Supporting Document for Amendment to CPS 3472/6

Christmas Island Phosphates
October 2024

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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 3472/1 was originally approved in 2009 under section 51E of the EP Act 1986. In July 2017, CPS 3472/6 was granted which is valid until 11 January 2025 and approved a total area of 227.85 hectares (ha) for clearing.

CPS 3472/1 was originally granted in December 2009 approving only 32 out of 106 areas in the application, with the other 74 areas, deferred to a 'case-by-case' assessment where clearing could not occur without approval of the Commonwealth. A request to clear some of these 'case-by-case' areas was lodged on 13 May 2010 and CPS 3472/2 was granted on 13 July 2010 approving a further four areas. It was agreed that approval of the remaining 70 areas would still require 'case-by-case' assessment.

A request to clear a further 16 of the outstanding case-by-case areas was submitted in August 2010 (the application for CPS 3472/3). From 24-26 August 2010, Leah Stratford (Environmental Officer, Indian Ocean Territories, Department of Environment and Conservation (DEC)) visited the island to inspect 'case-by-case' areas under application CPS 3472/3. The report stated that special clearing conditions would be granted on a case-by-case basis for areas in ML 116, ML 133, ML 109 and ML 110.

On 28 January 2011, a request was submitted to Department of Regional Australia, Regional Development and Local Government by PRL for approval to clear 16 case-by-case areas. CPS 3472/3 was approved on the 7 April 2011 however, only approved seven of the 16 areas applied for. In August 2011, the Department of Regional Australia, Regional Development and Local Government advised of the intention to approve the clearing of a further 2.99 ha but that the majority of the requested 19.95 ha would remain as 'case by case'. The refusal to approve clearing permits over areas already environmentally approved under the EPIP Act, effectively negated the approval and prevented access to large areas of PRL's reserves. This triggered a range of discussions and correspondence between PRL and the Government.

On 6 September 2011, PRL wrote to Julian Yates (First Assistant Secretary, Local Government and Territories Division, Department of Regional Australia, Regional Development and Local Government, delegate under Section 51 of the EP Act) to express concern over the intention not to approve areas under the application CPS 3472/3 and requested that the Minister undertake a review of the decision, taking into account socio-economic factors and the low environmental impacts of the proposed clearing. On 27 September 2011, PRL wrote to Julian Yates and provided the results of an environmental risk-assessment of the areas applied for in January 2011.

Delays in the issuing of clearing permits were causing significant concern for PRL with potential for this to cause early closure of the mine. In response to this situation, meetings were requested by PRL to resolve a way forward. On 16 November 2011, Dale Stanton (DEC), Julian Yates and Jadranka Matijas (Department of Regional Australia, Regional Development and Local Government), Kevin Edwards (PRL) and Andrew Hill (Range to Reef Environmental) met on Christmas Island to seek a way forward to address PRL's resource needs. The meeting focussed on the case-by-case areas applied for (i.e. CPS 3472/3) and a new application (CPS 4506) to enable access to resources in the mining lease.

The importance of these areas for future mine security, access and environmental issues were discussed to determine potential compromises and strategies to minimise impacts and allow restricted access to the areas. An approach for the new application (CPS 4506) was agreed upon, and there was an in-principle agreement that a permit would be approved to access five of the case-by-case areas in CPS 3472 subject to a number of boundary changes and conditions. Areas 109-MCP-STP20B, 110-MCP-MB2, 110-MCP-STP20A, 110-MCP-STP20L and 110-MCP-STP20M were given in-principle support on a 'stockpile only' basis with a 5 metre buffer which would limit impacts to the National Park and allow for rapid vegetative recovery, as well as facilitate future rehabilitation by Parks.

On 9 November 2012, Julian Yates wrote to PRL to advise that a request for an amendment to CPS 3472/3 should be submitted addressing all outstanding case-by-case areas which would be assessed consistent with the approach undertaken for CPS 4506/1. On 12 November 2012, Stephen Clay (Director, Strategic Policy and Projects, Department of Regional Australia, Regional Development and Local Government) met with company representatives to discuss the assessment of outstanding case-by-case areas and identified some further information that was required, which was subsequently provided in January 2013.

On 21 June 2013, a revised permit (CPS 3472/4) was issued addressing the outstanding 'case-by-case' areas and approving clearing of 246.28 ha. Several proposed clearing areas were not approved under this permit, or conditions imposed (i.e. buffers) that effectively precluded access for mining. The decision report for CPS 3472/4 cited variances against clearing principles (a), (b) and (h) (biological diversity, significant fauna habitat and nearby conservation areas). The decision also erroneously applied principle (a) to the impact of the clearing on fauna habitats. PRL believed these decisions were unjustified, inconsistent with the approaches taken for CPS 4506, and inconsistent with a negotiated agreement with the Commonwealth in November 2011 for specific case-by-case areas in the Central Area. PRL had the option of appealing the decision at this time, however believed it would be in the best interests of all parties to accept the permit to allow PRL to undertake clearing of the approved areas, but to revisit the areas denied through a new application in due course.

CPS 3472 was further amended in April 2016 (CPS 3472/5) to remove a buffer condition for one stockpile and to correct the total approved area to 227.85 ha to match the shapefiles and then again in July 2017 (CPS 3472/6) to extend the expiry date to 2025.

The current clearing permit, CPS 3472/6, permits up to 227.85 ha of clearing for the purpose of stockpile recovery and insitu phosphate mining. This amendment application seeks to extend the date of expiry from 2025, to align with that of the current mine lease expiry in 2034 as well as removal/updating of Conditions 9a, 10b and 10c.

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).

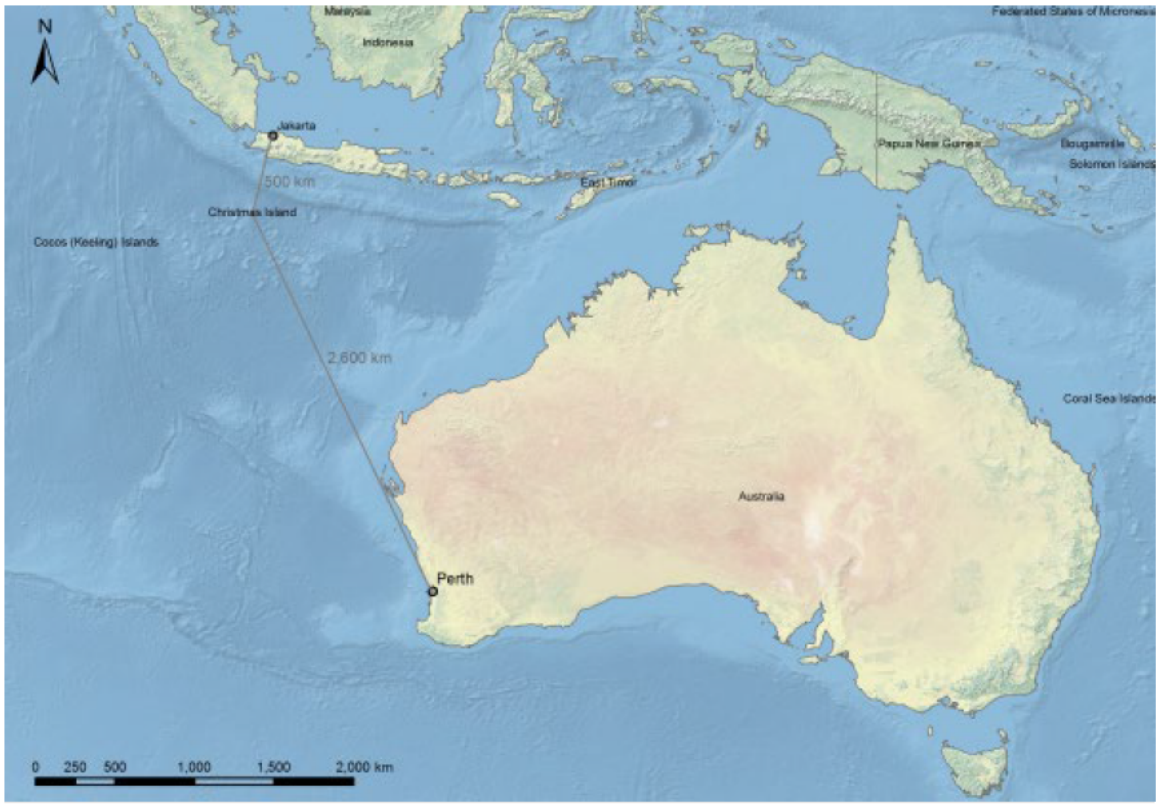

Figure 1: Location of Christmas Island (PRL 2014)

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 or other PRL tenure 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 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.

CPS 3472/6 resides completely within MCI 70/1A, with the exception of some areas that have been relinquished to underlying landowners since last application. 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 are awaiting a letter from the Commonwealth giving written authority to PRL to access the land for clearing.

Conservation Levy

The rehabilitation of former mining areas is undertaken as part of the Christmas Island Minesite to Forest Rehabilitation Program (CIMFR). 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

On 17 July 2017, Christmas Island Phosphates was granted Clearing Permit 3472/6 which approved clearance of a total not more than 227.85 ha, over ~84 separate blocks for the purposes of phosphate mining, including stockpile recovery and insitu phosphate mining. CIP does not seek to make any changes to the amount of native vegetation to be cleared in this application. All the proposed clearing within CPS 3472/6 will be undertaken in historically cleared areas within MCI 70/1A. 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.

Clearing permitted within the permit includes:

- Areas with clearing permitted on complete block;
- Areas approved for stockpile access only; and
- Areas for haul road access only.

Extension of Permit

Currently CPS 3472/6 expires 11 January 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 remove Condition 9(a); *Fauna Management. Clearing of native vegetation within Plan 3472/6a shall be undertaken in accordance with the Pipistrelle Bat Management Plan as approved on 27 October 2010 by the former Assistant Secretary responsible for Territories, Department of Regional Australia, Local Government, Arts and Sport, Australian Government*. The Christmas Island Pipistrelle Bat which was considered as 'possibly become extinct' in the 2017 and earlier applications was transferred from Critically Endangered category to Extinct in 2021 - Amendments to the EPBC Act list of threatened species - March 2021 (DCCEEW, 2021).

PRL request to amend Condition 10(b); *Weed management: 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.~~*

PRL request to remove Condition 10(c); *Weed Management: At least once in each 3-month period prior to the Weed Management Plan required in condition 10 (b) being approved, the Permit Holder must remove or kill any weeds growing within areas cleared under this permit.*

*The CIP Weed Management Plan was approved in May 2017 by the then Department of Infrastructure and Regional Development.

PRL request to amend Condition 12 through the removal of Condition 12(a): *'The Permit Holder shall maintain buffers to National Park boundaries when clearing native vegetation unless otherwise stated in accordance with the application areas set out below, except where clearing of native vegetation is on a pinnacle field mined prior to 2008 (where no buffer is required):*

a) *Plan 3472/6a (Dogs Tail – Western): As stated in the Pipistrelle Bat Management Plan: Plan 1*

Clearing to Date

Approximately 85 hectares has been cleared under CPS 3472 to date. Table 1 presents clearing undertaken per block within CPS 3472/6 (Table 1; Figure 3 to Figure 9).

Table 1 Clearing under CPS 3472/6 as of 01 July 2024

CPS 3472/6 Block	Block Use	Area Cleared (ha)	Notes
100-MCP-SPWNORTH4	Complete Clearing	0.950	
101-MCP-17NORTHMB1	Complete Clearing	0.150	Relinquished (0.150ha)
101-MCP-17NORTHMB2	Complete Clearing	0.532	Relinquished (0.358ha)
101-MCP-17NORTHMB3	Complete Clearing	1.277	
101-MCP-17NORTHMB4	Complete Clearing	3.058	
101-MCP-17NORTHMB5	Complete Clearing	3.197	
101-MCP-17NORTHMB6	Complete Clearing	0.119	
101-MCP-17SOUTHMB1	Complete Clearing	0	
101-MCP-STP17A	Complete Clearing	0.974	Relinquished (0.974ha)
101-MCP-STP17C	Complete Clearing	4.466	
101-MCP-STP17D	Complete Clearing	4.234	
101-MCP-STP17ED	Complete Clearing	4.060	
101-MCP-STP17DE	Complete Clearing	0.455	Relinquished (0.455ha)
101-MCP-STP17I	Complete Clearing	1.445	Relinquished (1.445ha)
101-MCP-STP17T	Complete Clearing	2.392	Relinquished (2.392ha)
101-MCP-STP17U	Complete Clearing	1.213	Relinquished (0.699ha)
101-MCP-STP17V	Complete Clearing	0.698	Relinquished (0.557ha)
101-MCP-STP17W	Complete Clearing	1.350	Relinquished (0.600ha)
106-MCP-MB1	Complete Clearing	0.939	Relinquished (0.642ha)
106-MCP-MB2	Complete Clearing	1.805	
106-MCP-MB3	Complete Clearing	5.456	
106-MCP-STP15B	Complete Clearing	2.775	
106-MCP-STP-15C	Stockpile Only	0.514	Relinquished (0.514ha)
106-MCP-STP-15D	Stockpile Only	0	
106-MCP-STP15I	Complete Clearing	1.368	
106-MCP-STP15J	Complete Clearing	1.537	
106-MCP-STP15JB	Complete Clearing	0.744	
106-MCP-STP15D	Complete Clearing	0.750	Relinquished (0.750ha)
106-MCP-STP18G	Complete Clearing	3.523	
106-MCP-STP18IA	Complete Clearing	1.052	

CPS 3472/6 Block	Block Use	Area Cleared (ha)	Notes
106-MCP-STP18M	Complete Clearing	3.555	
106-MCP-STP18Q	Complete Clearing	1.498	
106-MCP-STP18S	Complete Clearing	0.818	
108-MCP-MB1	Complete Clearing	0.976	Relinquished (0.326ha)
108-MCP-MB2	Stockpile Only	0	
110-MCP-STP20K	Stockpile Only	0	
116-MCP-MB1	Complete Clearing	0.497	0.028ha Cleared outside of a permit (reported to DWER 2014) Relinquished (0.497ha)
116-MCP-MB2	Complete Clearing	0	
116-MCP-STP22A	Stockpile Only	0.593	Relinquished (0.593ha)
116-MCP-STP23A	Stockpile Only	1.010	
116-MCP-STP-23C	Stockpile Only	0	
116-MCP-STP-23F	Stockpile Only	0	
123-MCP-STP-11A	Stockpile Only	0	Relinquished
127-MCP-STP9D	Complete Clearing	0	
128-MCP-MB1	Complete Clearing	0	
129-MCP-MB1	Complete Clearing	2.042	Relinquished (2.042ha)
131-MCP-MB1	Complete Clearing	0.016	
131-MCP-STP131A	Complete Clearing	**0.065**	
132-MCP-MB1	Complete Clearing	0.025	
132-MCP-MB2	Complete Clearing	**0.052**	
132-MCP-MB3	Complete Clearing	0	
133A-MCP-F5MB2	Complete Clearing	0.663	
133A-MCP-STP133AA	Complete Clearing	0.966	
133A-MCP-STP33P	Complete Clearing	0.542	
133A-MCP-STP33PA	Complete Clearing	0.064	
133A-MCP-STP34P	Complete Clearing	1.256	
133A-MCP-STP35P	Complete Clearing	2.160	
133A-MCP-STP4P-2	Complete Clearing	0.267	
133A-MCP-STP6P	Complete Clearing	0.014	
133A-MCP-STP 8A	Stockpile Only	0.971	
133A-MCP-STP 8B	Stockpile Only	1.392	
133A-MCP-STP8BA	Stockpile Only	0.747	
133A-MCP-STP8C	Stockpile Only	2.581	
133A-MCP-STP9D	Complete Clearing	2.300	

CPS 3472/6 Block	Block Use	Area Cleared (ha)	Notes
133A-MCP-STP9DA	Complete Clearing	**0.807**	
133B-MCP-MB1	Complete Clearing	**0.089**	
133B-MCP-STP27P	Complete Clearing	0.185	
133B-MCP-STP4BG	Complete Clearing	0	
135-MCP-STP9P	Complete Clearing	**0**	
135-MCP-STP9PA	Complete Clearing	0	
136-MCP-MB1	Complete Clearing	0	Relinquished
138-MCP-MB1	Complete Clearing	0	
138-MCP-MB2	Haul Road Only	0.208	
138-MCP-STP26D	Stockpile Only	0.832	
139-MCP-MB1	Haul Road Only	0	
139-MCP-STP-25C	Stockpile Only	0	
139-MCP-25I	Stockpile Only	0	
139-MCP-STP27A	Stockpile Only	0	
140-MCP-MB1	Complete Clearing	0	
140-MCP-STP26B	Complete Clearing	0	
140-MCP-STP26E	Complete Clearing	0.010	
140-MCP-STP26I	Complete Clearing	0.243	
140-MCP-STP26J	Complete Clearing	2.308	
140-MCP-STP27C	Stockpile Only	3.894	
Total		**84.679**	

Relinquished Areas

12.964 ha cleared under CPS 3472, has since been relinquished by PRL to the underlying landholder. Where areas are identified as part of relinquishment planning all relinquishment tenement conditions are complied with prior to handover. Rehabilitation is undertaken by Parks Australia. The Commonwealth have requested for areas that have been relinquished to remain within the CPS boundary to facilitate and support the Parks Australia rehabilitation. PRL are awaiting a letter from the Commonwealth giving written authority to PRL to access the land for clearing.

Compliance

Non-compliances to the CPS3472/6 permit are outlined in Table 2 below.

Table 2 Non Compliance Incidents

Date	Block	Non-compliance
May 2021	133A-MCP-STP8C	Condition 9(e): "… shall not clear vegetation between May and September, the nesting period of the Red Footed Booby and the Greater Frigate Bird".
July 2021	133A-MCP-STP4P-2	Incorrectly reported as a non-compliance in the 2022 CPS3472/6 Annual Report, this block is not listed under Condition 9(e).
December 2021	133A-MCP-STP9D	Incorrectly reported as a non-compliance in the 2022 CPS3472/6 Annual Report, this block is not listed under Condition 9(e).

CIP have identified one potential incident where clearing in Block 133A-MCP-STP8C which is subject to Condition 9(e) "… the Permit Holder shall not clear vegetation between May and September, the nesting period of the Red Footed Booby and the Greater Frigate Bird" was undertaken in May 2021 at the start of the restricted period.

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

Figure 3: Clearing conducted under CPS3472 (North West Point region)

Figure 4: Clearing conducted under CPS3472 (Central region part 1)

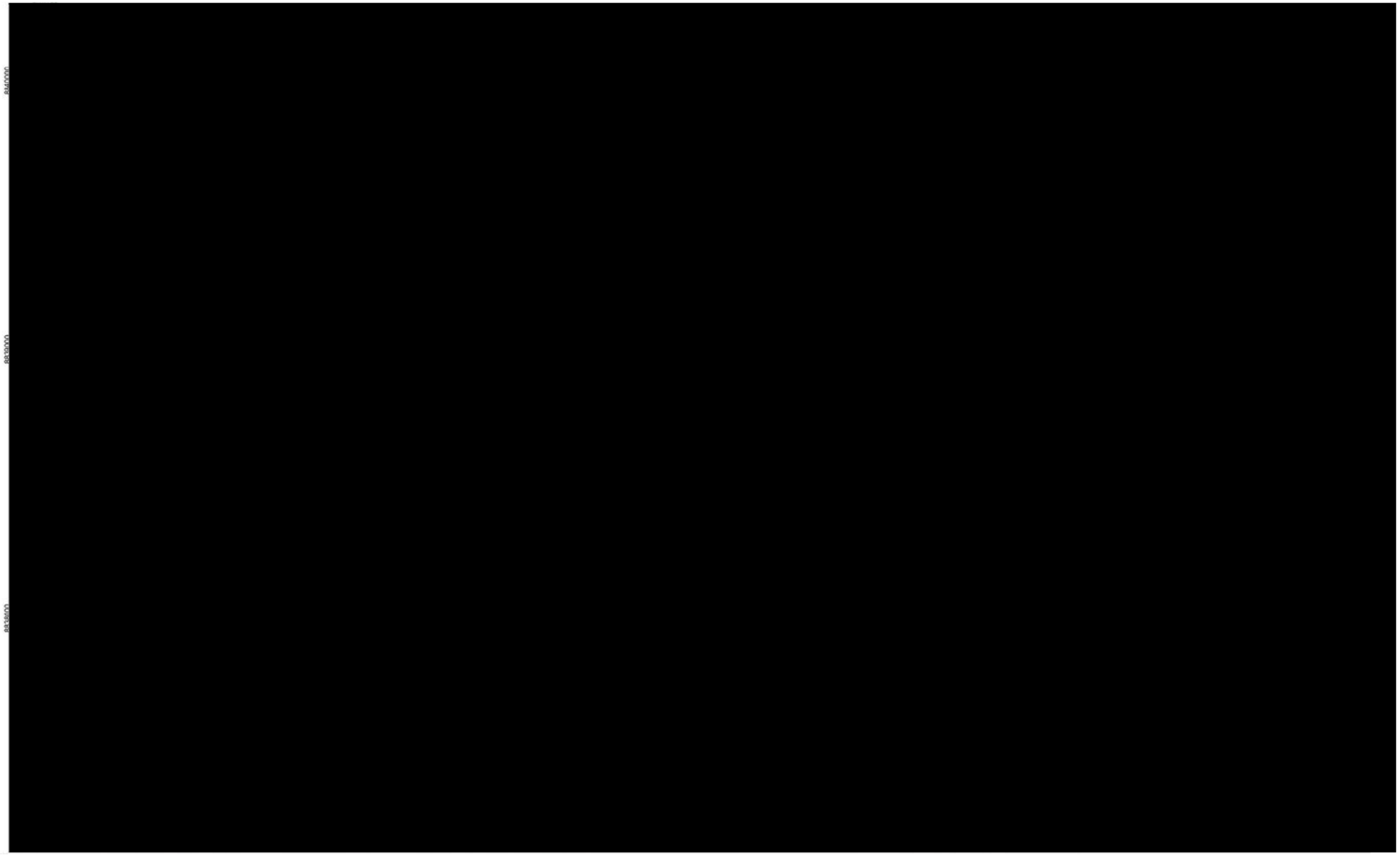

Figure 5: Clearing conducted under CPS3472 (Central region part 2)

Figure 6: Clearing conducted under CPS3472 (Central region part 3)

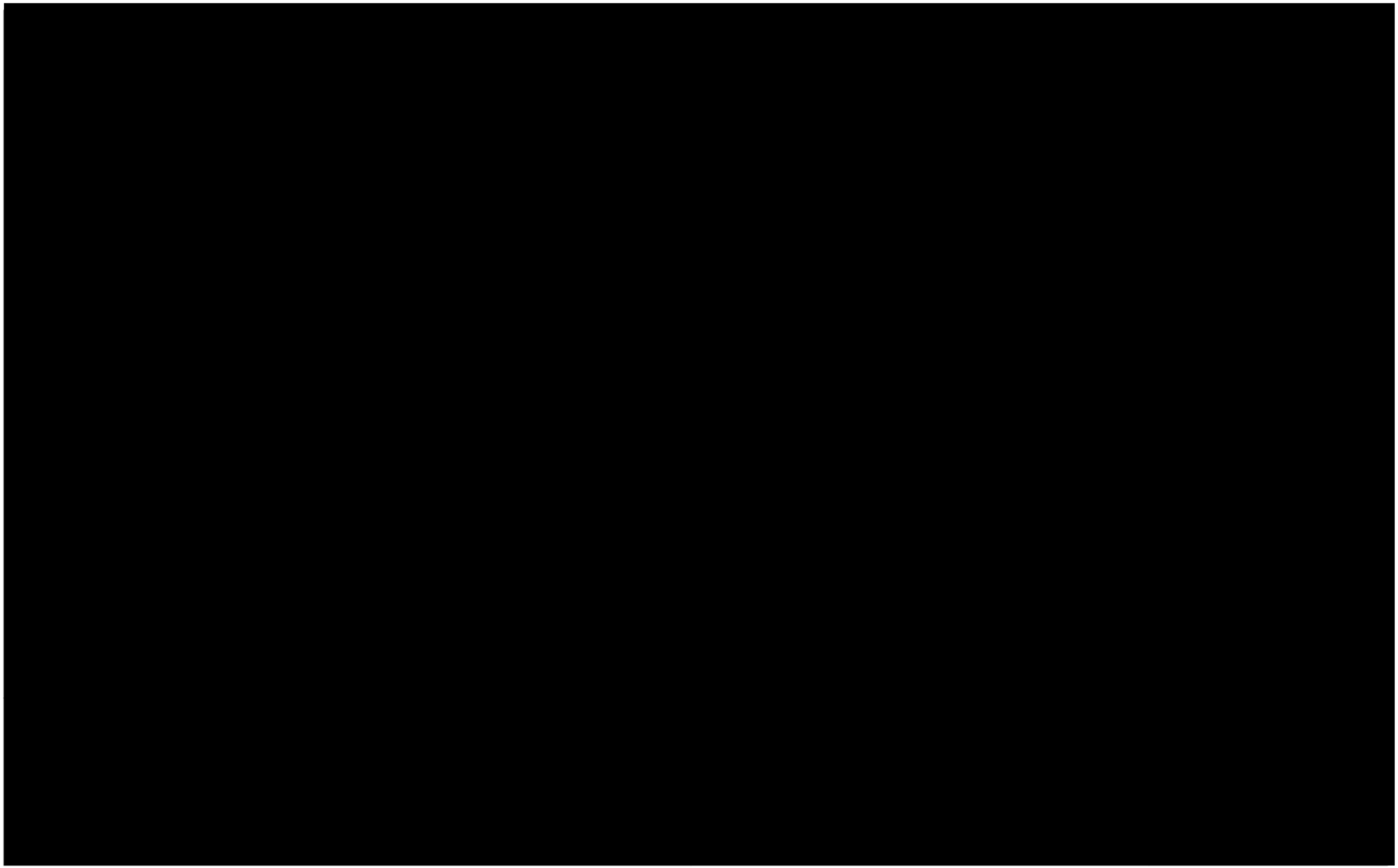

Figure 7: Clearing conducted under CPS3472 (Southern region)

Figure 8: Clearing conducted under CPS3472 (Northern region part 1)

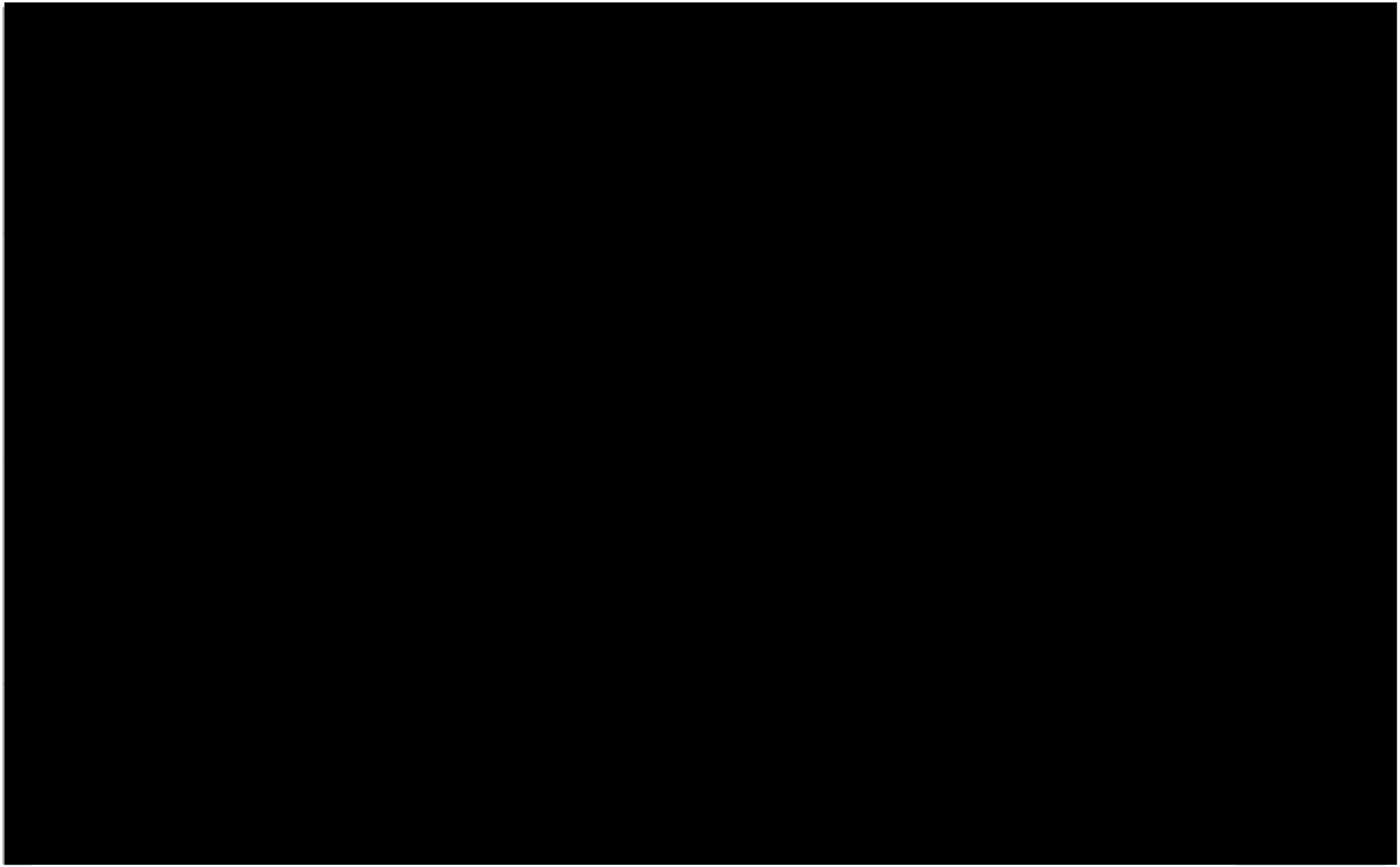

Figure 9: Clearing conducted under CPS3472 (Northern region part 2)

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. Between January and July 2024, Christmas Island received around three quarters of the long-term average rainfall, with temperatures slightly above the mean average (Figure 10).

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.

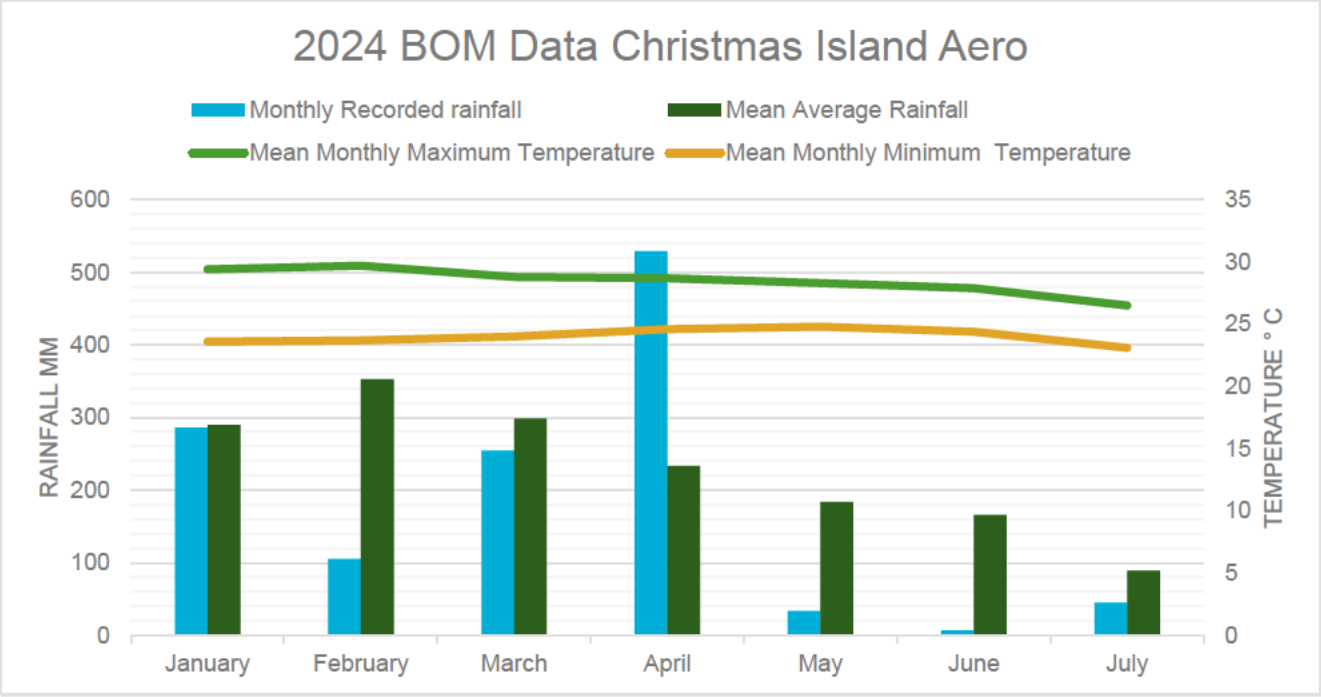

Figure 10: Rainfall and Temperature 2024 at Christmas Island Aero (BoM 2024)

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 (Figure 8) and The Dales (Figure 3) 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).

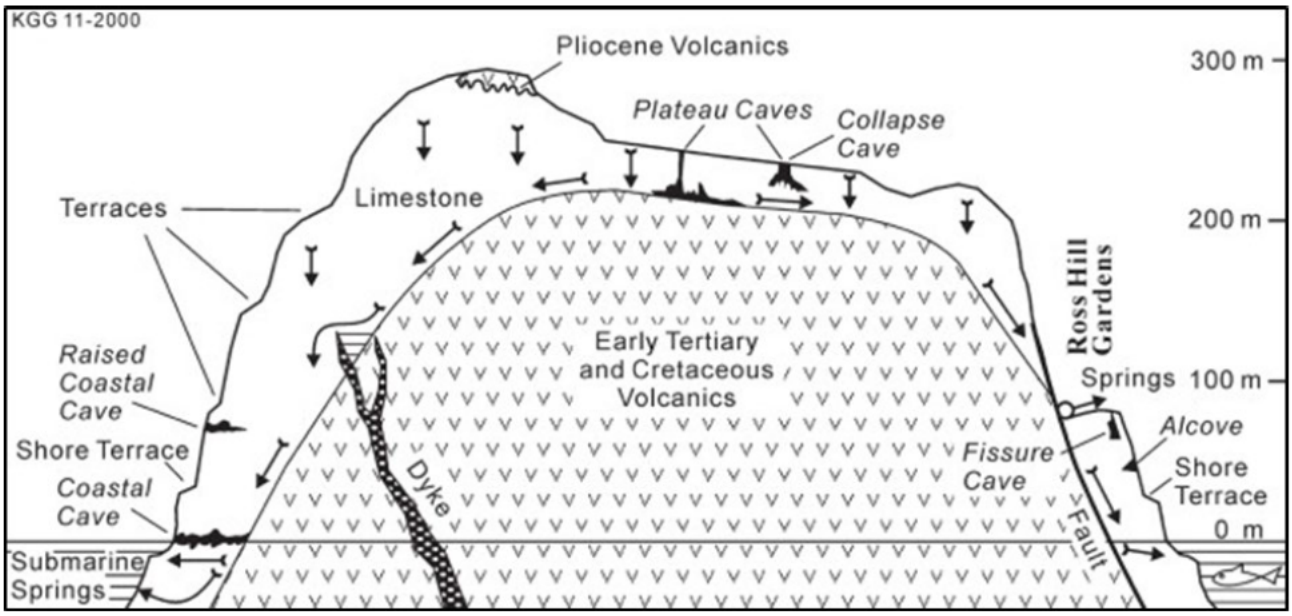

Figure 11: Diagrammatic cross-section of Christmas Island (Grimes 2001)

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 (Figure 12). 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.

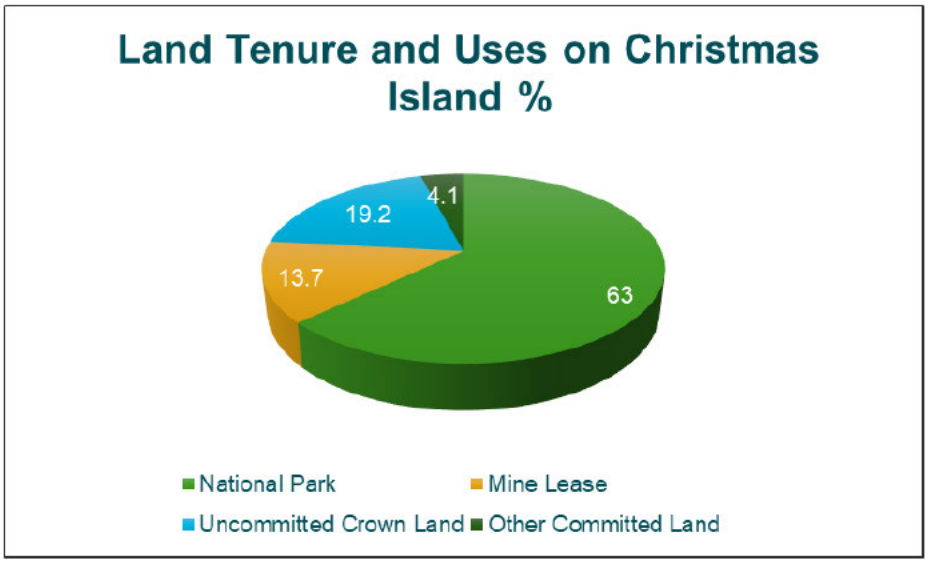

Figure 12: Land Tenure and Uses (Environment Australia 2014, Geoscience Australia 2014)

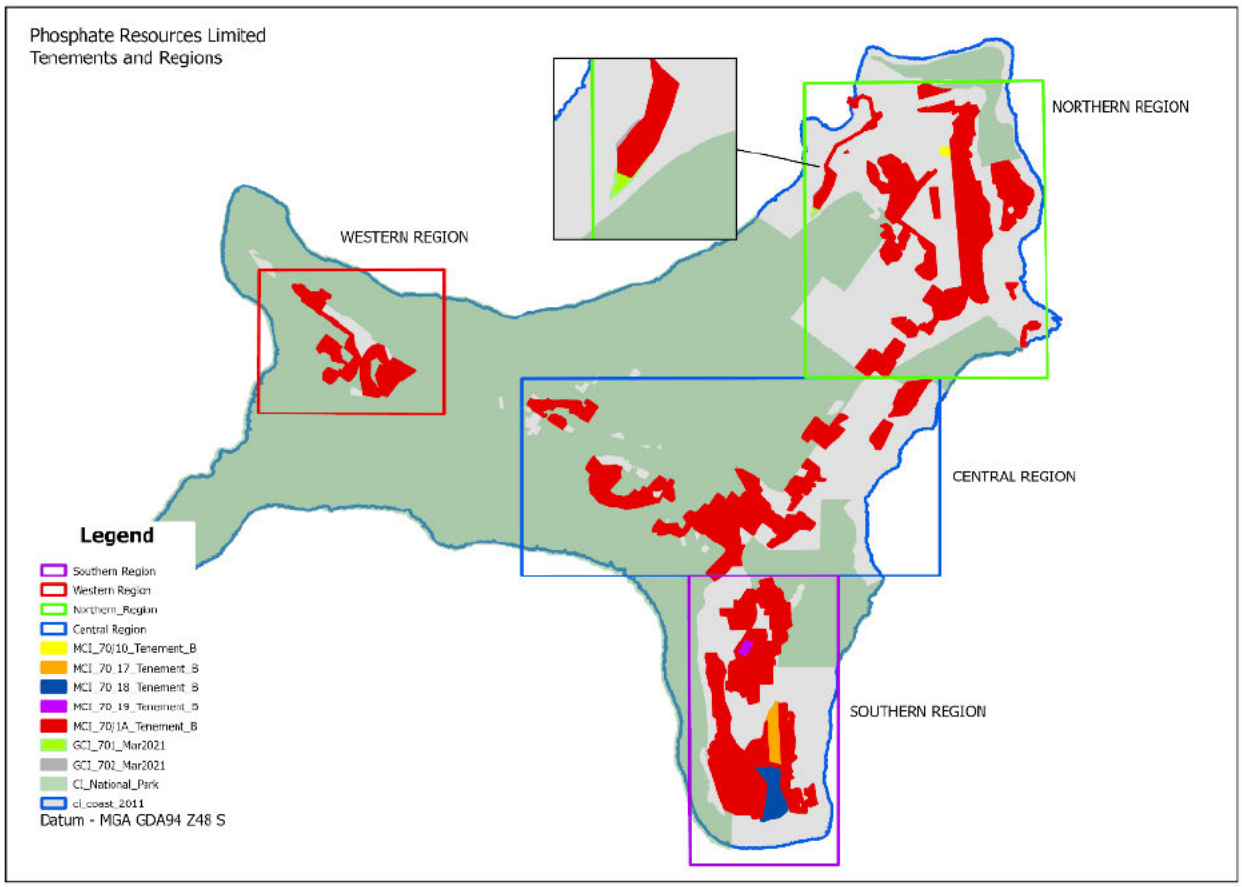

Figure 13: Land Tenure Areas and Assigned Regions

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 (Figure 15). 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 portion of the permit areas fall outside of the ESA in the Dogs Head and South Point Regions (Figure 14).

CPS 3472/6 does not intersect the Ramsar listed wetlands however the Dales area is adjacent to the sub-region in Northwest Point (Figure 15). For this reason, Condition 6 of CPS 3472/6 requires that CIP (the ‘Permit Holder’) “shall not cause or allow the discharge of sediments, from within the area(s) permitted on Plan 3472/6a to be cleared under CPS3472/6, into The Dales Ramsar listed wetlands”.

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

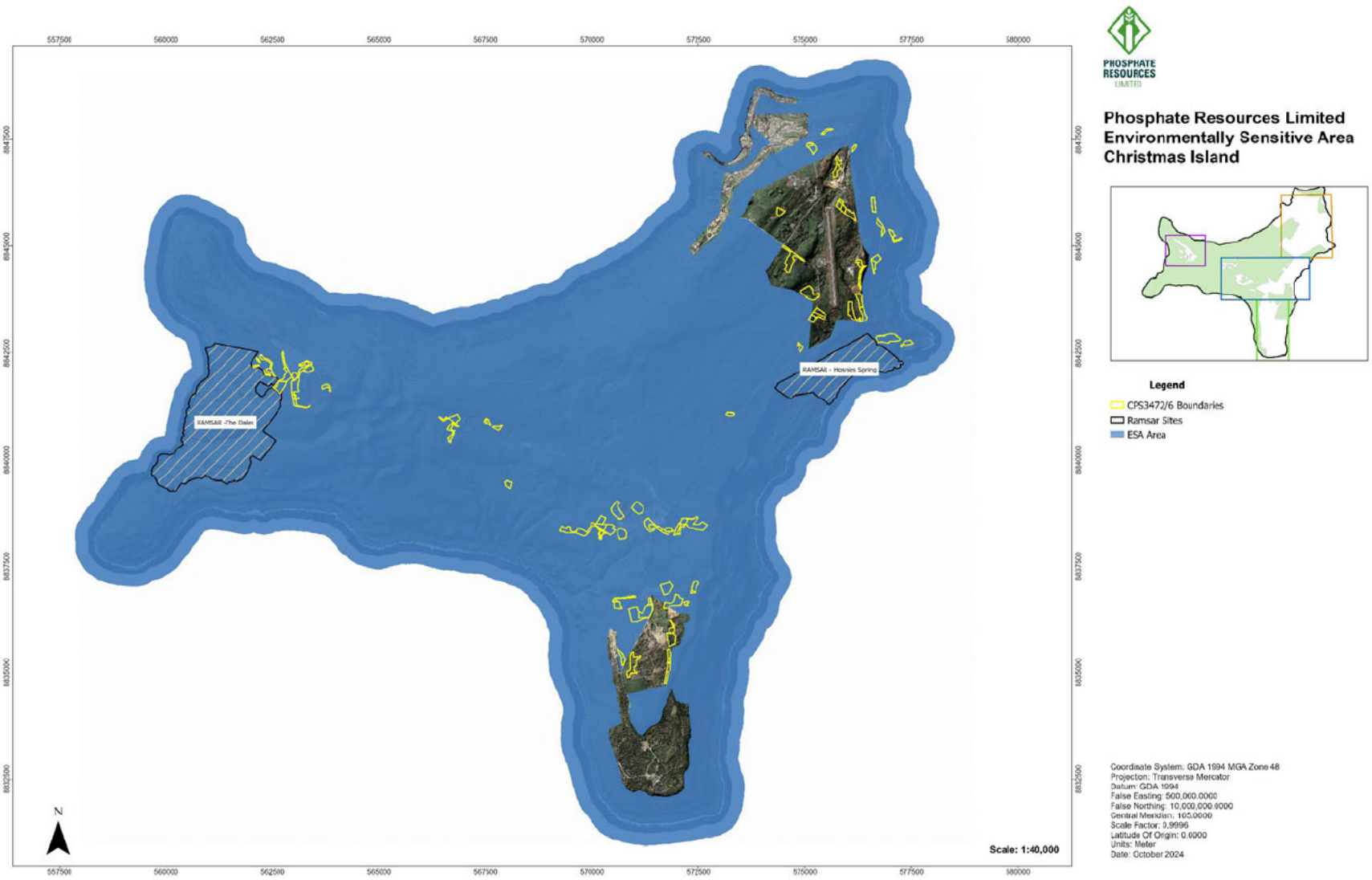

Figure 14: Map of ESA, Ramsar and CPS 3472/6

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 map classified the full extent of Christmas Island into vegetation and land cover classes (Figure 15 - Figure 18; 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.

There are two main vegetation types within CPS 3472/6, the remainder is cleared of vegetation:

- **Regrowth (~60%); and**
- **Weed dominated vegetation and pioneer regrowth (~32%).**

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, Calophyllum, 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*

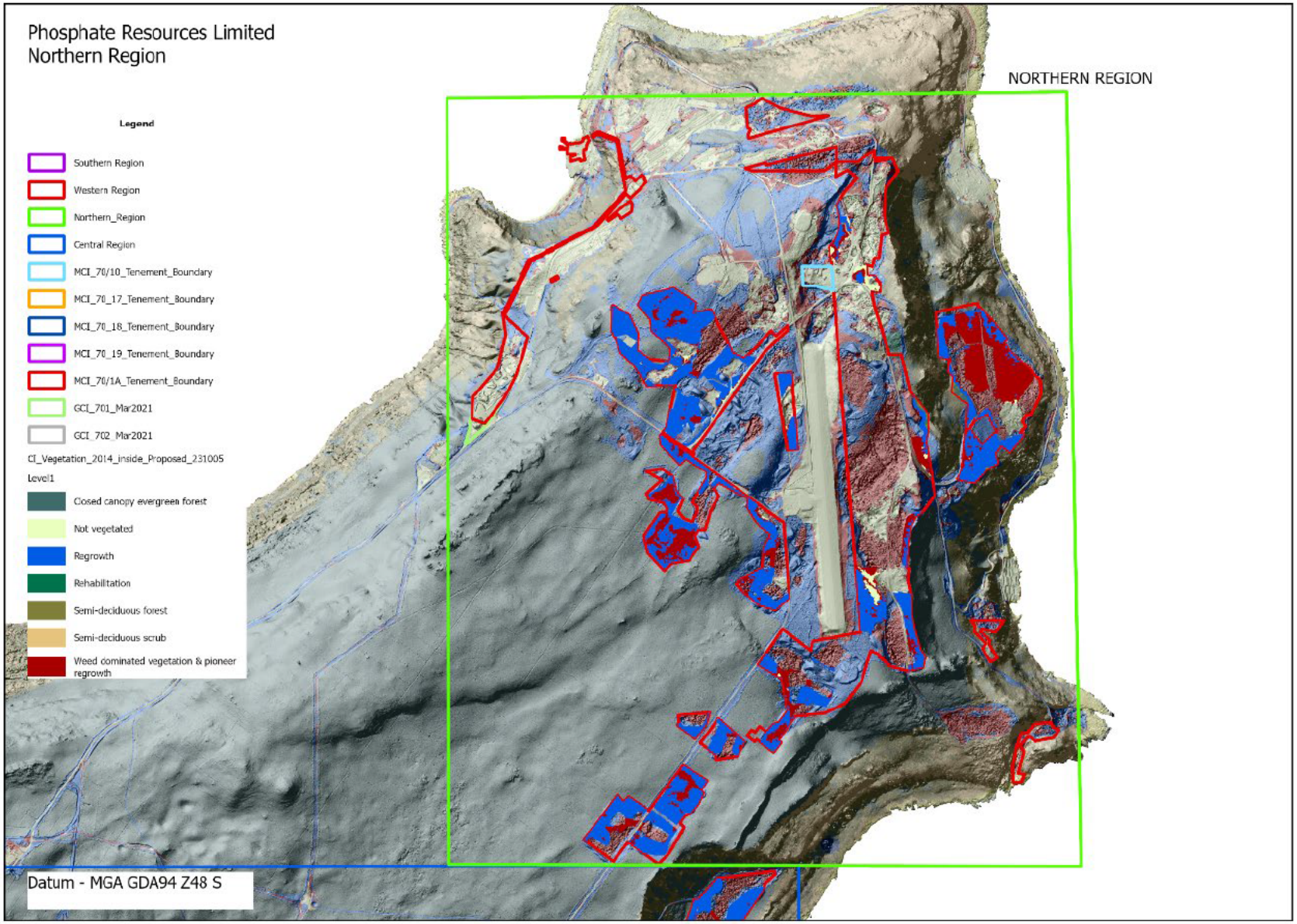

Figure 15: Geoscience 2014 Classified Vegetation within Northern Region

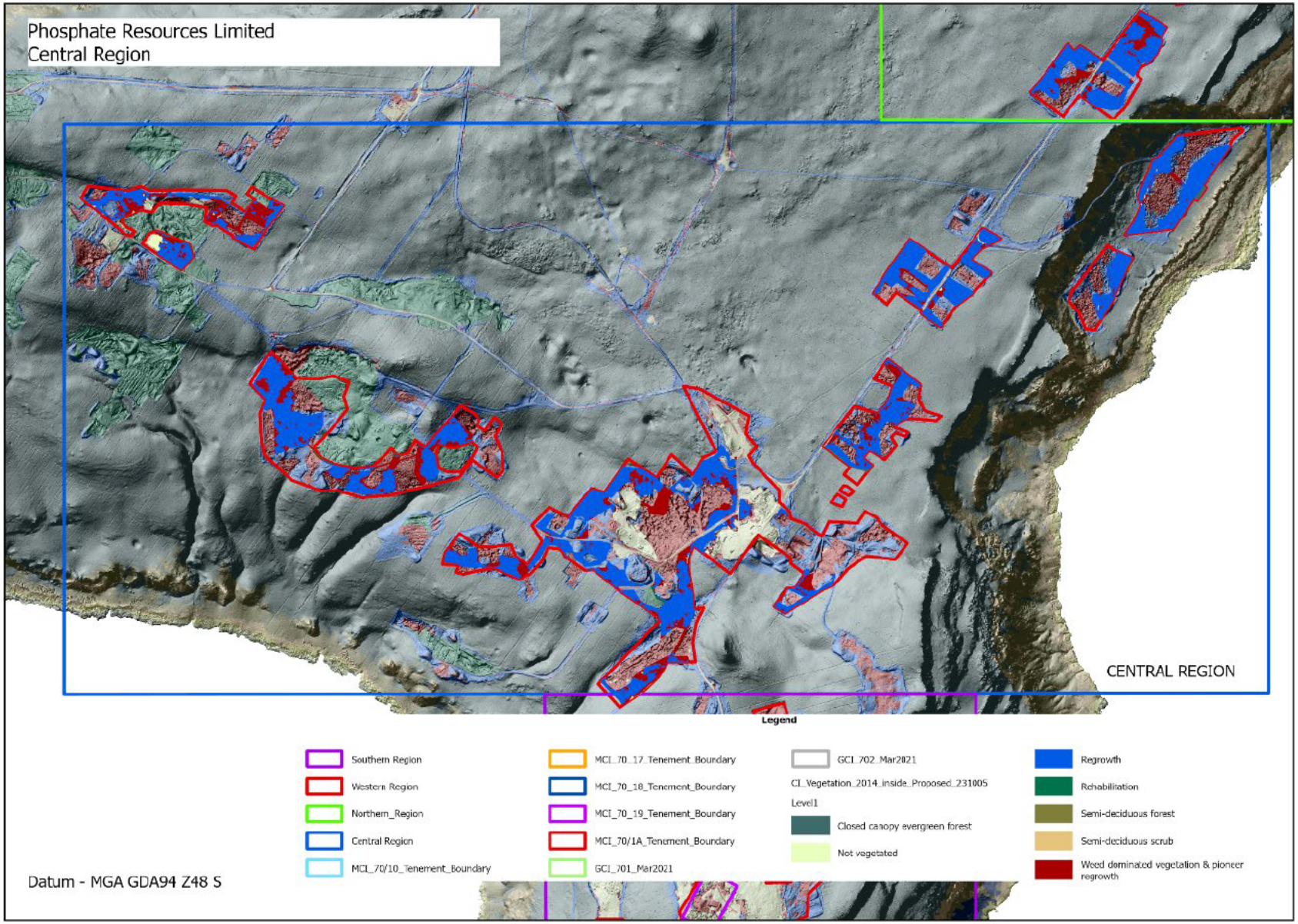

Figure 16 : Geoscience 2014 Classified Vegetation within Central Region

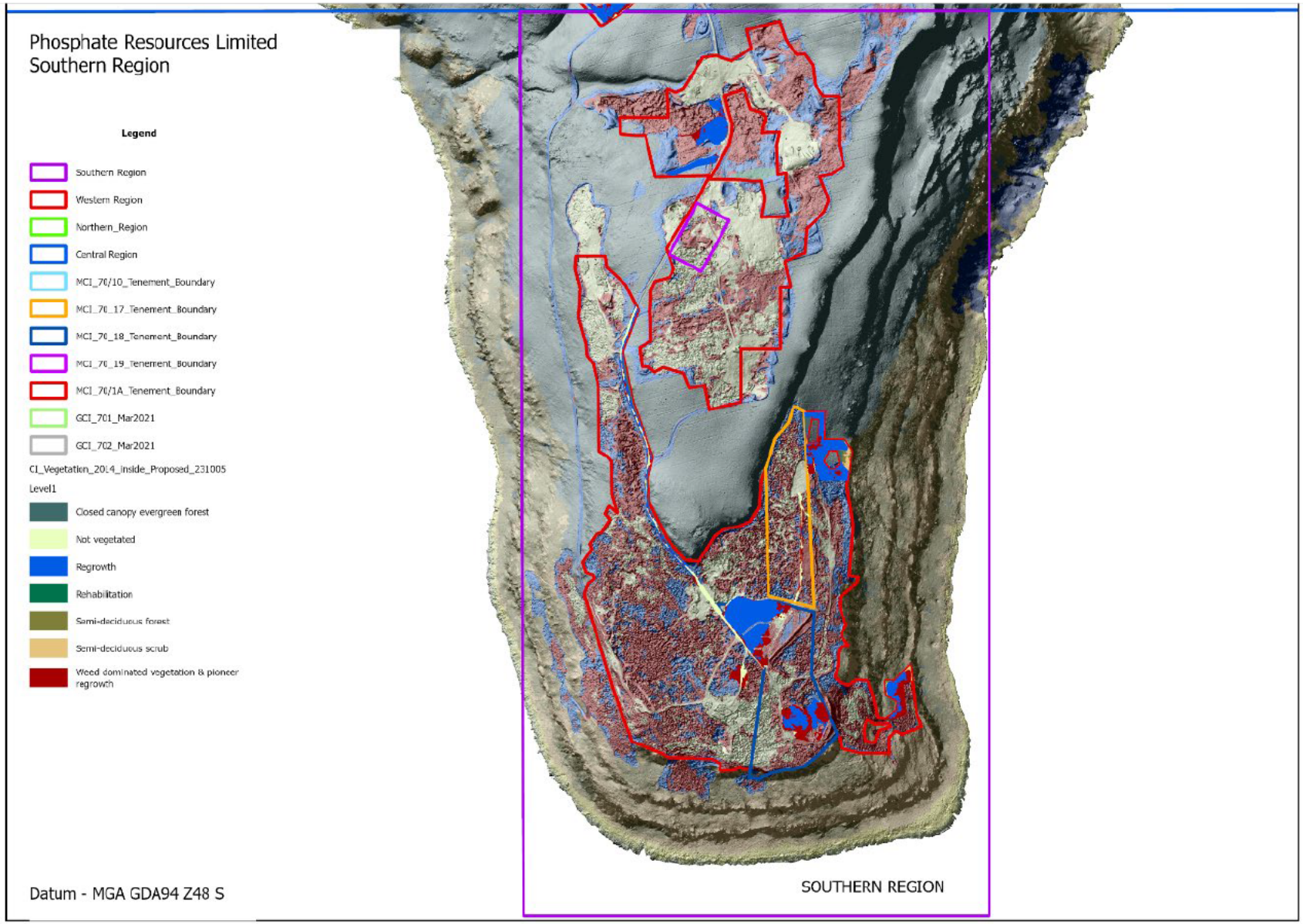

Figure 17: Geoscience 2014 Classified Vegetation within Southern Region

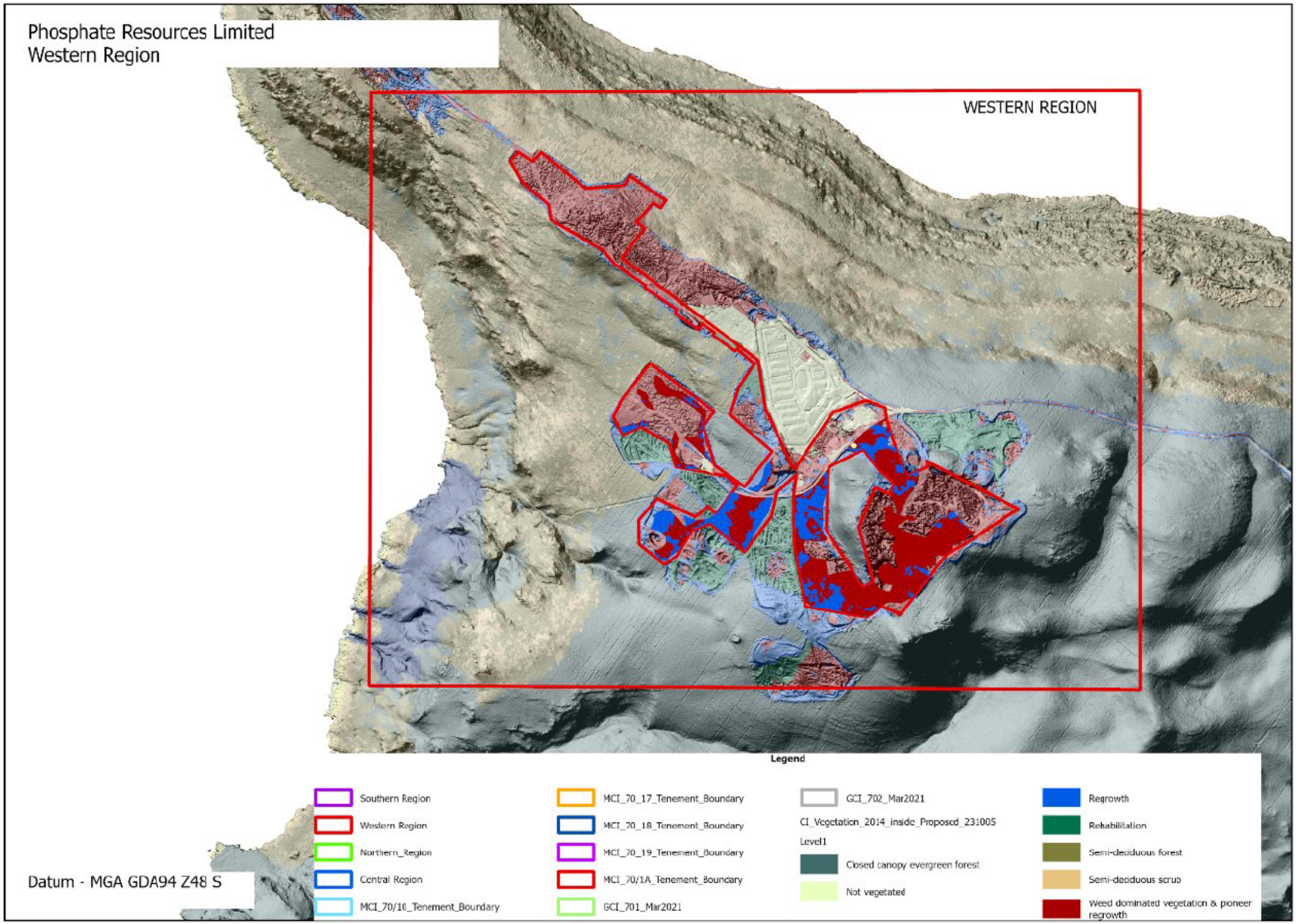

Figure 18: Geoscience 2014 Classified Vegetation within Western Region

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 CPS3472/6 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, disturbance to vegetation structure caused by very frequent fires, the	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
	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 bierrata* 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 and 2014 Geoscience vegetation categorisations to identify any areas of significant change. No significant changes in vegetation type or condition category were identified. See Table 5 below, and Appendix I Ground Truthing and Vegetation Maps for reference.

Figure 19: Example of Category 6 (Completely Degraded) vegetation from 127-MCP-STP9D (left) and 140-MCP-STP27C (right).

Figure 20: Example of Category 2 (Excellent) vegetation from 139-MCP-STP27A

Table 5: Vegetation Condition and Comments

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
Clearing permitted of complete block				
100-MCP-SPWNORTH4	5	2.358	Low density. Maximum height of 10m. Degraded vegetation with a blend of weed and native species including Fern fields, *Leucaena leucocephala; Macaranga tanarius, Tristiropsis acutangula, Pandanus elatus, Dysoxylum gaudichaudianum*	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth and some Closed canopy forest and Non-vegetated
101-MCP-17NORTHMB1	6	0.457	Low quality fern field	2014 Geoscience Categorisation: Weed Dominated vegetation and pioneer regrowth and Fern fields
101-MCP-17NORTHMB2	6	0.753	Low density, maximum height of regrowth vegetation 7m. Degraded blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Melochia umbellata*	2014 Geoscience Categorisation: Weed Dominated vegetation and pioneer regrowth and Fern fields
101-MCP-17NORTHMB3	6	1.952	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth
101-MCP-17NORTHMB4	3, 4, 6	6.354	Medium – low density. Maximum height of regrowth ranging from 2 – 30m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Mikania micrantha, Trema tomentosa, Spathodea campanulate; Macaranga tanarius, Planchonella duclita, Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Melochia umbellata*	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth and some Non-vegetated
101-MCP-17NORTHMB5	5, 6	5.515	Low-density, low-level regrowth with a maximum height of 10m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Mikania micrantha, Trema tomentosa; Macaranga tanarius, Melochia umbellata*	2014 Geoscience Categorisation: Blend of Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth and some Non-vegetated

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
101-MCP-17NORTHMB6	5	0.865	Degraded vegetation with maximum height of 15 – 18m. Blend of weed and native species including: *Macaranga tanarius, Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Muntingia calabura, Leucaena leucocephala*, part Fern field.	2014 Geoscience Categorisation: Predominantly Regrowth (5-10m) with some Weed Dominated vegetation and pioneer regrowth
101-MCP-17SOUTHMB1	6	6.837	Pinnacle/ low quality Fern field	2014 Geoscience Categorisation: Predominantly Weed Dominated vegetation and pioneer regrowth and Fern fields, with some Regrowth (5-15m) with Non-vegetated
101-MCP-STP17A (Relinquished 1.443ha in 2017)	6	1.455	Pinnacle field border dominated by weed species: Fern field, *Leucaena leucocephala, Muntingia calabura, Spathodea campanulata*	2014 Geoscience Categorisation: Predominantly Weed Dominated vegetation and pioneer regrowth and Fern fields
101-MCP-STP17C	6	6.431	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth
101-MCP-STP17D (Relinquished 4.909 ha)	6	6.792	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth and some Closed canopy forest
101-MCP-STP17DE (Relinquished)	6	1.089	Largely cleared. Regrowth up to 1m dominated by weed species: *Muntingia calabura*	2014 Geoscience Categorisation: Predominantly Weed Dominated vegetation and pioneer regrowth and Fern fields with some Regrowth (5-10m)
101-MCP-STP17ED	6	4.973	Low quality old trial rehabilitation field. Average maximum height of 5 – 10m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Mikania micrantha, Gliricidia sepium; Macaranga tanarius, Calophyllum inophyllum*	2014 Geoscience Categorisation: Blend of Regrowth (5-10m) with Weed Dominated vegetation and pioneer regrowth

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
101-MCP-STP17I (Relinquished)	2,6	2.736	Part fern field, dominated by weed species adjoining a forested area of medium density and a maximum height of 30m. Dominant species: *Planchonella duclita, Dysoxylon gaudichaudianum, Hernandia ovigera, Syzygium nervosum, Aidia racemosa, Guettarda speciosa, Pandanus elatus, Pisonia umbellifera*	2014 Geoscience Categorisation: Blend of Regrowth (5-15m) and Weed Dominated vegetation and pioneer regrowth with Fern fields
101-MCP-STP17T (Relinquished)	3	2.696	Red crabs and burrows. Medum density, maximum height 12m. Rehabilitation field. Species include: *Macaranga tanarius, Cerbera manghas, Kleinhovea hospita, Cordia subcordata, Erythina variegata, Spondias cytherea, Terminalia catappa, Hibiscus tiliaceus*	2014 Geoscience Categorisation: Blend of Regrowth (5-15m) and Weed Dominated vegetation and pioneer regrowth with Fern fields, and some Non vegetated
101-MCP-STP17U (Partly Relinquished)	6	1.701	Largely cleared. Regrowth up to 1m dominated by weed species: *Leucaena leucocephala, Muntingia calabura, Spathodea campanulata* with some ***Macaranga*** *tanarius*	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth
101-MCP-STP17V (Partly Relinquished)	5	0.728	Rehabilitation field. Medium density. Species includes *Macaranga tanarius, Calophyllum inophyllum, Cordia subcordata, Gyrocarpus americanus, Heliotropium foertherianum, Morinda citrifolia, Inocarpus fagifer, Guettarda speciosa*	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with Weed Dominated vegetation and pioneer regrowth
101-MCP-STP17W (Partly Relinquished)	5	1.652	Low – medium density site. Rehabilitation field. Blend of weed and native vegetation including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Trema tomentosa; Macaranga tanarius, Tristiropsis acutangula, Ehretia javanica, Arenga listeri, Heritiera littoralia, Hibiscus tiliaceus, Heliotropium foertherianum, Celtis timorensis*	2014 Geoscience Categorisation: Blend of Regrowth (5-20m) and Weed Dominated vegetation and pioneer regrowth with Fern fields, and some Non vegetated
106-MCP-MB1	6	1.565	Low density, maximum height of regrowth vegetation 12m. Blend of weed and native species including: *Leucaena leucocephala, Clausena excavate,* Fern	2013: Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			fields; *Macaranga tanarius, Planchonella duclita, Ficus macrocarpa, Dysoxylum gaudichaudianum*	
106-MCP-MB2	6	4.789	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (5-20m) with some Weed Dominated vegetation and pioneer regrowth and Fern fields
106-MCP-MB3	6	8.200	Cleared for mining	2013: Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
106-MCP-STP15B	5	3.809	Low density, maximum height of 20m. Blend of weed and native species including: *Leucaena leucocephala, Muntingia calabura,* Fern field; *Pandanus elatus, Arenga listeri, Planchonella duclita, Tristiropsis acutangula, Dysoxylum gaudichaudianum*	2014 Geoscience Categorisation: Predominantly Non-vegetated, with some Regrowth (5-10m) and Weed Dominated vegetation and pioneer regrowth
106-MCP-STP15I	6	1.772	Cleared for mining	2013: Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
106-MCP-STP15J	6	1.739	Cleared for mining	2013: Highly disturbed, historic mining field and stockpile. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species. Red crabs in areas
106-MCP-STP15JB	5	1.358	Low density, maximum height of 15m. Blend of weed and native degraded vegetation including: *Leucaena leucocephala, Cordia curassavica, Mikania micrantha,* Fern fields; *Macaranga tanarius, Planchonella duclita, Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
106-MCP-STP15D (Relinquished)	4	1.202	Medium density low height (maximum 2m) regrowth. Rehabilitation field. Species including: *Macaranga tanarius, Planchonella duclita, Melochia umbellata,*	2014 Geoscience Categorisation: Predominantly Non-vegetated

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			Calophyllum inophyllum, Cordia subcordata, Gyrocarpus americanus, Spondias cythera	
106-MCP-STP18G	6	6.510	Largely cleared. Regrowth up to 1m dominated by weed species: *Leucaena leucocephala, Muntingia calabura, Cordia curassavica* with some **Macaranga** *tanarius*	2014 Geoscience Categorisation: Regrowth (10-15m) and Non-vegetated, with some Weed Dominated vegetation and pioneer regrowth
106-MCP-STP18IA	4	4.367	Red crabs and burrows. Low – medium density vegetation. Blend of weed and native vegetation including: *Leucaena leucocephala, Cordia curassavica, Clausena excavate, Muntingia calabura,* Fern fields*; Macaranga tanarius, Planchonella duclita, Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Pittosporum ferrugineum, Barringtonia racemosa*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species. Red crabs in areas
106-MCP-STP-18M	6	4.226	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (5-10m) with some Weed Dominated vegetation and pioneer regrowth
106-MCP-STP18S	6	2.351	Cleared for mining	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas
106-MCP-STP18Q	6	2.370	Cleared for mining	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs and robber crabs in areas
108-MCP-MB1	3, 4, 5	1.245	Red crabs and burrows. Low - medium density. Average maximum height of 20m. Blend of weed and native vegetation including: *Muntingia calabura,* Fern fields*; Planchonella duclita, Arenga listeri, Pandanus elatus, Macaranga tanarius, Ficus macrocarpa, Tristiropsis acutangula, Cloaxylon indicum, Inocarpus fagifer*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs and robber crabs in areas

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
116-MCP-MB1 (Relinquished)	3, 4	0.709	Red crabs and robber crabs. Medium density, average height of regrowth 10m. Rehabilitation field, Blend of weed and native species including: *Macaranga tanarius, Berrya cordifolia, Celtis timorensis, Arenga listeri, Calophyllum inophyllum Cordia subcordata, Cerbera manghas, Pandanus elatus, Ficus macrocarpa, Kleinhovia hospital, Hibiscus tiliaceus, Planchonella duclita*	2013: Highly disturbed, historic mining field and stockpile. Average age of regrowth vegetation is 5 – 10 years old, containing fern and weed species, with edging native vegetation.
116-MCP-MB2	4, 5	1.137	Red crabs and burrows. Low – medium density, average height of 25m. Blend of weed and native species including: Fern fields, *Leucaena leucocephala, Muntingia calabura; Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Cloaxylon indicum, Planchonella duclita*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
127-MCP-STP9D	3, 6	1.287	Red crabs and burrows. Medium – low density, maximum height of 25m. Degraded to good vegetation with a blend of weed and native species including: Fern fields, *Castilla elastica; Macaranga tanarius, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Planchonella duclita, Arenga listeri, Pandanus elatus, Inocarpus fagifer, Baringtonia racemosa, Ehretia javanica*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
128-MCP-MB1	5, 6	2.309	Low density regrowth with a maximum height of 10m. Degraded regrowth vegetation with a blend of weeds and natives including: *Cordia curassavica, Leucaena leucocephala, Melia azedarach; Macaranga tanarius, Dysoxylum gaudichaudianum, Guettarda specisa*	2014 Geoscience Categorisation: Predominantly Regrowth (5-10m) with Non-vegetated, and Weed Dominated vegetation and pioneer regrowth
129-MCP-MB1 (Relinquished)		8.274	Relinquished	2014 Geoscience Categorisation: Predominantly Regrowth (5-10m) and Weed Dominated vegetation and pioneer regrowth
131-MCP-MB1 (Relinquished)		2.400	Relinquished	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
				a blend of native and weed species. Significant red crab population
131-MCP-STP131A (Relinquished)		1.716	Relinquished	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species. Significant red crab population
132-MCP-MB1	4, 5	1.899	Red crabs and burrows. Low density degraded vegetation with some tall specimens of 15 – 20m. Blend of weed and native vegetation including: *Leucaena leucocephala, Cordia curassavica, Clausena excavate, Trema tomentosa, Melia azedarach; Dysoxylum gaudichaudianum, Guettarda speciosa, Terminalia catappa, Ficus macrocarpa, Macaranga tanarius, Tristiropsis acutangula, Arenga listeri*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
132-MCP-MB2	3, 4	2.423	Red footed booby nest. Medium – low density with some tall specimens of maximum 30m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Tacoma stans, Clausena excavate, Melia azedarach; Macaranga tanarius, Tristiropsis acutangula, Barringtonia racemosa, Terminalia catappa, Ficus micropcarpa, Arenga listeri, Dysoxylum gaudichaudianum, Planchonella duclita, Cryptocarya nitens, Celtis timorensis*	2014 Geoscience Categorisation: Predominantly Regrowth (15-20m) with some Non-vegetated, and Weed Dominated vegetation and pioneer regrowth
132-MCP-MB3	3	2.411	Medium density, maximum height of 18m for an individual tree specimen. Blend of weeds and natives including: *Leucaena leucocephala, Cordia curassavica; Macaranga tanarius, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Ficus microcarpa*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas
133A-MCP-F5MB2	5	1.243	Degraded low density with a maximum height of 18m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Muntingia calabura, Tacoma stans, Clausena excavate, Manihot glaziovii;*	2014 Geoscience Categorisation: Predominantly Regrowth (5-10m) with some Non-vegetated, and Weed Dominated vegetation and pioneer regrowth

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			Macaranga tanarius, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Arenga listeri	
133A-MCP-STP133AA	5	1.909	Degraded low density with a maximum height of 15m for individual trees. Blend of weed and native species including: Fern fields, *Leucaena leucocephala, Cordia curassavica, Muntingia calabura; Macaranga tanarius, Arenga listeri, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Planchonella duclita*	2014 Geoscience Categorisation: Predominantly Regrowth (5-15m) with some Weed Dominated vegetation and pioneer regrowth
133A-MCP-STP33P	5	1.585	Degraded low density with a maximum height of 12m for individual trees. Blend of weed and native vegetation including: *Leucaena leucocephala, Corida curassavica, Macaranga tanarius, Pandanus elatus*	2014 Geoscience Categorisation: Blend of Weed Dominated vegetation and pioneer regrowth and Regrowth (5-10m)
133A-MCP-STP33PA	5	0.552	Degraded low density with a maximum height of 16m for individual trees. Blend of weed and native vegetation including: *Leucaena leucocephala, Corida curassavica, Macaranga tanarius, Pandanus elatus*	2014 Geoscience Categorisation: Regrowth (5 -10m)
133A-MCP-STP34P	6	1.545	Largely cleared. Regrowth up to 1m dominated by weed species: *Cordia curassavica, Muntingia calabura*	2014 Geoscience Categorisation: Blend of Non-vegetated and Regrowth (5-10m)
133A-MCP-STP35P	6	3.378	Largely cleared. Regrowth dominated by fern field	2014 Geoscience Categorisation: Blend of Non-vegetated, Weed Dominated vegetation and pioneer regrowth and Regrowth (5-10m)
133A-MCP-STP4P-2	6	0.846	Largely cleared. Regrowth up to 1m dominated by weed species: *Leucaena leucocephala*	2014 Geoscience Categorisation: Blend of Weed Dominated vegetation and pioneer regrowth and Regrowth (5-10m)
133A-MCP-STP6P	4, 5	2.451	Red crabs and burrows. Average height of regrowth 5 – 15m, medium - low density. Blend of weed and native species including: *Cordia curassavica, Leucaena leucocephala, Clausena excavata, Mikania micrantha, Muntingia calabura, Delonix regia, Melia azedarach, Coco nucifera, Paederia foetida, Nephrolepis biserrata; Macaranga tanarius, Tristiropsis acutangula, Melochia umbellata, Pittosporum ferrugineum, Dysoxylum*	2014 Geoscience Categorisation: Blend of Non-vegetated, Weed Dominated vegetation and pioneer regrowth and Regrowth (5-10m)

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			gaudichaudianum, Claoxylon indicum, Arenga listeri, Planchonella duclita, Pipturus argenteus, Terminalia catappa	
133A-MCP-STP9D	6	2.661	Cleared for mining	2014 Geoscience Categorisation: Predominantly Regrowth (10-20m) with some Weed dominated vegetation and pioneer regrowth
133A-MCP-STP9DA	6	2.054	Largely cleared. Regrowth up to 1m dominated by weed species: ***Leucaena leucocephala,*** *Cordia curassavica, Muntingia calabura, some Macaranga tanarius*	2014 Geoscience Categorisation: Blend of Weed Dominated vegetation and pioneer regrowth, Fern fields, and Regrowth (5-15m)
133B-MCP-MB1	3, 4, 5, 6	7.659	Red crabs and burrows. Average height of regrowth 15–25m, medium - low density. Blend of weed and native species including: *Cordia curassavica, Leucaena leucocephala, Clausena excavata,* Fern fields, *Muntingia calabura; Macaranga tanarius, Tristiropsis acutangula, Pittosporum ferrugineum, Dysoxylum gaudichaudianum, Arenga listeri, Planchonella duclita, Syzygium nervosum, Barringtonia racemosa, Hernandia ovigera*	2014 Geoscience Categorisation: Blend of Weed Dominated vegetation and pioneer regrowth, Fern fields, and Regrowth (10-20m)
133B-MCP-STP27P	5	7.554	Low density regrowth with maximum heights of 15 - 20m. Blend of weed and native species including: Fern fields, *Leucaena leucocephala, Corida curassavica, Clausena excavate, Muntingia calabura, Tacoma stans; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Planchonella duclita, Arenga listeri, Macaranga tanarius*	2014 Geoscience Categorisation: Blend of Weed Dominated vegetation and pioneer regrowth, Fern fields, and Regrowth (5 -- 20m)
133B-MCP-STP4BG (Relinquished)		2.116	Relinquished	2014 Geoscience Categorisation: Blend of Regrowth (5-10m) and Non-vegetated, with some Weed Dominated vegetation and pioneer regrowth
135-MCP-STP9P (Relinquished)		2.331	Relinquished	2014 Geoscience Categorisation: Regrowth (10 -15m)

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
135-MCP-STP9PA (Relinquished)		0.869	Relinquished	2014 Geoscience Categorisation: Regrowth (10 -15m)
136-MCP-MB1 (Relinquished)		1.146	Relinquished	2014 Geoscience Categorisation: Regrowth (10 -15m)
138-MCP-MB1	5, 4	3.016	Red crab burrows. Low – medium density, average height of regrowth 10m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Tacoma stans, Muntingia calabura; Macaranga tanarius, Tristiropsis acutangula, Arenga listeri, Planchonella duclita, Syzygium nervosum, Dysoxylum gaudichaudianum*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species
140-MCP-MB1	5	2.930	Low density. Average height of regrowth vegetation 10m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Tacoma stans, Clausena excavata; Macaranga tanarius, Planchonella duclita, Dysoxylum gaudichaudianum*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species
140-MCP-STP26B	5	0.320	Red crabs and crab burrows. Low density, Average maximum height of regrowth 10 – 15m. Blend of weed and native species including: *Leucaena leucocephala, Tacoma stans, native vine thicket; Macaranga tanarius, Cloaxylon indicum, Ficus microcarpa*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species
140-MBP-STP26E	5, 6	0.424	Red crabs and crab burrows. Low density, average maximum height of 15 -20m. Blend of weed and native species including: *Leucaena leucocephala, Tacoma stans, native vine thicket, Muntingia calabura, Corida curassavica; Macaranga tanarius, Dysoxylum gaudichaudianum, Ficus microcarpa, Guettarda speciosa, Arenga listeri, Tristiropsis acutangula, Cloaxylon indicum, Planchonella duclita*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species. Red crabs in areas
140-MCP-STP26I	5	0.868	Low density, degraded vegetation. Blend of weed and native species including: *Leucaena leucocephala, Tacoma stans, Macaranga tanarius, Planchonella*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			duclita, Arenga listeri. Partly cleared	
140-MCP-STP26J	5, 6	4.486	Low density degraded vegetation. Blend of weed and native species including: *Leucaena leucocephala, Adenanthera pavonina; Macaranga tanarius, Planchonella duclita, Dysoxylum gaudichaudianum*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species. Red crabs in areas
Approved for stockpile access only				
106-MCP-STP-15C (Relinquished)	4	0.690	Medium density low height (maximum 1.5m) regrowth. Rehabilitation field. Species including: *Calophyllum inophyllum, Cordia subcordata, Erythrina variegata, Ficus macrocarpa, Hibiscus tiliaceus, Cerbera manghas, Ochrosia ackeringae*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
106-MCP-STP-15D	4	1.203	Medium density low height (maximum 2m) regrowth. Species including: *Macaranga tanarius, Planchonella duclita, Melochia umbellata, Calophyllum inophyllum, Cordia subcordata, Gyrocarpus americanus, Spondias cythera*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
108-MCP-MB2	4	7.691	Red crabs and burrows. Medium density, maximum height of 18m. Blend of weed and native species including: *Leucaena leucocephala,* Fern fields*; Pandanus elatus, Macaranga tanarius, Tristiropsis acutangula, Dysoxylum gaudichaudianum*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs and robber crabs in areas
110-MCP-STP20K	3, 4, 5, 6	1.839	Red crabs and burrows. Medium – low density regrowth with an average height of 15 -20m. Blend of weed and native species including: Fern fields, Leucaena leucocephala, Spathodia campanulata; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Pittosporum ferrugineum, Arenga listeri, Planchonella duclita, Pandanus elatus, Macaranga tanarius, Barringtonia racemosa, Pisonia umbellifera	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas
116-MCP-STP22A (Relinquished)	4, 5	1.758	Red crabs and burrows. Low – medium density. Rehabilitation field. Blend of weed and native vegetation including: Leucaena leucocephala,	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			Muntingia calabura; Fern fields*; Planchonella duclita, Arenga listeri, Pandanus elatus, Pittosporum ferrugineum; Macaranga tanarius, Berrya cordifolia, Calophyllum inophyllum; Cordia subcordata, Inocarpus fagifer, Melochia umbellata*	
116-MCP-STP23A	4	2.983	Robber crabs. Medium density, average maximum height of 15m. Blend of weeds and native vegetation including: *Leucaena leucocephala, Cordia curassavica, Mikania micrantha,* Fern fields, *Coco nucifera; Dysoxylum gaudichaudianum, Pittosporum ferrugineum, Arenga listeri, Syzygium nervosum, Tristiropsis acutangula, Macaranga tanarius, Planchonella duclita*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
116-MCP-STP-23C	6	1.027	Medium density, maximum height of 15m. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Clausena excavata,* Fern fields; *Planchonella duclita, Arenga listeri, Pandanus elatus*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
116-MCP-STP-23F	4	1.244	Red crabs and burrows. Medium density, maximum height of 25m. Blend of weed and native species including: *Clausena excavate,* Fern fields*; Macaranga tanarius, Planchonella duclita, Arenga listeri, Cloaxylon indicum, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Pandanus elatus*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species. Red crabs in areas
123-MCP-STP-11A	3, 5, 6	1.120	Red crabs and burrows. Medium – low density. Blend of weed and native species including: Fern fields, *Castilla elastica, Psidium guajava, Melia azedarach; Macaranga tanarius, Arenga listeri, Tristiropsis, acutangula, Dysoxylum gaudichaudianum, Planchonella duclita, Pandanus elatus, Pisonia umbellifera, Barringtonia racemosa, Inocarpus fagifer, Leea angulate, Pittosporum ferrugineum*	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native, fern, and weed species.
133A-MCP-STP-8A	5, 4	2.823	Red crabs and crab burrows. Max height 7m, low density. Blend of weed and native species including: *Cordia curassavica, Leucana leucocephala,* Ferns,	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			Manihot esculenta, Muntingia calabura; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Melochia umbellate, Guettarda speciosa, Macaranga tanarius	a blend of native and weed species. Red crabs and robber crabs in areas
133A-MCP-STP-8B	6	2.899	Red crabs and burrows. Low-density, low-level regrowth with an average height of 5m. Blend of weed and native species including: Fern fields, *Cordia curassavica, Leucaena leucocephala, Manihot esculenta, Muntingia calabura; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Macaranga tanarius, Melochia umbellata, Guettarda speciosa.* Cleared for stockpile access in the south of the block	Highly disturbed. Average age of regrowth vegetation is 10 – 15 years old, containing a blend of native and weed species
133A-MCP-STP8BA	4, 5, 6	3.420	Red crabs and burrows. Low density and mostly low level with some taller individual trees 20m. Blend of weed and native species including: Fern fields, *Cordia curassavica, Leucaena leucocephala, Tacoma stans, Clausena excavate, Psidium guajava; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Macaranga tanarius, Pittosporum ferrugineum.*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas
133A-MCP-STP8C	5, 6	5.373	Crab burrows. Low density regrowth with mostly low-level regrowth. Blend of weed and native species including: *Leucaena leucocephala, Cordia curassavica, Dysoxylum gaudichaudianum, Pittosporum ferrugineum, Melcohia umbellata, Pandanus elatus* Cleared for Stockpile access in part of the block.	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas
138-MCP-STP26D	4, 5	2.331	Red crabs and burrows. One robber crab. Average height of regrowth 10 - 15m, mostly low density. Blend of weed and native species including: *Cordia curassavica, Leucana leucocephala, Manihot esculenta, Muntingia calabura, Epipremnum pinnatum, Tecoma stans Mikania micrantha; Tristiropsis acutangula, Dysoxylum gaudichaudianum, Macaranga tanarius, Leea angulate, Claoxylon indicum, Arenga listeri,*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in areas

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
			Planchonella duclitan, Cryptocarya nitens, Ficus macrocarpa, Pittosporum ferrugineum	
139-MCP-STP-25C	4, 6	1.472	Red crab burrows. Medium density, average height 15m. Blend of weed and native species including: *Leucaena leucocephala, Muntingia calabura, Mikania micrantha,* fern fields*; Macaranga tanarius, Planchonella duclita, Arenga listeri, Tristiropsis acutangula, Pittosporum ferrugineum*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species. Red crabs in areas
139-MCP-25I	6	0.752 (2013)	Un-trafficable fern fields	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species. Red crabs in areas
139-MCP-STP27A	1, 2, 4, 5, 6	4.829	Red crabs and crab burrows, Abbotts Booby Nests Note: Abbott's Booby nesting sites outside (within 50m) of eastern boundary. Low – medium density, average height of regrowth vegetation 10 – 15m, some primary *Ficus* species up to 40m. Blend of weed and native vegetation including: native vine thickets, *Leucaena leucocephala,* fern fields, *Muntingia calabura, Tacoma stans; Macaranga tanarius, Dysoxylum gaudichaudianum, Cloaxylon indicum, Tristiropsis acutangula, Arenga listeri, Ficus macrocarpa, Planchonella duclita, Guettarda speciosa*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species. Red crabs in areas
140-MCP-STP27C	3, 4, 5, 6	5.310	Red crabs and burrows. Low - medium density. Average height 10 - 15m. Blend of weed and native vegetation including: *Leucaena leucocephala, Cordia curassavica. Tacoma stans, Muntingia calabura, Mikania micrantha Adenanthera pavonina, Melia azederach; Macaranga tanarius, Tristiropsis acutangula, Ficus macrocarpa, Arenga listeri, Ehretia javanica, Planchonella duclita, Claoxylon indicum, Inocarpus fagifer, Dysoxylum gaudichaudianum, Allophyllus cobbe, Pittosporum ferrugineum, Cryptocarya nitens*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species

Location	2024 Vegetation Condition Rating/s	Area (ha)	2024 Ground-truthing Assessment	Key Issues in 2013 / 2017 assessment / Geoscience Classification
Areas approved for haul road access only				
138-MCP-MB2	4, 5	1.241	Low - medium density, average height of 15m. Blend of weed and native species including: *Leucaena leucocephala, Tacoma stans, Mikania micrantha, Muntingia calabura; Macaranga tanarius, Syzygium nervosum, Calophyllum inophyllum, Hibiscus tiliaceus, Tristiropsis acutangula, Dysoxylum gaudichaudianum, Melochia umbellata*	Highly disturbed. Average age of regrowth vegetation is 5 – 10 years old, containing a blend of native and weed species. Red crabs in some areas
139-MCP-MB1	5	1.411	Low density, average height of 10m. Blend of weed and native species including; *Leucaena leucocephala,* Fern field, *Muntingia calabura, Mikania micrantha, Psidium guajava; Pandanus elatus, Arenga listeri, Pittosporum ferrugineum*	Highly disturbed. Average age of regrowth vegetation is 5 - 10 years old, containing a blend of native and weed species.

Significant Changes to Vegetation

No locations were identified as having significant changes to the quality of vegetation against the 2017 application except for where clearing has been undertaken. Assessment against the 2014 Geoscience dataset classifying vegetation into zones was also undertaken (Table 5).

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 3472/6.

Minimum boundaries are specified with Condition 11: Flora Management, should any protected flora species be identified in the proposed clearing areas.

It was noted in the response from Parks Australia (Majorie Gant, former Manager, Christmas Island National Park) to Leah Stratford as part of the case-by-case assessment in 2009 that *T. devexa* had been found in adjacent forest to site 101-MCP-17SOUTHMB1 but no location specific buffer in addition to those listed in Condition 12 was enforced as a condition in CPS 3472/6. CIP will conduct thorough pre-clearing ground truthing in this area as part of a risk-based approach. Appendix I includes the locations of identified Priority Species fauna neighbouring CPS 3472 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 21: 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 the 2024 ground truthing, though additional risk-based management measures may be proposed to mitigate against the risk of *Tectaria devexa* being disturbed.

Figure 22: 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 23: 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.

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 6). 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

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 ground truthing assessment, 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.

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. Three sites outside of clearing permit block 139-MCP-STP27A and one in 116-MCP-STP23A in the northwest of the island have been identified as containing nesting sites for the Abbott's Booby, but as no clearing of primary rainforest is proposed it is unlikely that the Abbott's Booby will be present in areas to be cleared. Site specific ground truthing requirements including the use of aerial footage (drone) will be used based on likelihood of presence.	Possible; however critical nesting habitat unlikely to be impacted
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* species), 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-	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
		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 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	CR	The Christmas Island Flying Fox is small compared to most Australian Pteropus species,	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,	Possible; however individuals and roosting habitat

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
Christmas Island Flying Fox		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).	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. 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.	unlikely to be affected
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,	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

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
		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).		
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 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).	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). 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. Given that the species utilises revegetated mining areas, it is considered possible that the species may be present in areas proposed for clearing.	Possible; however highly mobile
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	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	Likely; however the crab burrow density in these areas is less than in the high density coastal terraces (Parks

Species	Status	Description	Distribution & Habitat	Likelihood of Occurrence
		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).	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.	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, coconut, carrion and other crabs, including the Red Crab (Krieger et al., 2012).	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). 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.	Likely; however, the physical relocation of robber crabs will be suitable mitigation
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 25):

- 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 places within CPS 3472/6.**

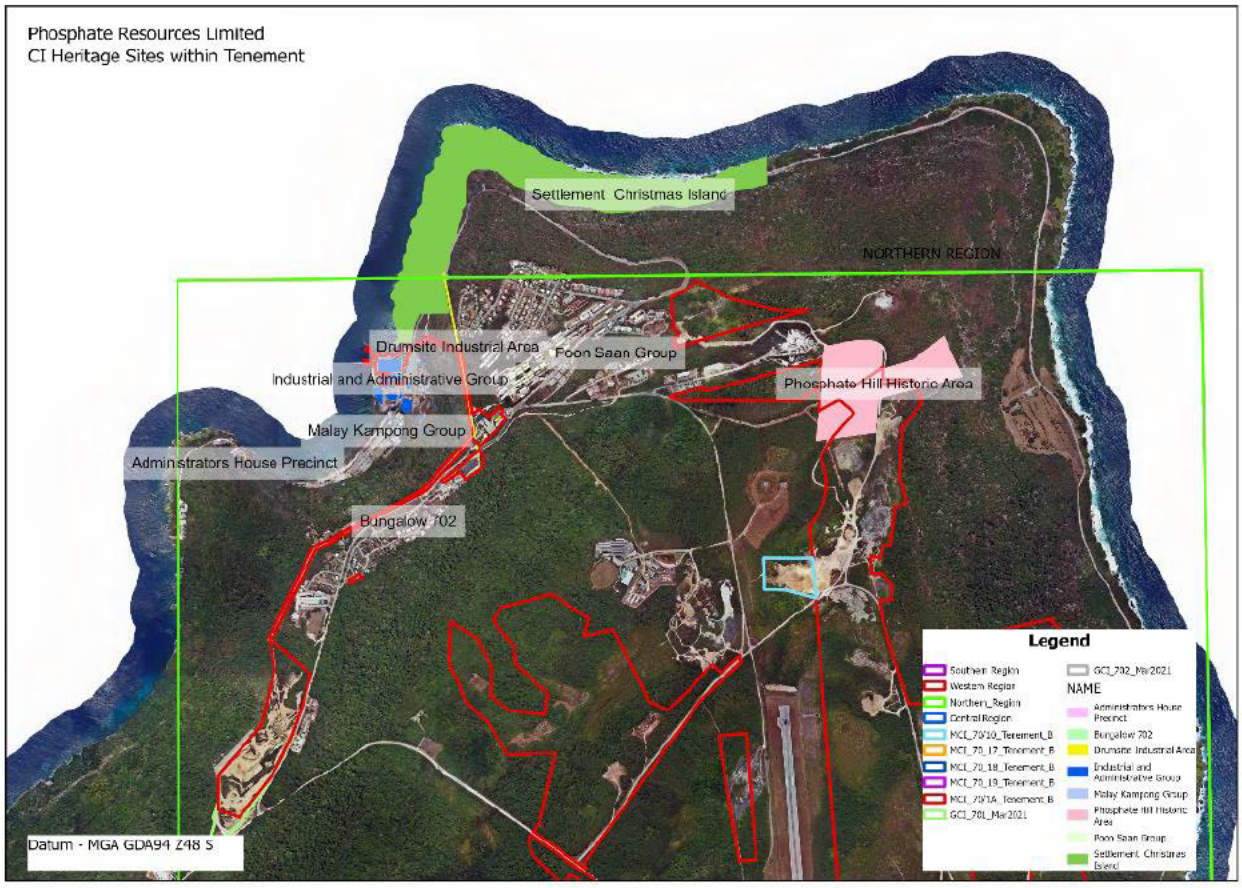

Figure 24: National Heritage List sites

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.

The 2017 decision approving CPS 3472/6 noted the proposed clearing areas may impact on red crab migration, and Abbott's booby (*Papasula abbotti*), Red Footed booby (*Sula sula*), and the Greater Frigate bird (*Fregata minor*), and specified conditions to mitigate this are noted in the Fauna Management sections below.

Buffers

Buffers are required to be added to National Park boundaries as specified within CPS 3472/6 Condition 12 'Buffers to national park', which requires that CIP (as the 'Permit Holder') shall maintain buffers to National Park boundaries where clearing native vegetation unless otherwise stated in accordance with the application areas set out below, except where clearing of native vegetation is on a pinnacle field which was mined prior to 2008 (where no buffer is required):

a) Plan 3472/6a (Dogs Tail – Western): As stated in the Pipistrelle Bat Management Plan: Plan 1 (NB: this condition is requested to be removed as part of this application);
b) Plan 3472/6b (Dogs Head – Northern): 30m;
c) Plan 3472/6c (Southern Area): 5m;
d) Plan 3472/6d (central): 50m; will apply to 106 MCP STP18G, 106 MCP STP18M, 106 MCP STP15B, and 106MCP MB2;
e) Application areas ML108-MCP-MB1, ML 138-MCP-STP-26D, ML 139-MCP-STP27A, ML 139-MCP-MB1, ML 139-MCP-25I, ML ML139-MCP-SP-27A (Western boundary), 140-MCP-STP27C (Eastern boundary), ML 140-MCP-STP26I, ML 140_MCP-STP26J: 5m;
f) Application areas 108-MCP-MB2 (Northern portion of North-Eastern boundary), ML 140-MCP-MB1, 123-MCP-STP11A, ML 116-MCP-STP23C: 10m;
g) Application areas ML139-MCP-STP27A (Southern portion of North-Eastern boundary), 140-MCP-STP27C (Western boundary) and 108-MCP-MB2 (North-Eastern boundary): 20m;
h) 50m buffers for these significant seabird nesting areas:
    i. ML128; and
    ii. ML129.

The condition further states that CIP can apply for access to clear vegetation in the buffer zones within condition 12 (a-d) and (h) for stockpile access on a case-by-case basis.

CIP have made improvements to ensure compliance with required buffers while clearing considering incident findings (see Compliance section above). This includes applying expanded measures to ensure buffers are in place such as:

- Thoroughly checking any requirements as per clearing permit prior to undertaking any clearing/ boundary marking e.g. restrictions in clearing dates due to Bird nesting seasons (Abbott's Booby, Red Footed Booby, or Greater Frigate Bird) or specific buffers required for blocks/ block boundaries such as the 20m buffer to National Park on NE boundary side of Block 108-MCP-MB2.
- Creating the buffer according to CPS requirements, then adding an additional buffer of 5-7m 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 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 3472/6 include:

- Condition 11: CIP (the 'Permit Holder') shall identify the following listed flora species and shall maintain a buffer around each species in accordance with *Table 1* of CPS 3472/6 (below).

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.
- Undertake appropriate assessments of areas proposed for clearing to assess potential presence of other special flora species and assess management measures to minimise impacts.

Fauna Management

Fauna management conditions specified within CPS 3472/6 (in addition to the buffers specified above in Clearing Permits) include:

- Condition 9 (b): The Permit Holder shall ensure clearing of native vegetation within Plan 3472/6b and the mining areas listed is prohibited between March and October, the nesting period of *Papasula abbotti* (Abbotts Booby) (EN):

138-MCP-MB1	139-MCP-MB1	140-MCP-STP26E
138-MCP-MB2	140-MCP-MB1	140- MCP-STP26I
139-MCP-251	140-MCP-STP26B	140-MCP-STP26J

- Condition 9 (d): The Permit Holder will liaise and reach agreement with Parks Australia to determine the most appropriate time for clearing of the areas listed to minimise impacts on the *Geocaracoidea natalis* (Red Crab) migration through increased mortality 123-MCP-STP11A, 133-MCP-STP8A, 133-MCP-STP8B, 133-MCP-STP8BA, 133-MCP-STP8C and permitted areas within, ML 109* and ML 110.
- Condition 9 (e): Within the mining lease areas listed below, the Permit Holder shall not clear vegetation between May and September, the nesting period of *Sula sula* (Red Footed booby) and *Frigata minor* (Greater Frigate bird):
  - i. ML128;
  - ii. ML129;
  - iii. ML132-MCP-MB1;
  - iv. ML132-MCP-MB2;
  - v. ML132-MCP-MB3;
  - vi. ML133-MCP-STP8A
  - vii. ML133-MCP-STP8B;
  - viii. ML133-MCP-STP8BA;
  - ix. ML133-MCP-STP-8C; and
  - x. ML136-MCP-MB1

In addition, 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.

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.
- Ensure all minimum buffers and boundaries are enforced utilising the Mines Works Permit process.

Weed Management

- Undertake weed management in accordance with the Weed Management Plan (ENV-Plan-003).
- Undertake weed control on a prioritised basis based on meeting regulatory requirements, minimising the establishment of new populations of weeds into 'clean' areas, and protecting important habitat communities from priority weed species.
- Undertake monitoring of priority weed locations and follow up controls.
- Ensure vehicles are cleaned regularly (e.g. high-pressure hose at designated wash down bays) to avoid movement and spread of weed species through transfer of soil and plant material.

- Work collaboratively with Island partners to address pest species management of priority Island wide weed species.
- Provide training and awareness programs for the workforce on weed and pest identification, reporting and management.

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 Principles	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 **may be** at variance to Principle (A)	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. 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 primarily ranging from good to completely degraded. Sites were assessed thoroughly, including some on a case-by-case basis to determine whether they are representative of natural vegetation in the ground truthing conducted prior to CPS 3472/6 being approved. No Priority Flora species are listed for Christmas Island within the permitted area. Vegetation varies at each site/ block, and consists of secondary regrowth forest species including, *Dysoxylum gaudichaudianum, Pandanus elatus, Tristiropsis acutangula, Nephrolepsis biserrata, Barringtonia racemosa, Macaranga tanarius, Claoxylon indicum, Ficus Microcarpa, Planchonella duclita, Guettarda speciosa, Arenga listeri* and weed species including Fern fields, *Leucaena leucocephala, Cordia curassavica, Clausena excavata, Tacoma stans, Mikania micrantha, Guava sp., Coconut sp.* etc 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, the proposal is primarily not likely to be at variance to this principle, however may be at variance for a single block which has a vegetation score of 1 (Pristine) or 2 (Excellent) in sections (139-MCP-STP27A).
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 Principles	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. Consequently, it is considered unlikely that any mammal or reptile species of conservation significance rely upon habitat in areas proposed to be cleared. 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 but 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 remnant 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.

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
		• The Island fauna species that are of particular conservation concern due to low population numbers or special risks (including Abbott's booby, and other listed species) have not been found within the proposed clearing areas to date. • 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 small (0.013ha to 8.279 ha of regrowth with 73% of sites p • Red crabs are ubiquitous and common, estimated to number between 40-50 million and their preferred habitat is in undisturbed rainforest, most of which is protected in the Christmas Island National Park. The density of red crab burrows within the proposal area is relatively low. It is not possible to undertake clearing without some localised, albeit small, impact. The key consideration is that any impacts will be minor compared to the large and well protected existing population and following rehabilitation it would be expected that red crabs would recolonise these areas and they would again become productive red crab habitat. Therefore, any localised impacts on red crabs are likely to be insignificant to the Island population. • There are known Abbott's Booby nest trees in the adjoining National Park however indirect impacts due to turbulence created by clearing is considered a low risk (*see below for more detail); and a risk-based assessment approach will be used prior to any clearing in block/s with known adjacent Abbott's Booby nesting sites. 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. *Hypothesised Turbulence Impacts* Turbulence impacts on Abbott's booby nesting have been hypothesised based on modelling of the hypothetical removal of a primary rainforest. This is based on removal of a natural undisturbed canopy which would be the maximum change and impact due to clearing activities. The impacts due to increased turbulence in adjoining forest areas from the clearing as proposed would not be at this level, as the forest to be cleared is already disturbed and turbulence effects would already have been experienced on the adjoining forest when the site was originally cleared (circa 1970's).

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
		The anticipated change in turbulence will vary for different sites as they have different dimensions, different canopy heights and vegetation. Some clearing is expected to have minimal increased turbulence due to the extent of existing clearing in the area (i.e. the effective change in the canopy will be minimal). Turbulence impacts will also only be realised if Abbott's booby nest trees are situated within the ten canopy heights downwind of the cleared areas (Range to Reef, 2018). A notional 300m distance is often quoted but it should be noted that this is based on the forest having a 30m canopy height. Within the CPS3472 permitted area canopy heights of vegetation to be cleared are relatively low (with 95% being less than 20 m, and 85% less than 15m), with weed and fern fields being generally less than 5 m (based on ground truthing vegetation survey and scores). Given that these clearing areas will be rehabilitated post mining, any effects of turbulence will be temporary with the growth of rehabilitation progressively diminishing turbulence affects. Only a small number of individuals relative to the population on Christmas Island are adjacent to the clearing area (namely 139-MCP-STP27A and 116-MCP-STP23A) and the species is currently considered to be stable. 2017 assessments by Range to Reef suggest that there may be an improvement in the number of breeding pairs of the species in the areas surveyed and concluded therefore that increase in turbulence will be low, and the resultant risk to Abbott's Booby is negligible and reversible over time with rehabilitation after mining.
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 data as well as ground truthing surveys conducted in 2024 did not locate any of these species in the areas to be cleared nor within the immediate boundary. *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

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
		of *T. devexa* have been identified at proposed clearing locations, however it was reported in 2009 that a nearby population occurred in the National Park forest adjacent to (but not within) one of the blocks within the CPS area. *P. truncata* is known from two sites on Christmas Island. Neither location is within the CPS 3472/6 clearing areas. *P. truncata* grows in permanently moist sites in semi-deciduous closed forest and is 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	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.

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
associated with a watercourse or wetland.		All the area under application is situated on the plateau and not within wetland areas. This proposal is not at variance to this principle.
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 will be left as safe and trafficable to meet tenement conditions. 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, 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". Blocks 140-MCP-STP26B, 140-MCP-STP26E, 140-MCP-STP26I and 140-MCP-STP26J include a boundary or portion of boundary adjacent to (within 5-30m) of The Dales Ramsar wetland while several areas are adjacent to 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. In some cases, the proposed clearing boundary has been reduced in prior applications to provide some buffer between clearing and the National Park boundary, or to protect the more developed regrowth on the border of National Park. 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, PRL will implement the Weed Management Plan approved by the Commonwealth in 2017 to ensure that the development does not result in the localised introduction and spread of priority weed species into the National Park.

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
		Furthermore, several of the proposed blocks for clearing have 'stockpile only' removal conditions. This involves mining historic stockpiles and returning the ground level to its original natural level. This approach has the advantage of retaining the original soil profile which facilities vegetative growth and rehabilitation activities. The rapid return of vegetation will be beneficial in ameliorating edge effects to the adjoining National Park and allowing recovery of the site. This condition is already in place for blocks: 106-MCP-STP-15C, 116-MCP-STP23A, 133A-MCP-STP8B, 139-MCP-25I 106-MCP-STP-15D, 116-MCP-STP23C, 133A-MCP-STP8BA, 139-MCP-STP27A 108-MCP-MB2, 116-MCP-23F, 133A-MCP-STP8C, 140-MCP-STP27C 110-MCP-STP20K, 123-MCP-STP-11A, 138-MCP-STP26D 116-MCP-STP22A, 133A-MCP-STP8A, 139-MCP-STP-25C In addition, a further imposed condition in CPS3472/6 is the use of haul road access only conditions, which further restricts clearing and promotes the retention of natural conditions in a block. This is in place for blocks: 138-MCP-MB2, and 139-MCP-MB1. These conditions, adequate buffers as specified, and implementation of the Weed Management Plan should be sufficient to ensure conservation areas are not compromised.
Principle (I) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause	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.

Clearing Principles	Is the Proposal at Variance?	Justification for Variance
deterioration in the quality of surface or underground water.		
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 and amend several conditions of CPS 3472/6 (Purpose Permit) approved on 28 July 2017.

Conditions of CPS 3472/6 have been complied with the exceptions stated within Table 2; however, several changes are being requested as part of this application for extension, including:

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

- Removal of Condition 9(a) 'Clearing of native vegetation within Plan 3472/6a shall be undertaken in accordance with the Pipistrelle Bat Management Plan as approved on 27 October 2010 by the former Assistant Secretary responsible for Territories, Department of Regional Australia, Local Government, Arts and Sport, Australian Government' as the Pipistrelle Bat was formally listed as extinct in March 2021 (Threatened Species Scientific Committee, 2021);

- Amend Condition 10(b); 'Weed management: 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~~.'

- Removal of Condition 10(c) 'At least once in each 3-month period prior to the Weed Management Plan required in Condition 10(b) being approved, the Permit Holder must remove or kill any weeds growing within areas cleared under this permit' as the Weed Management Plan required under Condition 10(b) was approved in May 2017 by the then Department of Infrastructure and Regional Development, and will continue to form weed management over CPS 3472/6; and

- Removal of Condition 12(a) which relates to the implementation of buffers for the Pipistrelle Bat for Plan 3472/6a (see reference to Condition 9(a) above).

Thorough ground truthing has recently been conducted and identified no significant changes in the vegetation condition of the proposed clearing areas within CPS 3472/6 from previous assessments and the CPS approved in July 2017. Changes to the classification of several fauna species on the EPBC Act have been noted and are detailed within this document. 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.

Several areas in CPS 3472/6 have been relinquished. CIP will not be clearing any areas which are classified as rehabilitation fields; however, these areas are still included within this extension application, with the support of the Commonwealth to facilitate Parks Australia rehabilitation works.

CIP has re-assessed the proposed clearing of up to 227.85ha within CPS 3427/6 against the ten clearing principles and found that the clearing may be likely at variance to clearing principle A, not at variance to D and not likely to be at variance of any others.

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Appendices

Appendix I Ground Truthing and Vegetation Maps
Appendix II Condition Survey Photos and Scores
Appendix III Protected Matters Search Report