttressing and woody lianes
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species	Little to no weed species and a largely intact landform with few signs of disturbance. The vegetation structure is beginning to develop the full complexity and diversity expected in rainforest, with climax species present and a range of features included such as buttressing, palms, ferns, epiphytes and orchids, but the canopy is likely to be more open than in undisturbed rainforest
Very Good (3)	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing	Low diversity vegetation with few signs of disturbance or moderately diverse vegetation on a disturbed landform, a canopy dominated by pioneer species through recruitment of climax species may be evident, an open canopy or poor structural complexity. Few weeds present or weeds are limited to less aggressive species.
Good (4)	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example,	Multiple signs of disturbance or with low diversity and no structural complexity. Typically displays little to no recruitment of climax tree species. Numerous weeds present or a dense understory

Condition Rating	Keighery Definition	Christmas Island Definition
	disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing	dominated by one or two native fern species
Degraded (5)	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 grazing	Vegetation at very early successional stages with a canopy of one to two species and an understory dominated by ferns or weeds, typically adjacent to completely degraded land. May have the potential to develop into better quality vegetation as the canopy develops if weeds are managed
Completely degraded (6)	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 native trees or shrubs	The structures of primary rainforest are no longer present and native species are limited to only a few species, for example weed dominated shrubland with sparse emergent *Macaranga* or a near monoculture *Nephrolepis biserrata* fernland. The landscape may be highly disturbed, often with significantly reduced soil and pinnacles exposed. Predominantly lacking a native canopy and with little to no potential to develop one due to dense groundcover of shallow soil

Data collected was compared against the vegetation data collated for the original application to identify any areas of significant change. No significant changes in vegetation type or condition category were identified.

Figure 9: Example of Category 6 (Completely Degraded) vegetation from 100-MCP-SP-CENTRAL-MB1 (left) and 100-MCP-SP-SOUTH-MB1 (right)

Figure 10: Example of Category 3 (Very Good) vegetation from 133A-MCP-STP9A

Table 5: Vegetation Condition and Comments

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Comments from previous assessment/s
133A-MCP-STP9A	3, 4	3.9957	Red crabs and red crab burrows associated with the vegetation classified as good to very good. Maximum canopy heights range from 22m to 28m. A blend of weed and native vegetation was recorded with dominant species including: *Arenga listeri, Planchonella duclita, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Macaranga tanarius, Leea angulata, Syzygium nervosum, Ehretia javanica. Low presence of weed species with Leucaena leucocephala, Cordia curassavica, Clausena excavate*	2008: Low level of biodiversity due to previous impacts from mining. Vegetation status is classed as heavily disturbed with a dominance of weed species. Average age of regrowth 10-15 years with dominant species including: Maclura vine, *Macaranga tanarius, Leucaena leucocephala, Tristiropsis acutangular, Barringtonia racemosa, Dysoxylum gaudichaudianum.*
133A-MCP-FIELD9MB1	5, 7	3.0142	Northern half of the block is cleared for mining. There is a southern portion of pinnacle field and a central strip of degraded, weed dominated regrowth with a maximum canopy height of 17m. Dominant regrowth species include: *Macaranga tanarius, Dysoxylum gaudichaudianum, Polichinelle duclita, Leucaena leucocephala, Cordia curassavica, Clausena excavata* and *Muntingia calabura.*	2008: Low level of biodiversity due to previous impacts from mining. Vegetation status is classed as heavily disturbed with a dominance of weed species. Average age of regrowth 10-15 years with dominant species including: *Leucaena leucocephala, Macaranga tanarius, Nephrolepis sp.*, Maclura vine, *Callicarpa longifolia, Dysoxylum gaudichaudianum.*
133A-MCP-STP23P	7	2.8734	Cleared for mining	2008: Low level of biodiversity due to previous impacts from mining. Vegetation status is classed as heavily disturbed with a dominance of weed species. Average age of regrowth 5-15 years with dominant species including: Maclura vine, *Tristiropsis acutangular, Claoxylon indicum, Macaranga tanarius, Dysoxylum gaudichaudianum, Leucaena leucocephala.*
133A-MCP-STP22P	7	3.8251	Cleared for mining	2011: This block is largely covered by regrowth (95%) with an average canopy height of 10-15m with some small pockets up to 20m.
133A-MCP-STP9C	7	2.2228	Cleared for mining	2008: Low level of biodiversity due to previous impacts from mining. Vegetation status is classed as heavily disturbed with a dominance of weed species. Average age of regrowth 5-15 years with dominant species

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Comments from previous assessment/s
				including: Maclura vine, *Leucaena leucocephala, Nephrolepis sp., Tristiropsis acutangular, Macaranga tanarius, Aspalinium nidus, Dysoxylum gaudichaudianum.*
100-MCP-SP-CENTRAL-MB1	6	22.1203	Vegetation assessed as completely degraded across the site. No fauna recorded. Low density with maximum canopy heights recorded as 3 – 7m. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Ficus microcarpa, Melochia umbellata, Tristiropsis acutangula*	2011: Heavily degraded across much of the block due to historic mining. Approximately 36% not vegetated and 51% covered by weed dominated vegetation and some pioneer regrowth with a maximum canopy height of 5m. Small portions within the northeast and northwest apex points (~1ha) have regrowth cover of up to 15m high.
100-MCP-SP-CENTRAL-MB2	4, 5	50.5254	Vegetation assessed as good in the southern part of the block to degraded across the northern two thirds of the site. No fauna recorded. Medium to low density. Maximum canopy heights range from 12m in the north to 20m in the southern part of the block. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Muntingia calabura Aleurites moluccanua; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Ficus microcarpa, Melochia umbellata, Tristiropsis acutangula, Arenga listeri, Pittosporum ferrugineum*	2011: Heavily degraded across much of the block due to historic mining. Approximately 18% not vegetated, 60% weed dominated vegetation less than 5m high and 22% regrowth cover of up to 15m high.
100-MCP-SP-CENTRAL-MB3	4, 5	33.9815	Vegetation assessed as good towards the central area of the block. degraded across the remaining two thirds of the site to degraded No fauna recorded. Medium to low density. Maximum canopy heights range from 7m in the north to 22m in the middle. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Delonix regia, Adenanthera pavoninananthera, Melia azedarach; Macaranga tanarius, Dysoxylum gaudichaudianum, Ficus*	2011: Heavily degraded across much of the block due to historic mining. Approximately 14% not vegetated, 67% weed dominated vegetation less than 5m high and 19% regrowth cover up to 20m in a small remnant portion central to the block.

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Comments from previous assessment/s
			microcarpa, Pittosporum ferrugineum, Claoxylon indicum, Pipturus argenteus.	
100-MCP-SP-SOUTH-MB1	5, 6	16.7399	Vegetation assessed as degraded in the northern part to completely degraded across the south of the site. No fauna recorded. Low density with maximum canopy heights recorded as 18m in the north and 3m in the south. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Ficus microcarpa, Melochia umbellata, Tristiropsis acutangula, Arenga listeri, Cloaxylon indicium, Pipturus argenteus*	2011: Heavily degraded across much of the block due to historic mining. Approximately 45% not vegetated, particularly in the southern third, 35% weed dominated vegetation less than 5m high, and some remnants of regrowth in the northwest block with a canopy of less than 10m (20% of total area).
100-MCP-SP-SOUTH-MB2	5	30.6354	Vegetation assessed as degraded across the site. No fauna recorded. Low density with maximum canopy heights recorded as 12 – 18m. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Delonix regia, Muntingia calabura; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Ficus microcarpa, Melochia umbellata, Tristiropsis acutangula, Pittosporum ferrugineum, Pipturus argenteus,*	2011: Heavily degraded across much of the block due to historic mining. Approximately 23% not vegetated and 57% weed dominated vegetation less than 5m high. Nineteen percent of the block was covered by regrowth, much of this in the southern extending node which has now been relinquished by CIP. This portion also contains just over 1% of relinquished semi-deciduous scrub and forest.
100-MCP-SP-EAST-MB3	5, 6	10.4925	Vegetation assessed as degraded across most of the block to completely degraded across the fern fields in the central area of the site. No fauna recorded. Low density with maximum canopy heights recorded as 12m in the north and 17m in the south. A blend of weed and native vegetation was recorded with dominant species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Ficus microcarpa, Tristiropsis acutangula, Arenga listeri, Cloaxylon indicium*	2011: Heavily degraded across much of the block due to historic mining. Approximately 22% not vegetated, 62 % weed dominated vegetation less than 5m high and 16% regrowth with a canopy height of no more than 10m.
100-MCP-WP-EAST-MB4	5	2.5390	Vegetation assessed as degraded across the. No fauna recorded. Low density with maximum canopy heights recorded as 15m in the	2011: Heavily degraded across much of the block due to historic mining. Approximately 10% not vegetated,

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Comments from previous assessment/s
			north and 8m in the south. A blend of weed and native vegetation was recorded with dominant species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Guetta speciosa, Dysoxylum gaudichaudianum, Tristiropsis acutangula, Pipturus argenteus.*	63% weed dominated vegetation less than 5m high and a small pocket of regrowth in the northern portion with an average canopy height of 5-10m (26% total cover).

Significant Changes to Vegetation

Assessment and comparison against the 2014 Geoscience dataset classifying vegetation into zones was undertaken. No locations were identified as having significant changes to the quality of vegetation, except for where clearing has been undertaken.

Flora of Conservation Significance

Three flora species which occur on Christmas Island are listed as threatened species under the *Environmental Protection and Biodiversity Conservation Act 1999* (Table 6).

No flora species of conservation significance is known to occur within CPS 3290/3.

Minimum boundaries are specified with Condition 10: Flora Management, should any protected flora species be identified in the proposed clearing areas.

Figure 8 and Figure 9 include the locations of identified priority fauna species neighbouring CPS 3290/3 blocks.

Table 6: Conservation Significant Flora Species

Genus (Family)	Conservation Status (listed under EPBC Act)	Habitat	Description	Distribution
Aspelenium listeri (Aspleniaceae)	CR	Limestone rock crevices in dry, exposed areas	A lithophytic fern with short erect fronds, 3.5 – 9 cm long, which grow in a crown	Christmas Island
Tectaria devexa var. minor (Dryopteridaceae)	EN	Primary rainforest (tall and largely undisturbed), above 80 metres elevation; both in deeper soils and as a lithophyte (on mossy pinnacles at the base of a slope, a wet site).	A small, tufted, terrestrial fern with pale green fronds.	Christmas Island and Sri Lanka.
Pneumatopteris truncata (Thelypteridaceae)	CR	Permanently moist sites in semi-deciduous closed forest.	A large terrestrial fern with an erect rhizome and fronds growing in a crown to 120 cm long. The fronds have aerophores (respiratory structures) at the base of the pinnae.	Fragmented distribution over Asia and Malaysia and two sites on Christmas Island.

***Asplenium listeri* (Christmas Island Spleenwort)**

The Christmas Island Spleenwort occurs in limestone rock crevices in dry, exposed areas on Christmas Island and hence is not associated with proposed clearing sites. The likelihood of Christmas Island Spleenwort being impacted by the proposed clearing is negligible due to an absence of suitable habitat in proposed clearing areas.

Figure 11: Christmas Island Spleenwort (Asplenium listeri[§])

Tectaria devexa var. minor

Tectaria devexa var. minor grows colonially, mainly on the plateau, in primary rainforest (tall and largely undisturbed), above 80 metres elevation; both in deeper soils and as a lithophyte (on mossy pinnacles at the base of a slope, a wet site). Ten populations of *Tectaria devexa* have been identified at Christmas Island, with the majority of these occurring in the National Park. No known populations of *Tectaria devexa* have been identified at proposed clearing locations from previous surveys or during the 2024 ground truthing, although the species is identified in neighbouring areas (Figure 8). The North-South Baseline Road separates the identified population from the nearest 3290/3 block, 100-MCP-SP-CENTRAL-MB2. Additional thorough ground truthing will be conducted prior to clearing being conducted in the vicinity of identified populations.

Figure 12: Tectaria devexa var. minor

Pneumatopteris truncata

Pneumatopteris truncata is known from two sites at Christmas Island (Hugh's Dale and Blowholes Ravine), and has a specialised habitat associated with groundwater seepage (Reddell et al, 2020). Neither location is within or close to the proposed clearing areas, which all occur within regrowth closed canopy evergreen forest, excepting one site which is on the boundary of evergreen and semi-deciduous forest. *Pneumatopteris truncata* grows in permanently moist sites in semi-deciduous closed forest. Due to the small number of known

populations, its habitat requirements are not known. The likelihood of *Pneumatopteris truncata* being impacted by the proposed clearing is negligible due to the proposed clearing areas occurring on the plateau in mining regrowth.

Figure 13: Pneumatopteris truncate

Fauna and Habitat

EPBC Act listed species, red crabs and robber crabs were identified as those prioritised for assessment of potential impact. Evidence which was used to identify potential habitats included assessment against known breeding habitats and locations, and preferred habitats. This was compared against findings from the original application. In addition, whilst conducting the flora surveys, the areas were also surveyed for evidence of fauna habitat, particularly Abbotts's Booby. No locations were identified as being affected by the proposed clearing areas.

Fauna of Conservation Significance

A desktop assessment of the likelihood of EPBC listed fauna species occurring in the permit areas, either resident or transient, was made on the basis of their breeding ecology, habitat preferences and known location records held by Parks Australia, and consultants who have previously conducted surveys for clearing permits including Range to Reef Environmental and JBS&G. An assessment of the impact of the proposed clearing has been made against the clearing principles later in this report, together with other notes on impact and proposed mitigation.

Likelihood of presence of conservation significant fauna species within proposed clearing areas was assessed and the potential for significant impact to the species was examined (Table 7). The assessment suggested that the risk posed to conservation significant species from the proposed mining activity would be low and not significant in the context of species conservation. The general absence of natural habitat and low biodiversity value of the area suggested limited habitat important for the lifecycle of listed species.

The Draft Christmas Island Biodiversity Conservation Plan (2014) lists five criteria for determining the significance of fauna on the island and identified 27 species as significant. For the purposes of the plan, a significant species was defined as a native terrestrial species which meets one or more of the following criteria:

- A species listed (or under consideration for listing) as threatened under the EPBC Act,
- A species with an important or 'keystone' role in maintaining the island's ecology or which characterises a significant ecosystem,
- Species which are of conservation concern (those which have a substantial decline on Christmas Island) but not listed as threatened,
- An endemic vertebrate, and/ or
- A species of international conservation significance with strong community support for its conservation

Table 7: Fauna of Conservation Significance

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
BIRDS				
Papasula abbotti Abbotts Booby	EN	A large sea bird about 80 cm from beak to tail, with off-white plumage; black panda-like eye patches; black wings, flank marks and tails; and black outer ends to its blue webbed feet. Males have pale grey bills, tipped black and females have black-tipped pink bills (Pizzey & Knight 1997). Abbotts Booby is a marine species which spends much of its time at sea but needs to come ashore to breed.	Endemic to Christmas Island. Most nests for this species are situated in the tall rainforest on the central and western areas of the Island (Department of National Parks, 2016). Nest sites for Abbott's Booby have been mapped in previous island wide surveys (conducted by Parks Australia), and ground truthing activities have noted any potential or actual Abbott's Booby nest locations. No sites containing Abbott's Booby nests were identified in the CPS 3290 2024 ground truthing. Additionally, Parks Australia data has not identified Abbott's Booby nesting sites within or adjacent to CPS3290/3 boundaries.	Unlikely
Chalcophaps indica natalis Christmas Island Emerald Dove	EN	A small pigeon about 23 to 26 cm long, with a mass of about 80 to 135 g. It is mostly purplish-brown or red-brown with iridescent dark-green wings, dark brown irises, an orange bill (with a darker base) and red or purple-red legs and feet. The male differs from the female in having a grey crown, white forehead, white stripe above each eye, narrow white line across each shoulder, and dark grey (rather than red-brown) lower back, rump and tail (Department of the Environment, 2014).	Whilst endemic and confined to Christmas Island, this species is widespread and common in areas of rainforest (Director of National Parks, 2014b). It is estimated that more than 60% of the population occurs within the boundaries of the National Park. It is most common in tall, closed evergreen rainforest and open semi-deciduous rainforest, especially on the terraces that surround the central plateau of the island. The dove is also regularly observed in deciduous scrub, disturbed vegetation such as thickets of weeds and secondary regrowth (including areas dominated by *Muntingia calabura*), settled areas (on lawns, in gardens and around houses), and on forest tracks (Department of the Environment, 2014). It is likely that the Christmas Island Emerald Dove will be present in areas proposed for clearing, however, the species is highly mobile, capable of relocating during the clearing process. With better than 60% of the population estimated to be within the National Park, the proposed clearing is not considered a significant threat to the species.	Likely; however highly mobile and critical nesting habitat unlikely to be impacted

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
Fregata andrewsi Christmas Island frigatebird	EN	A very large seabird with a mainly black body, a glossy green sheen to the feathers of its head and back, and varying patches of white on the underbody. It has slender, long wings, a deeply forked tail and a long bill with a hooked tip. Its legs are dull pink, and its feet are black above with pale soles. Adult males have a large, red gular (throat) pouch which can be inflated (Department of the Environment, 2014).	Endemic to Christmas Island but known to fly vast distances to feed and can be seen in Indonesia. Christmas Island is, however, the only place in the world where they breed (Department of National Parks, 2016). Breeding colonies are currently confined to the terrace forests of Christmas Island. The three recorded breeding colonies are known as the Golf Course, Cemetery and Margaret Beaches colonies. Tree species used for nesting include Beach Almond (*Terminalia catappa*), Stinkwood (*Celtis timorensis*), Strangler Fig (*Ficus* sp.), Propeller tree (*Gyrocarpus americanis*) and Pongamia (*Pongamia pinnata*). Multiple pairs will nest in the same tree, sometimes less than 1 m apart. These tree species occur right around the island, and yet the species nests only in a small area of the island (DCCEEW, 2024a). It is unlikely that the Christmas Island Frigatebird will be present in areas proposed for clearing.	Unlikely
Accipiter hiogaster natalis Christmas Island Goshawk	EN	A large hawk with a dark grey head and upperparts, mostly rufous underparts with fine and sometimes almost imperceptible white barring, yellow irises, yellow eyelids, greenish-yellow cere, yellow legs and feet and black talons. Females are larger than males and the throat of the female has a rufous-brown wash while the throat of the male is white with grey spots. Adults weigh from 200-490 g and are around 40 cm length. The Christmas Island Goshawk feeds on large insects, small birds, mammals and reptiles (Department of the Environment, 2014).	Whilst confined to Christmas Island, this species is widespread and has been recorded in all major island habitats from primary and marginal rainforests to areas of regrowth vegetation (Hill, 2004b). The Christmas Island Goshawk is an endemic, territorial resident of Christmas Island. It occurs in all forest types on the island, but is commonly seen in secondary forest, settlements or rehabilitated habitat. The Christmas Island Goshawk nests in tall trees in forest patches of more than 1.5 ha. Its nest sites are often near cleared land, possibly because these sites provide better visibility and access to food (Department of the Environment, 2014). Primary and Marginal Rainforest have been identified as critical habitat for the species and it is understood that regrowth vegetation may also be critical habitat for the species, though the quality of regrowth necessary has not yet been identified (Hill, 2004). It is likely that the Christmas Island Goshawk may be present in areas proposed for clearing but these areas are not used as nesting habitat.	Likely; however critical nesting habitat unlikely to be impacted

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
Ninox natalis Christmas Island Hawk-Owl	VU	A small owl about the size of a common pigeon (26 to 29 cm and weighing approximately 140 to 210 g) but with a barred breast. It has an unmistakeable boo-book call. There is little difference in size between males and females with females being only slightly larger than the male. The Hawk-Owl feeds mainly on large insects and sometimes on small vertebrates. It is nocturnal, feeding mainly in the understorey of primary forest, or in secondary vegetation along roadsides (Department of the Environment, 2014).	This species is confined to Christmas Island and occupies permanent territories in all forest types on the island, with highest densities in primary forest and lowest in post-mining regrowth. Breeding does not occur in secondary growth because trees there are not old enough to have developed hollows. Habitat critical to the survival of the Christmas Island Hawk-Owl is defined as Primary and Marginal rainforest, and secondary growth rainforest that provide suitable hollows. Suitable secondary growth forest has not been identified (Hill, 2004). It is likely that the Christmas Island Hawk-Owl will forage in areas proposed for clearing but these areas are not used as nesting habitat due to the predominance of secondary growth.	Possible; however individuals and roosting habitat unlikely to be affected
Turdus poliocephalus erythropleurus Christmas Island Thrush	EN	A subspecies of Island Thrush, 21 to 22 cm long, with a mass of 44 to 68 g. It has brown to dark-grey upperparts, a white chin and throat, a grey brown to grey breast, dull orange flanks, and a belly that is dull orange on the sides and white in the centre. It has dark brown irises, a prominent ring of yellow to orange-yellow skin around each eye, a yellow to orange bill, and yellow to orange-yellow legs and feet (Department of the Environment, 2014).	Whilst endemic and confined to Christmas Island, this species is widespread across the island (Director of National Parks, 2014b). This Thrush is common in most habitats on Christmas Island, including tall, closed evergreen rainforest, open semi-deciduous rainforest, secondary regrowth, thickets of weeds and semi-deciduous vines, settled areas (where it forages on lawns and nests on buildings), and on the Christmas Island golf course. It is most common in the evergreen rainforest and open rainforest on the coastal and higher terraces and plateau of Christmas Island. It is least common in disturbed habitats (such as urban areas, regrowth and post-mining wasteland) and in suboptimal endemic vegetation such as thickets of §Pandanus and patches of low vegetation in coastal areas (Department of Environment, 2014). No habitat has been identified as critical to the subspecies (Director of National Parks, 2014). It is likely that the Christmas Island Thrush will be present in areas proposed for clearing as it is a habitat generalist, but the species is highly mobile and will self-relocate during any clearing activities and re-establish in the disturbed habitat.	Likely; however highly mobile

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird	EN	The white-tailed tropicbird (Christmas Island) is a medium-sized, whitish seabird with long central tail-feathers ('streamers'), a yellow bill and black wing-bars on its upper wings. It is distinguished from the white-tailed tropicbird (Indian Ocean) by having a golden or apricot wash to its white plumage (Pizzey & Knight 1997; Dunlop et al., 2001). However, there is considerable variation in the extent and intensity of colour (Department of the Environment, 2014). The Golden Bosun has been regarded as a subspecies of the White-tailed tropicbird, however one that is confined to Christmas Island. There has been an observed/ inferred and projected decline in numbers (DCCEEW,	Widely distributed across the island (Christmas Island National Park, 2013) and roosts and forages over the Indian Ocean. Both adults and juveniles appear to disperse widely across Christmas Island (Marchant & Higgins, 1990). It can utilise a range of nest-sites, including hollows in rainforest trees and crevices on rock faces, cliffs and quarries (Dunlop et al., 1988b). Potential nest sites are plentiful, the species is adaptable to new nest sites, and some breeding appears to occur across most parts of Christmas Island (Dunlop et al., 1988b). No habitat has been identified as critical to the subspecies (Director of National Parks, 2014). This endemic species has been found using nest boxes installed for the Christmas Island Hawk-owl as part of a collaboration between Christmas Island Phosphates and Christmas Island District High School (pers. comm. Andrew Hill). There has been an observed/ inferred and projected decline in numbers (DCCEEW, 2023b) however the rate and cause of decline has yet to be established. Feral cat and rat predation is presumed to be a significant contributor. It is possible that this bird will be present in areas proposed for clearing as it is a habitat generalist but the species is highly mobile and will self-relocate during any clearing activities, and re-establish in the disturbed habitat.	Possible; however critical breeding habitat unlikely to be impacted
Phaethon rubricauda westralis Red-tailed Tropicbird, Indian Ocean Red-Tailed Tropicbird	EN	The Red-tailed tropicbird is a medium-sized seabird with a body length of around 100cm, with a wingspan of around 115 cm, and weight between 600g to 1kg (Marchant & Higgins 1990; Menkhorst et al. 2017). Adult birds are mainly white with a bright red beak and long red tail streamers. The only dark markings are a short black eye-stripe with comma-like hook; dark outer primary feathershafts can also be observed, mostly when birds are in flight. Both sexes have similar plumage and show no seasonal variation. Juveniles are heavily barred and scaled with black across most of their upper	Christmas Island contains one of the largest breeding populations in Australia. Cat and rat predation on the island are considered the source behind the significant decline in the Silver Bosunbird population (DCCEEW, 2023a). This bird lays a single, pink egg and prefers bare ground nesting sites on the island including rock crevices, and under vegetation on coastal cliffs (R Willacy et al. 2021).	Unlikely

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
		parts, lack tail streamers, and have a black beak (DEECC, 2023)		
MAMMALS				
Crocidura attenuata trichura Christmas Island Shrew	CR	The Christmas Island shrew is a small insectivorous mammal that varies from light-brown or reddish-brown to dark-slate grey in colouration, and weighs 4.5–6 g (Schulz, 2004). All members of the Crocidura genus are small, with a head and body length of 40–180 mm and tail length of 40–110 mm, and a distinctly pointed muzzle (Schulz, 2004)	Listed as Critically Endangered but its current distribution on island is unknown. The last two individuals were captured in 1984 and 1985 (Woinarski *et al.* 2014). The most recent records (in 1984 and 1985) are of single individuals from tall plateau rainforest in deep soils (Tranter pers. comm., cited in Schulz 2004) and terrace rainforest with shallow soils (Goh pers. comm., cited in Schulz 2004), with one recorded from a fallen bird's nest fern (Meek 2000). The majority of remaining primary plateau and terrace rainforest (about 75 percent of the original native rainforest vegetation remains), including the locations of the 1984 and 1985 sightings, is now protected within the Christmas Island National Park (Woinarski et al. 2014; Director of National Parks, 2014). It is unknown whether the shrew occurs in post-mined secondary regrowth, and there are no records from areas of human habitation on the island.	Unlikely
Pipistrellus murrayi Christmas Island Pipistrelle	EX	-	-	N/A
Pteropus melanotus natalis Christmas Island Flying Fox	CR	The Christmas Island Flying Fox is small compared to most Australian Pteropus species, weighing on average 350 g when fully grown (Department of the Environment, 2014). The subspecies is described as having uniformly long, black fur, giving a 'chubby' appearance. A faint reddish collar of fur exists on some individuals. The subspecies forages during the day as well as at night (Department of the Environment, 2014).	The Christmas Island Flying Fox is endemic to Christmas Island with three known breeding colonies (DCCEEWe. 2024) The entire island is used for foraging, with suitable fruit and nectar being found in most vegetation types including rainforests, residential gardens, and post-mine revegetation. They disperse seeds and pollen as they go, making them an important part of the rainforest system (Parks Australia, 2024). All recorded roosts have been located on the coastal terrace or around the first land cliff and semi-deciduous forest. All previously uncleared vegetation is considered critical foraging habitat. Mined areas are not considered critical habitat for this species.	Possible; however individuals and roosting habitat unlikely to be affected

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
			It is possible that the Christmas Island Flying Fox will be present in areas proposed for clearing but these areas are not known roost sites.	
Rattus macleari Maclear's rat	EX	-	-	N/A
Rattus nativitatis Bulldog rat	EX	-	-	N/A
REPTILES				
Ramphotyphlops exocoetid Christmas Island Blind Snake	VU	A brown snake growing to 35 cm, with a pale brown belly, rounded snout, scales in 20 rows at mid-body and an oval scale at the tip of the snout (Department of the Environment, 2014). The Christmas Island Blind Snake almost certainly preys on the eggs, larvae and pupae of ants and termites.	The Christmas Island Blind Snake is endemic to Christmas Island. The few records with information on locality or habitat suggest that this species occurs primarily where the deeper soils and primary rainforests occur on the island's central plateau. The Christmas Island Blind Snake is a fossorial snake found in the sub-surface soil and surface litter of the forest floor. It is usually active on the surface only at night (Cogger, 2006). No specimens have been found since 2009, and it is assumed that the species occurs only in parts of the island where dense vegetation is abundant (DCCEEWd. 2024) so it is considered unlikely that the species will occur in proposed clearing areas.	Unlikely
Lepidodactylus listeri Lister's Gecko	EW	A brown reptile growing to 5 cm with a broad, pale fawn/grey vertebral stripe which expands to cover the top of the head and matches the colour and pattern of the tail, scattered darker-brown flecks/blotches on the back, whitish belly and body covered with small, smooth scales. Eats a broad spectrum of small invertebrates, with termites, small beetles, bugs and slaters predominating (Department of the Environment, 2014).	Endemic to Christmas Island where it was previously found to have been most abundant on the plateau area in primary rainforest (Cogger, 2006). Lister's Gecko is considered extinct in the wild (Parks Australia, 2024) so it is unlikely that the species will occur in proposed clearing areas.	Would Not Occur
Cyrtodactylus sadleiri Giant Gecko	EN	A large gecko, around 8-10 cm from head to vent, with an average body weight of 15 g. The species is dark grey, brown or blackish in colour, flecked with a mixture of darker and lighter patches, with obscure paler bands	The giant gecko is endemic to Christmas Island and is likely to occur in small populations scattered across the Island, occurring in all habitats except areas lacking in tree or shrub cover (Cogger, et al., 1983; TSSC, 2013).	Possible where established trees and shrubs are present

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
		across the dorsal side. It has a long slender tail with alternating cream and grey-brown bands (Director of National Parks, 2012a). The Giant Gecko is a nocturnal predator of small invertebrates. (Threatened Species Scientific Committee, 2013).	Found in all island habitats, except for areas lacking trees and shrubs, including formerly mined areas with dense regrowth. Evergreen, tall, closed forest is considered critical habitat for this species (Director of National Parks, 2014). Numbers of Giant Geckos recorded during targeted surveys have markedly declined due to predation from wolf snakes, giant centipedes, and rats. The nearest record of a Giant Gecko is from a Range to Reef survey in 2016, approximately 150m southwest of block 133A-MCP-STP9A. It is unlikely that the gecko would be present within the blocks of the southern region due to it mostly being low vegetated pinnacle fields. Given that the species utilises revegetated mining areas it is possible that they may be present in the more densely vegetated blocks in the Dog's Head region.	
Emoia natitivitatis Christmas Island Forest Skink	EX	-	-	N/A
INVERTEBRATES - CRUSTACEANS				
Gecarcoidea natalis Red Crab	N/A	A land crab with distinctive red colouring and an adult carapace measuring up to 11.6 cm across. Males are larger than females, but females have a much broader abdomen and usually have smaller claws than males. Red crabs are diurnal, and their diet consists mainly of fallen leaves, fruits, flowers and seedlings. They are not solely vegetarian and will eat other dead crabs, birds, the introduced Giant African Snail and palatable human refuse (Department of the Environment, 2014).	Endemic to Christmas Island, the red crab is abundant across most parts of the island and critical to the ecology of the island (Director of National Parks, 2014). They are a keystone species in the forest ecology, influencing the structure and function of the rainforest where the majority of them live. They selectively consume seeds, seedlings and leaf litter, turning over the soil and spreading seeds by burrowing, and fertilising soil with their droppings (Department of the Environment, 2014). Habitat critical to their survival occurs throughout the whole island (Director of National Parks, 2014). It is likely that some Red Crab will be present in areas proposed for clearing.	Likely; however, the crab burrow density in these areas is less than in the high-density coastal terraces (Parks Australia 2023 Crab Burrow Density).
Birgus latro Robber Crab, Coconut Crab	N/A	The largest terrestrial crustacean in the world with a weight of up to 4 kg and a leg span up to 1 m. The robber crab is related to the hermit crab but does not carry a shell. They are semi-nomadic and omnivorous, feeding on fruit,	This crab is abundant but critical to the ecology of the island (Director of National Parks, 2014). Christmas Island has the world's largest and best protected population of the world's biggest land crustacean (Parks Australia 2024).	Likely; however, the physical relocation of robber crabs will be suitable mitigation

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
		coconut, carrion and other crabs, including the Red Crab (Krieger et al., 2012).	They are found in most parts of the island but are also a keystone species in the forest ecology, influencing the structure and function of the rainforest by foraging the forest floor, feeding mainly on seeds, fruits and the pith of fallen trees. They also scavenge the carcasses of dead animals. It is likely that the Robber Crab will be present in areas proposed for clearing. The main threat to Robber Crabs are vehicles.	
Discoplax celeste Blue Crab	N/A	A large crab with a deep and rounded carapace with a width of 45 mm or more. Adults are overall blue to bluish white (Ng and Davie, 2012).	Endemic to Christmas Island, with a restricted distribution in perennially wet/moist areas and seepages of the coastal terraces and below, though they may range further during the wet season. The species is of conservation significance because it characterises a significant ecosystem. All spring and wetland areas are considered critical habitat (Director of National Parks, 2014). The species will be absent from proposed clearing areas which are confined to the upper terraces.	Would Not Occur

Heritage

There are no Aboriginal Sites of significance or Native Title Claims over the area however there are sites on the National Heritage List (EPBC Act). Christmas Island has been mined for phosphate since the 1890s and contains a unique collection of structures and sites of heritage significance associated with this mining and blended cultural past.

Under the National Heritage List, comprising of natural and historical places, nine sites were identified on Christmas Island for its outstanding heritage significance to the Australian nation (DoE, 2004a, b, c, d, e, f, g, h, i). Three of which are located within PRL lease areas (Figure 15).

- Drumsite Industrial Area,
- Industrial and Administrative Group (Phosphate Rock Storage Bins, Phosphate Dust Storage Building and Downhill Conveyor System (from Drumsite to Dry Storage Bins), and Phosphate Loading Cantilevers), and
- Phosphate Hill Historic Area (Phosphate Hill Mine Workings).

National heritage sites are protected and thus would require approval for an action that will or is likely to have a significant impact on matters of National Environmental Significance (NES). **There are no heritage listed sites within CPS 3290/3.**

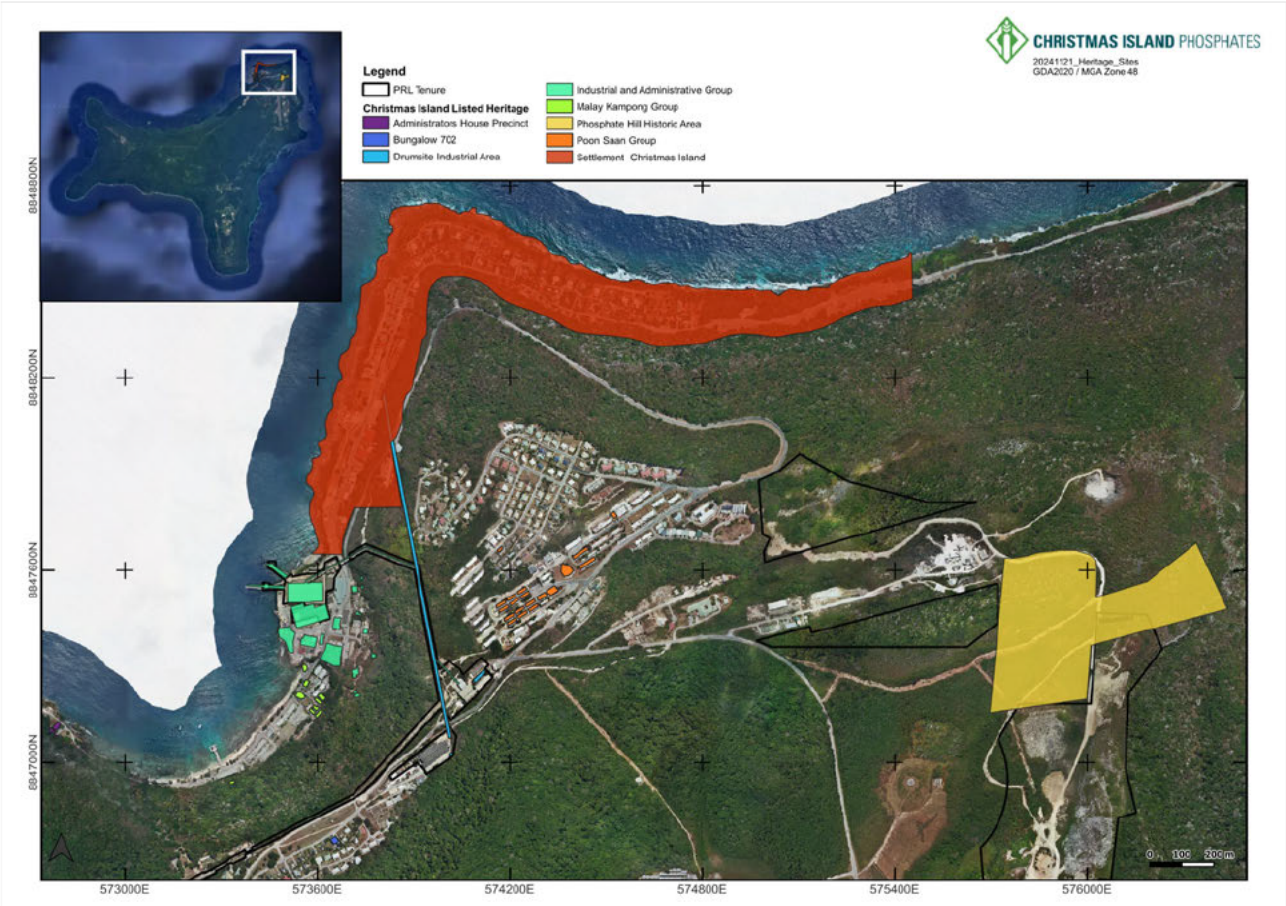

Figure 14: National Heritage List sites

Environmental Management

Clearing Activities

Key management commitments from the Christmas Island Phosphate Environmental Management Plan 2024 – 2029 (ENV-Plan-001) which will reduce the impact of clearing upon the biodiversity values of the island are listed below:

- Undertake works in accordance with procedure ENV-SOP-002: Vegetation Clearing Procedure.
- Ensure a Mine Works Clearing Permit is completed, and any restrictions/conditions highlighted and understood by all involved prior to starting any clearing activities.
- Comply with all conditions of clearing permits.
- Provide an annual report to DWER for clearing permits in accordance with permit conditions.
- Undertake mine site planning for all clearing operations to identify potential erosion potential and mitigation strategies in liaison with neighbouring land managers (where applicable).
- Ensure appropriate pre-clearing assessment and flagging is undertaken to identify areas to be cleared, boundaries of National Park and other areas to be protected (heritage and/or rainforest areas). CIP will include standard Buffer Zones in all areas to be cleared (against roadway and site boundaries) and will comply with any additional buffer zones as imposed by the Permit Conditions.
- Utilise an appropriate onsite audit and reporting program for mine site operations to thoroughly risk assess sites prior to clearing and assess compliance with clearing conditions and boundary impacts to surrounding vegetation and habitats.
- Identify any primary habitat within MCI 70/1A and ensure appropriate management of mining activities to protect these areas.
- Ensure no primary rainforest within MCI 70/1A is disturbed or cleared; and minimise the amount of native vegetation to cleared.

Specific Conditions including Buffers and Restricted Periods

Specific conditions are those which require the permit holder (CIP) to comply with specific measures which are used as an instrument to prevent, control, abate, or mitigate environmental harm. Within CPS 3290/3 Part II – Assessment Sequence and Management Procedures there is one condition which impacts several blocks:

CIP request that the 50m buffer specified in Condition 7(a) for National Park boundary, which applies only to block ML100-MCPSP-SOUTH-MB2, is amended to 5m to bring CPS 3290/3 in line with other CPS Permits recently issued to CIP and acknowledging the low quality vegetation within the ML100-MCPSP-SOUTH-MB2 extent.

CIP have made improvements to ensure compliance with all required conditions including enforcing restricted periods and applying buffers. This includes applying expanded measures to ensure the specific conditions are compiled with such as:

- Thoroughly checking any requirements as per clearing permit prior to undertaking any clearing/ boundary marking e.g. specific buffers required for blocks
- Creating the buffer according to CPS requirements, then adding an additional buffer where identified as required (risk-based approach - depending on site layout/ issues).
- Ensuring when marking with survey tags if under dense canopy to improve GPS accuracy, the survey tags are moved further into the known boundary to avoid inadvertent GPS communication errors.
- Creating a map of roughly tagged area for Mine Works Permit (MWP).
- Preclearing meeting with Mining & Haulage (M&H) operator to run through details of mark up and any potential complications.
- For any sections or fields that are not safe to walk preclearing, a live clearing method is implemented where the surveyor is on site during the clearing to guide operators, ensuring they stay well within any boundaries and slowly working towards buffer.

Flora Management

Flora management conditions specified within CPS 3290/3 include:

- Condition 7(b) identify the following listed flora species and maintain a buffer around each species in accordance with the *below table*.

Species	Buffer
▪ All species listed as a "Protected Species" in accordance with the *Environmental Protection and Biodiversity Conservation Regulations 2000*, Schedule 12.	▪ 50m
▪ *Asplenium listeri* ▪ Christmas Island Spleenwort ▪ *EPBC listed (CE)	▪ 10m
▪ *Pneumatopteris truncate* ▪ Fern ▪ *EPBC listed (CE)	▪ 30m
▪ *Tectaria devexa* ▪ *EPBC listed (E)	▪ 50m

In addition, CIP commit to the following assurances for flora management:

- Undertake appropriate assessments in clearing permit approvals processes to ensure no threatened flora species are located within proposed mining areas.
- Risk-based pre-clearing ground truthing will be undertaken where identified, as required.
- Should threatened species be identified, CIP will contact DCCEEW & Parks Australia to determine appropriate measures to protect the populations located.

Fauna Management

There are no specific conditions relating to the management of fauna listed under CPS 3290/3, though CIP commit to the following assurances for fauna management:

Red Crabs

- Liaise with Parks Australia to determine the most appropriate timing of clearing to minimise impacts on the Red Crab population.
- Haul routes prior to migration are discussed with Parks Australia, both in formal and informal communications. Crab migration routes are dynamic to an extent i.e. road crossing points may vary year to year. Where required CIP manage the routes around crab migration i.e. certain routes being used over others.

Robber Crabs

- Relocate Robber Crabs from clearing areas for mining operations.

Abbott's Booby

- Assess potential impacts on Abbott's Booby and other threatened species in the clearing permit approval process to ensure no significant impacts on habitat or abundance due to clearing.
- Conduct risk-based pre-clearing ground truthing; with particular care paid prior to clearing the sites identified previously as being adjacent to or nearby known Abbott's Booby nesting areas; this may

include the use of aerial drone footage where nests have previously been identified in the surrounding areas.

- If an aerial footage survey identifies a suspected Abbott's Booby nest DCCEEW/Parks will be contacted prior to any clearing works taking place.
- Ensure all minimum buffers and boundaries, and restricted periods, are enforced utilising the Mines Works Permit process.

Christmas Island Giant Gecko

- Unless an alternative is agreed by Parks Australia or a suitably qualified specialist, CIP suggest the following for the 133A blocks that have not been disturbed under CPS 3290. When clearing suitable habitat for the giant gecko location the Permit Holder shall search, capture and relocate giant geckos from the area to be cleared, where safe to do so.

Weed Management

Weed management conditions specified within CPS 3290/3 include:

- Condition 6(a): When undertaking any clearing, or other activity pursuant to this permit, CIP (as 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 bought 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.
- Condition 6(b): Weed management activities will be undertaken by the Permit Holder in accordance with a Weed Management Plan approved by the General Manager responsible for territories Department of Infrastructure and Regional Development.

The Weed Management Plan required under condition 6(b) was approved in May 2017 by the then Department of Infrastructure and Regional Development.

CIP request the amendment of Condition 6 to reflect the approval and implementation of the Weed Management Plan

Ten Clearing Principals

An assessment carried out against the ten clearing principles provided under Part V Division 2 of the EP Act is shown in Table 8.

Table 8: Assessment of ten clearing principles

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
Principle (A) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Proposal is **not likely** to be at variance to Principle (A)	Christmas Island is home to approximately 420 species of vascular plants, including 177 introduced species and 242 species thought to be indigenous to the island. Eighteen species are known to be endemic to Christmas Island, with the other flora being more widely distributed through the Indo-Malayan and Malesian regions, or throughout the tropical Indo-Pacific. No Priority Flora species are listed for Christmas Island. Areas of the island which have not been previously cleared and retain high biodiversity have been reserved as National Park, including the island's two Ramsar wetlands. Areas which have been previously cleared have been allocated to the Shire of Christmas Island for future development, or to Mining Lease for future mining. Vegetation varies at each site/ block, and consists of secondary regrowth forest species including, *Dysoxylum gaudichaudianum, Tristiropsis acutangula, Nephrolepsis biserrata, Pittosporum ferrugineum, Pipturus argenteus, Macaranga tanarius, Claoxylon indicum, Ficus Microcarpa, Planchonella duclita, Arenga listeri* and weed species including Fern fields, *Leucaena leucocephala, Cordia curassavica, Clausena excavata* etc. CIP are not permitted to clear primary rainforest under the existing conditions of CPS 3290/3. All areas proposed for clearing have been previously disturbed through clearing and/or mining, though some of these have regrowth vegetation that is up to 40 years old. Condition of regrowth varies, with a number of sites being weed dominated and are not considered to hold high biological diversity. Given that there are no significant habitats or species that are found solely in these areas, and all areas proposed for clearing have been previously cleared and hold low biological value, the proposal is not likely to be at variance to this principle.
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.	Proposal is **not likely** to be at variance to Principle (B)	Christmas Island provides habitat for several fauna indigenous to the island including 14 native bird species and nine species of seabird which use the island for breeding. Three seabird taxa and nine land bird taxa are endemic to the island. A further 104 migratory or vagrant bird species have been recorded on the island. Eight of the island's endemic birds are listed as threatened under the EPBC Act 1999 (DCCEEW, 2024).

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
		Five endemic native mammals were historically recorded on Christmas Island with only one, the Christmas Island flying-fox, now known to remain. Christmas Island has six species of native terrestrial reptiles, five of them endemic. Mammal and reptile species indigenous to the island have undergone a catastrophic decline since human settlement, largely because of the introduction of invasive species. Crustaceans are the most conspicuous invertebrate fauna of Christmas Island, with the island supporting over 20 terrestrial and intertidal crab species of which 14 are regarded as true land crabs, depending on the ocean only for their larval development. Three land-crab species have been identified as conservation significant: the Red Crab, Blue Crab and Robber Crab. Blue Crabs have a restricted distribution and do not occur within the areas proposed for clearing. Red crabs are common throughout the island and are a keystone species in the island's ecology. Robber crabs have a wide distribution across many Indian and Pacific oceanic islands. Although abundant on Christmas Island their exact conservation status is unknown. Robber crabs are present in proposed clearing areas in much lower numbers than red crabs. Key considerations in assessing impacts include: • The majority of the Island's forest has never been cleared and is securely held in National Park. This provides high quality virgin forest habitat for the Island's fauna. • In comparison, the areas proposed to be cleared have all been cleared previously for mining and in some cases, landforms have been significantly modified. The vegetation is a mix of weed dominated shrublands, ferns and regrowth. Whilst these vegetation types will provide habitat for some species, they are depauperate compared to the uncleared primary forests and have much lower fauna values than the primary forests. • There are several species (e.g. the Christmas Island thrush) which, although listed as threatened species under the EPBC Act due to their endemic status, are found across the whole Island, are common and habitat generalist who recolonise disturbed areas. Whilst there is potential for these species to be in the proposed clearing areas, the small, localised clearing is unlikely to have significant impacts for these species and the risk of species impact is very low. • The Island fauna species that are of particular conservation concern due to low population numbers or special risks include the Abbott's booby, and other listed species. While there

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
		have been historic records of Abbott's in some blocks, no sightings were made in the 2024 ground truthing assessments. • There are no unique or significant fauna habitats found on the proposed clearing sites. • There are no fauna species that rely solely upon habitat in areas proposed to be cleared. • The sizes of the individual clearing areas are comparatively small areas of primarily weed dominated regrowth, compared to the habitat that remains (>10,000 ha of primary forest). Much of the remaining primary forest (~7,500 ha of primary forest) is securely protected in national park. Fauna of the island is supported by the surrounding extensive and intact vegetation; therefore the clearing is not likely to be at variance to this principle.
Principle (C) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.	Proposal is **not likely** to be at variance to Principle (C)	There are three species listed as Threatened under the EPBC Act 1999. These are: *Asplenium listeri*[§] (Christmas Island Spleenwort), listed as Critically Endangered, *Tectaria devexa var. minor*, listed as Endangered and *Pneumatopteris truncata,* listed as Critically Endangered. Parks Australia records and ground truthing surveys conducted in 2024 did not locate any of these species in the areas to be cleared *A. listeri*[§] occurs in limestone rock crevices in dry, exposed areas on Christmas Island and hence is not associated with proposed clearing sites. *T. devexa* grows colonially, mainly on the plateau, in primary rainforest (tall and largely undisturbed), above 80 metres elevation; both in deeper soils and as a lithophyte (on mossy pinnacles at the base of a sloped, wet site). Ten populations of *T. devexa* have been identified at Christmas Island, with the majority of these occurring in the National Park. No known populations of *T. devexa* have been identified at proposed clearing locations, however it has been recorded within 50m of the site boundary of 100-MCP-SP-CENTRAL-MB4. *P. truncata* is known from two sites on Christmas Island. Neither location is within the CPS 3290/3 clearing areas. *P. truncata* grows in permanently moist sites in semi-deciduous closed forest and is

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
		known to be found in two sub-populations (one at Hugh's Dale, the other at Blowholes Ravine, neither of which are associated with any of the proposed clearing sites. As buffers from the National Park boundaries will be in place, and no primary forest will be cleared as part of this CPS, there is likely no variance to this principle.
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.	Proposal is **not** at variance to Principle (D)	There are no listed Threatened Ecological Communities on Christmas Island.
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.	Proposal is **not likely** to be at variance to Principle (E)	Approximately 75% of Christmas Island is covered with native vegetation and 84% of this (63% of total island area) is protected within National Park. The proposed clearing occurs on land that has previously been cleared for phosphate mining and consists of predominantly regrowth vegetation and weed species, together with some lower value native species common across the island. The vegetation under application is not part of the island's original forests and the vegetation for many of the application areas is in a degraded condition which is no longer representative of rainforest structural values. The vegetation within the application area is not considered to be significant remnant vegetation as it is not located in an extensively cleared landscape and therefore is not at variance to this principle.
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.	Proposal is **not likely** to be at variance to Principle (F).	None of the proposed clearing is associated with or adjacent to a watercourse or wetland. Perennial surface water features on Christmas Island are limited to spring fed streams on coastal or sloping areas of the island. All the area under application is situated on the plateau and not within wetland areas. This proposal is not at variance to this principle.

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
Principle (G) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Proposal is **not likely** to be at variance to Principle (G)	The interior of the island is slightly undulating plateau, from about 160-360m above sea level. The area under application is situated on the plateau with relatively little relief, and above the terraces. Due to the nature of phosphate mining, topsoil will be removed in areas for in situ mining and all other areas will be mined to ground level. All areas that are mined in situ will be left as limestone boulders, or pinnacles. The land is currently approved for mining so its land capability will not be impacted by clearing. No wind erosion, water erosion, salinity, eutrophication, or waterlogging is expected as a result of the proposed clearing, and all mined areas are to be made safe at the completion of mining, so this proposal is not likely to be at variance to this principle.
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.	Proposal is **not likely** to be at variance to Principle (H)	There are four noteworthy conservation areas at Christmas Island. These are the Christmas Island National Park, the Ramsar wetlands Hosnie's Springs and The Dales, and the Commonwealth Heritage Site "Christmas Island Natural Areas". Block ML100-MCPSP-SOUTH-MB2 is the only block that adjoins the Christmas Island National Park. Most areas under application are highly disturbed and unlikely to be acting as an effective buffer to the adjacent conservation areas. The clearing of some blocks as proposed may result in adjacent conservation areas being exposed to minor edge effects but these are not likely to have a significant impact on the environmental value. Green et al. (2004) remarked that undisturbed Christmas Island rainforest vegetation was naturally resistant to weed invasion. However, there are some shade tolerant species that can spread into forested areas. Following clearing, CIP will implement weed management as per the approved Weed Management Plan to ensure that the development does not result in the localised introduction and spread of priority weed species into the National Park. This condition, adequate buffers as specified, and the continued implementation of weed management as per the Environmental Management Plan should be sufficient to ensure conservation areas are not compromised.

Clearing Principle	Is the Proposal at Variance?	Justification for Variance
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.	Proposal is **not likely** to be at variance to Principle (I)	Due to the high natural rate of infiltration at Christmas Island, erosion and sedimentation is generally localised to compacted areas such as roads and stockpiles. There is limited potential for deterioration of underground water as a result of clearing. Due to the location of the areas proposed to be cleared, it is unlikely that the clearing of native vegetation for phosphate mining will cause deterioration in the quality of surface water or groundwater within the local area.
Principle (J) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Proposal is **not likely** to be at variance to Principle (J)	Christmas Island's soils and karstic limestone rocks are generally highly permeable so clearing on the island does not cause or exacerbate flooding. As the proposed clearing is not likely to cause or exacerbate waterlogging or flooding, and as the water features on Christmas Island are not close to the applied area, the clearing as proposed is not likely to be at variance to this principle.

Conclusion

This proposed clearing permit amendment is a request to extend Clearing Permit CPS 3290/3 (Purpose Permit) approved on 28 July 2017, for the clearing of native vegetation by Christmas Island Phosphates for the areas expressly covered in the application for the purpose of stockpile recovery and insitu phosphate mining.

All conditions of CPS 3290/3 have been complied with, with the exception of the non-compliance relating to clearing outside of a boundary recorded in 2019, which did not cause significant environmental harm.

Several minor changes are being requested as part of this application for extension, including:

- Extension of the duration of the Permit from August 2025, to align with the tenement expiry MCI 70/1A in June 2034, to allow the remaining clearing and mining activity to be completed.

- Amend Condition 6(b) to *Weed management activities will be undertaken by the Permit Holder in accordance with a Weed Management Plan approved by the General Manager responsible for Territories Department of Infrastructure and Regional Development.*

- Remove Condition 6(c): *At least once in each 3-month period prior to the Weed Management Plan required in condition 6(b) being approved, the Permit Holder must remove or kill any weeds growing within areas cleared under this permit.*

- Amend Condition 7(a), the buffer to the National Park boundary when clearing native vegetation to specify a 5 metres.

- Amend Condition 7(b): The Permit Holder shall identify the following listed flora species and shall maintain the buffer around each species in accordance with the following table: The permit holder can apply to the CEO for access to clear vegetation within the buffer zones stated within Condition 7(b) on a case by case.

PRL additionally request on behalf of the Commonwealth for clearing for the purpose of rehabilitation to be included for areas within tenure which have been relinquished. Ground truthing has recently been conducted and identified no significant changes in the vegetation condition of the proposed clearing areas within CPS 3290/3 from previous assessments. Changes to the classification of several fauna species on the EPBC Act have been detailed. Risk assessment of impacts on flora and fauna have been improved with further mapping since the previous application which has been utilised during this assessment.

CIP has re-assessed the proposed clearing of up to 173.1ha within CPS 3290/3 against the ten clearing principles and found that the clearing will not be at variance to clearing principle D, and not likely to be at variance of any others.

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Appendices

Appendix I Ground Truthing Photos
Appendix II Protected Matters Search Report
Appendix III Letter of Authorisation from DITRDCA – Relinquished Areas within CPS (Assistant Director, Indian Ocean Territories Government Arrangements, Department of Infrastructure, Transport, Regional Development, Communications and the Arts