



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9687/1
Permit Holder:	Phosphate Resources Limited trading as Christmas Island Phosphates
Duration of Permit:	From 15 September 2022 to 15 September 2034

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

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

2. Land on which clearing is to be done

Mining Tenement MCA 70/1A, Christmas Island

Unallocated Crown Land (PINs 3642932, 3125797, 3125793, 3724524, 3125778), Christmas Island

3. Clearing authorised

The permit holder must not clear more than 18.1 hectares of *native vegetation* within the combined areas cross-hatched yellow in Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 and Figure 6 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

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

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

- avoid the clearing of *native vegetation*;
- minimise the amount of *native vegetation* to be cleared; and
- reduce the impact of clearing on any environmental value.

5. Weed management

- When undertaking any clearing, or other activity pursuant to this permit, the permit holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:
 - clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
 - ensure that no *weed*-affected mulch, fill or other material is brought into the area to be cleared; and
 - restrict the movement of machines and other vehicles to the limits of the areas to be cleared.
- Weed management activities will be undertaken by the permit holder in accordance with commitments in the Environmental Management Plan as approved by the Minister for Territories Department of Infrastructure, Regional Development and Cities.

6. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner from one side of the clearing area to the other, towards adjacent *native vegetation*, to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

7. Fauna management

Clearing of *native vegetation* within the area cross-hatched yellow on Figure 1 of Schedule 1 must be undertaken in accordance with the document 'A Management Plan for the Christmas Island Pipistrelle in relation to Vegetation Clearing on Mining Leases, May 2015'.

8. Buffers to national park

The permit holder must ensure a minimum buffer distance of five metres is provided between the boundary of the Christmas Island National Park and the areas cross-hatched yellow on Figure 1 of Schedule 1.

9. Rehabilitation

The permit holder must notify the General Manager having responsibility for the Indian Ocean Territories, Department of Infrastructure and Regional Development, Australian Government within one month after the completion of phosphate mining activities within each lease area.

10. Drainage Management

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

11. Flora management

The permit holder must ensure a minimum buffer distance of 50 metres is provided between recorded occurrences of the flora species, *Tectaria devexa* var. *minor* and the areas cross-hatched yellow on Figure 3 of Schedule 1.

PART III - RECORD KEEPING AND REPORTING

12. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) the direction of clearing; (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and in accordance with condition 5; (g) actions taken to manage and mitigate impacts to Christmas Island Pipistrelle in accordance with condition 7; (h) The date mining activities ceased and the General Manager was notified in accordance with condition 9; and

No.	Relevant matter	Specifications
		(i) actions taken to manage and prevent drainage into The Dales RAMSAR wetland in accordance with condition 10.

13. Reporting

The permit holder must provide to the *CEO* the records required under condition 12 of this permit when requested by the *CEO*.

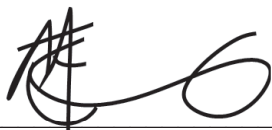
DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
rehabilitation	rehabilitation also known as site rectification, means that the land is left in a condition that is compliant with any other regulatory obligations, including but not limited to the <i>Mining Act 1978</i> (WA)(CI), and in a condition appropriate to the likely future use of the land;
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
 MANAGER
 NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
 of the Environmental Protection Act 1986*

22 August 2022

Schedule 1

The boundary of the combined areas authorised to be cleared is shown in the maps below (Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 and Figure 6).

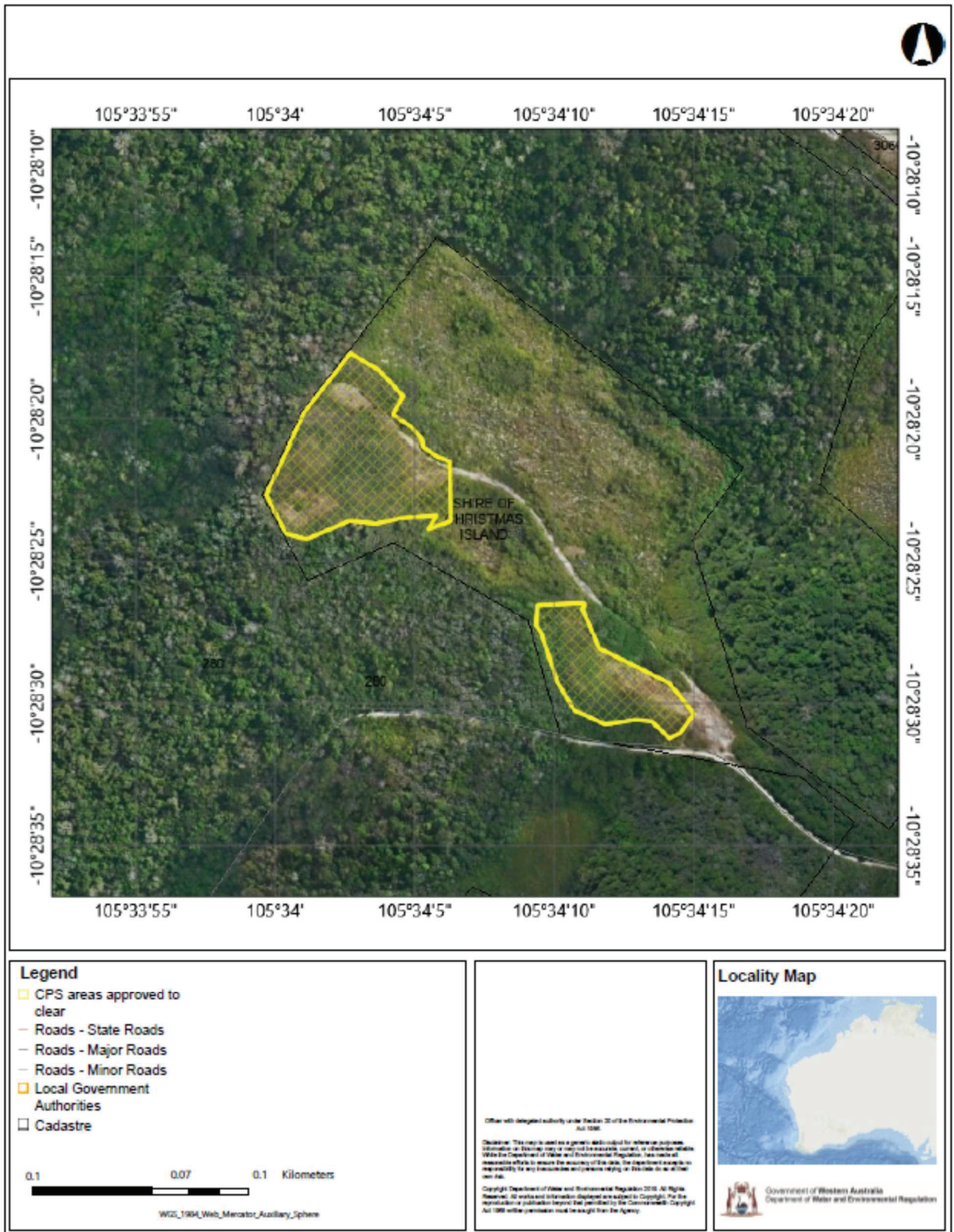


Figure 1: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

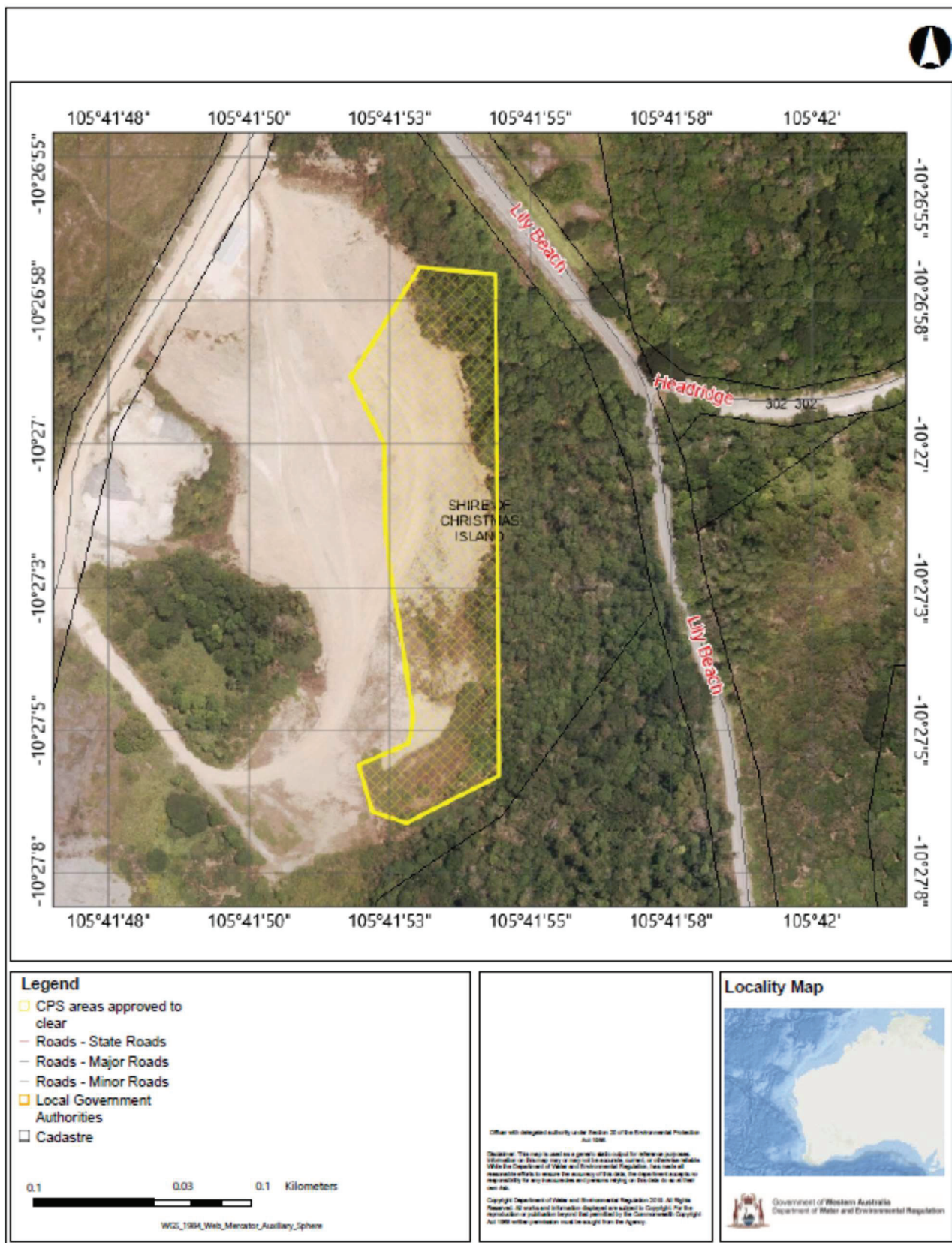


Figure 2: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

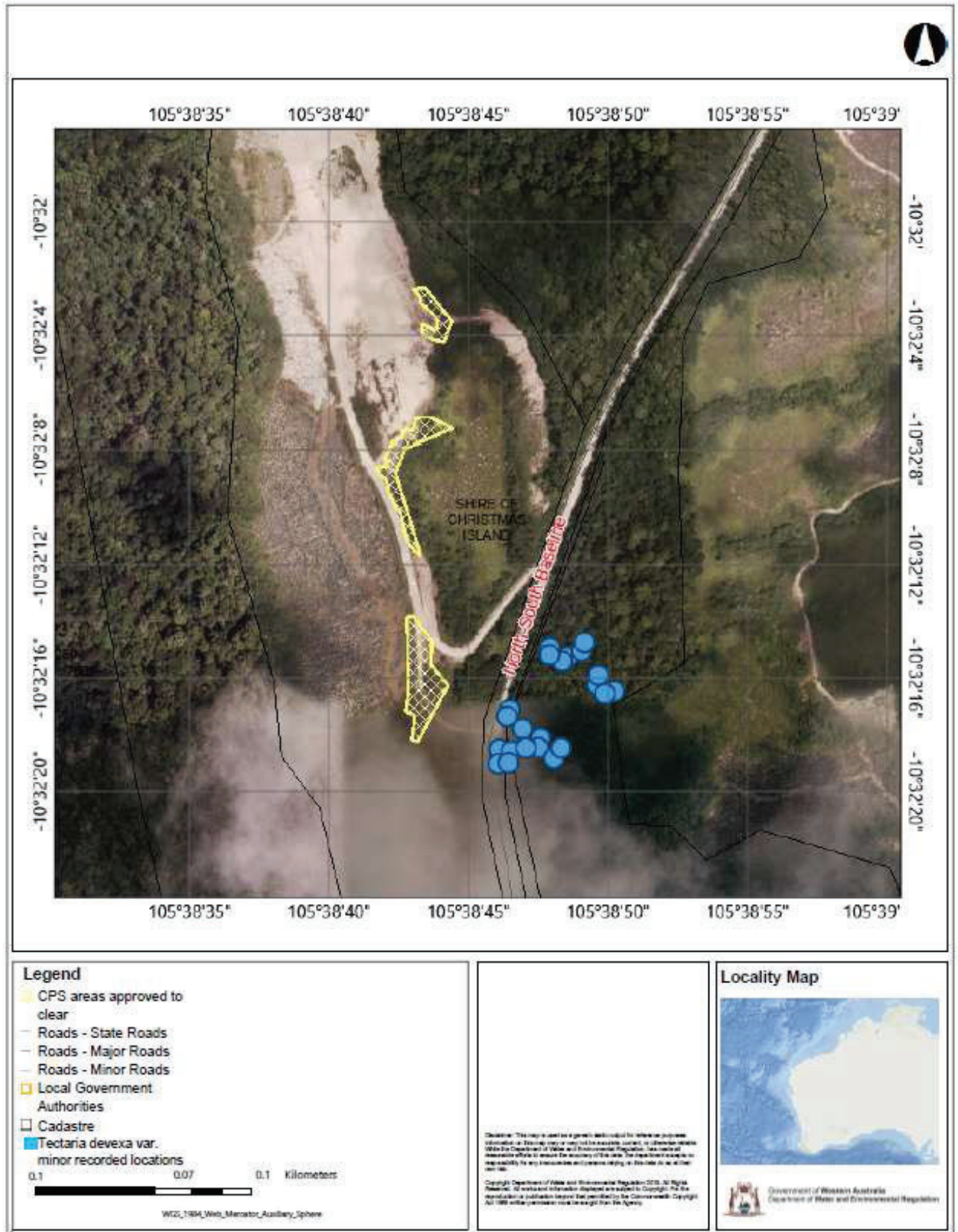


Figure 3: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

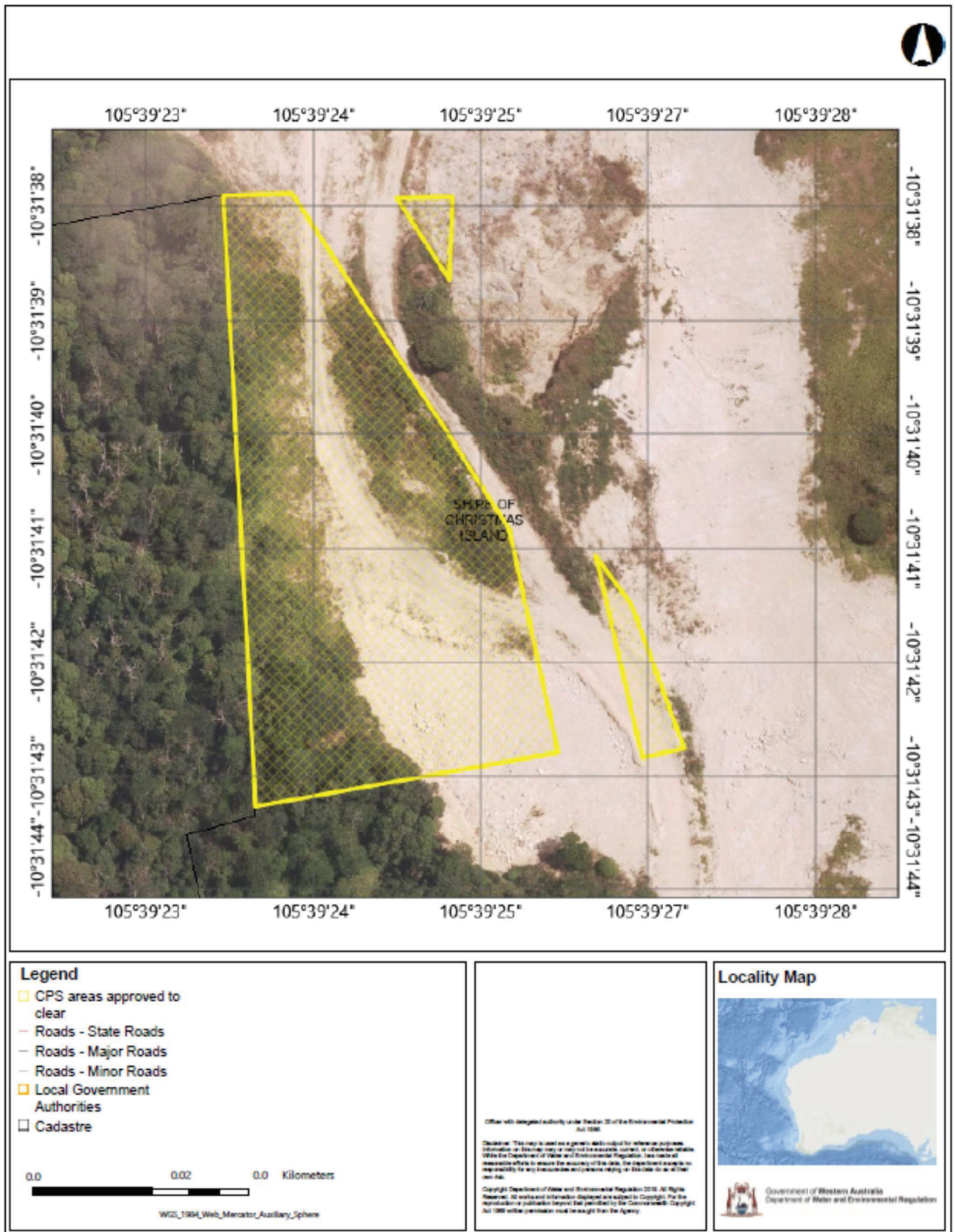


Figure 5: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

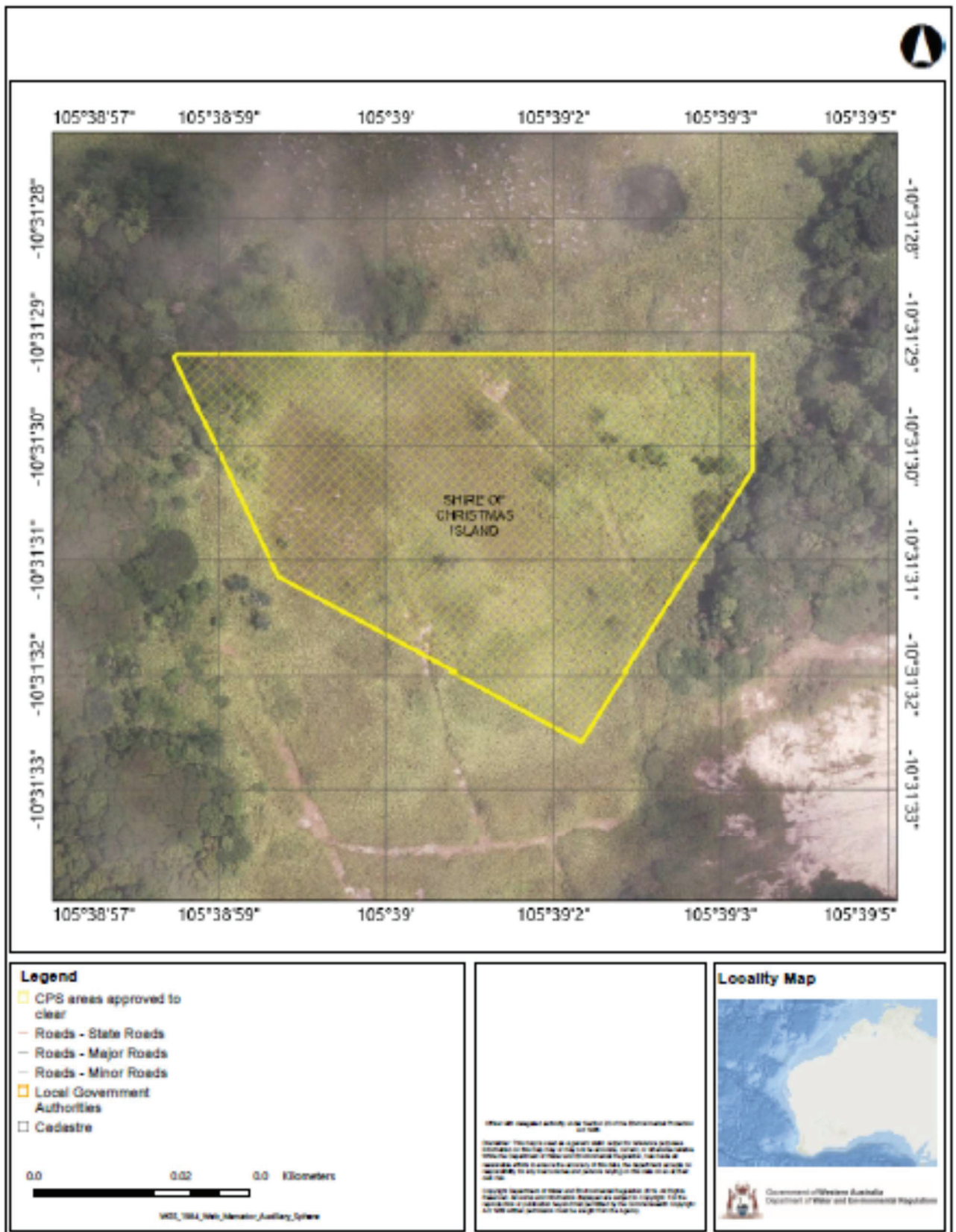


Figure 6: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9687/1
Permit type:	Purpose permit
Applicant name:	Phosphate Resources Limited
Application received:	6 April 2022
Application area:	18.1 hectares of native vegetation
Purpose of clearing:	Phosphate mining
Method of clearing:	Mechanical
Property:	MC1 70/1A Christmas Island Unallocated Crown Land (PINs 3642932, 3125797, 3125793, 3724524, 3125778)
Location (LGA area/s):	Shire of Christmas Island
Localities (suburb/s):	Christmas Island

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across eleven separate areas throughout Christmas Island (see Figure 1, Section 1.5).

1.3. Decision on application

Decision:	Granted
Decision date:	22 August 2022
Decision area:	18.1 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix I.1), and photographs provided by the applicant (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing (phosphate mining) occurs within areas that have been historically used, periodically, for phosphate mining over the last 30 years.

The assessment identified that the proposed clearing may result in:

- The introduction and/or spread of weeds into adjacent conservation areas, which could impact on the quality of the adjacent vegetation and its habitat values.
- May impact individuals of Christmas Island Pipistrelle and the Christmas Island red crab.

- May cause sedimentation of the adjacent 'The Dales' RAMSAR site.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have long-term adverse impacts on conservation areas, threatened fauna or flora and can be minimised and managed to unlikely to lead to an unacceptable risk to environmental values.

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

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds
- Christmas Island Pipistrelle management condition
- a minimum buffer distance of five metres to Christmas Island National Park to be maintained
- drainage management to prevent discharge of sediments into The Dales RAMSAR listed wetlands
- rehabilitation post mining

1.5. Site map

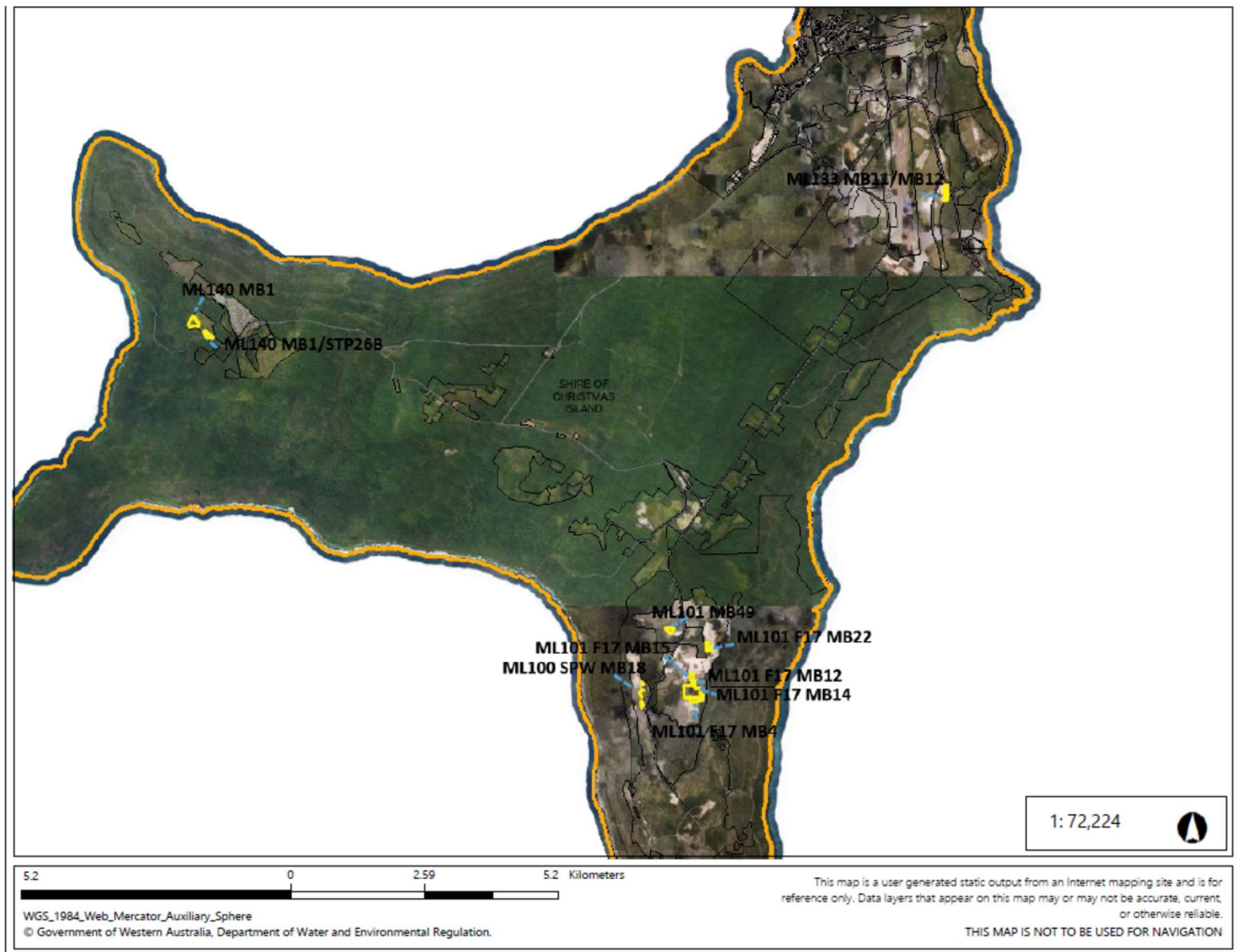


Figure 1 Location of the application areas spread across Christmas Island

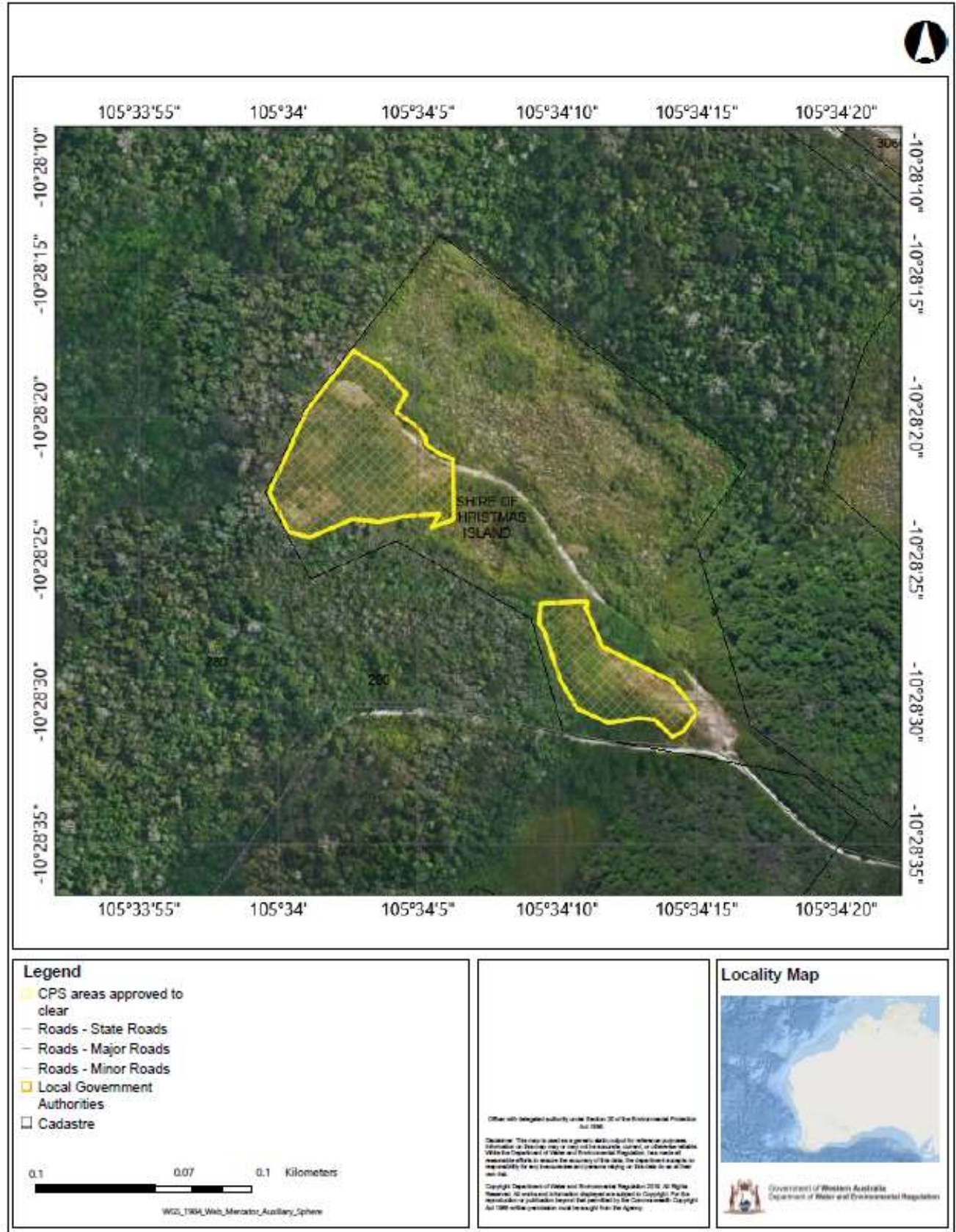


Figure 2 Map of the application area within ML140 MB1/STP26B



Figure 3 Map of the application area within ML133 MB11/MB12

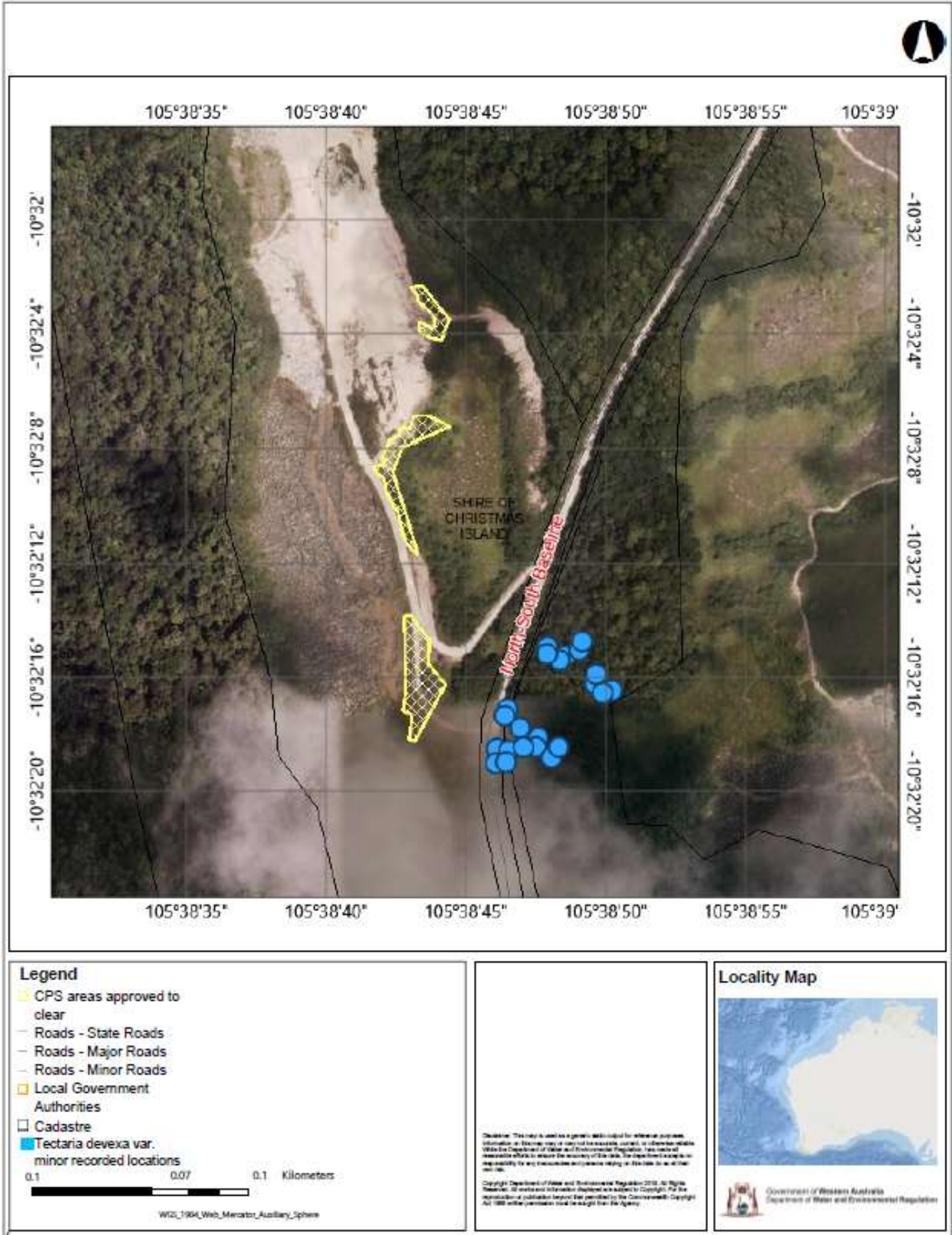


Figure 4 Map of the application area within ML100 SPW MB15 and ML100 SPW MB18

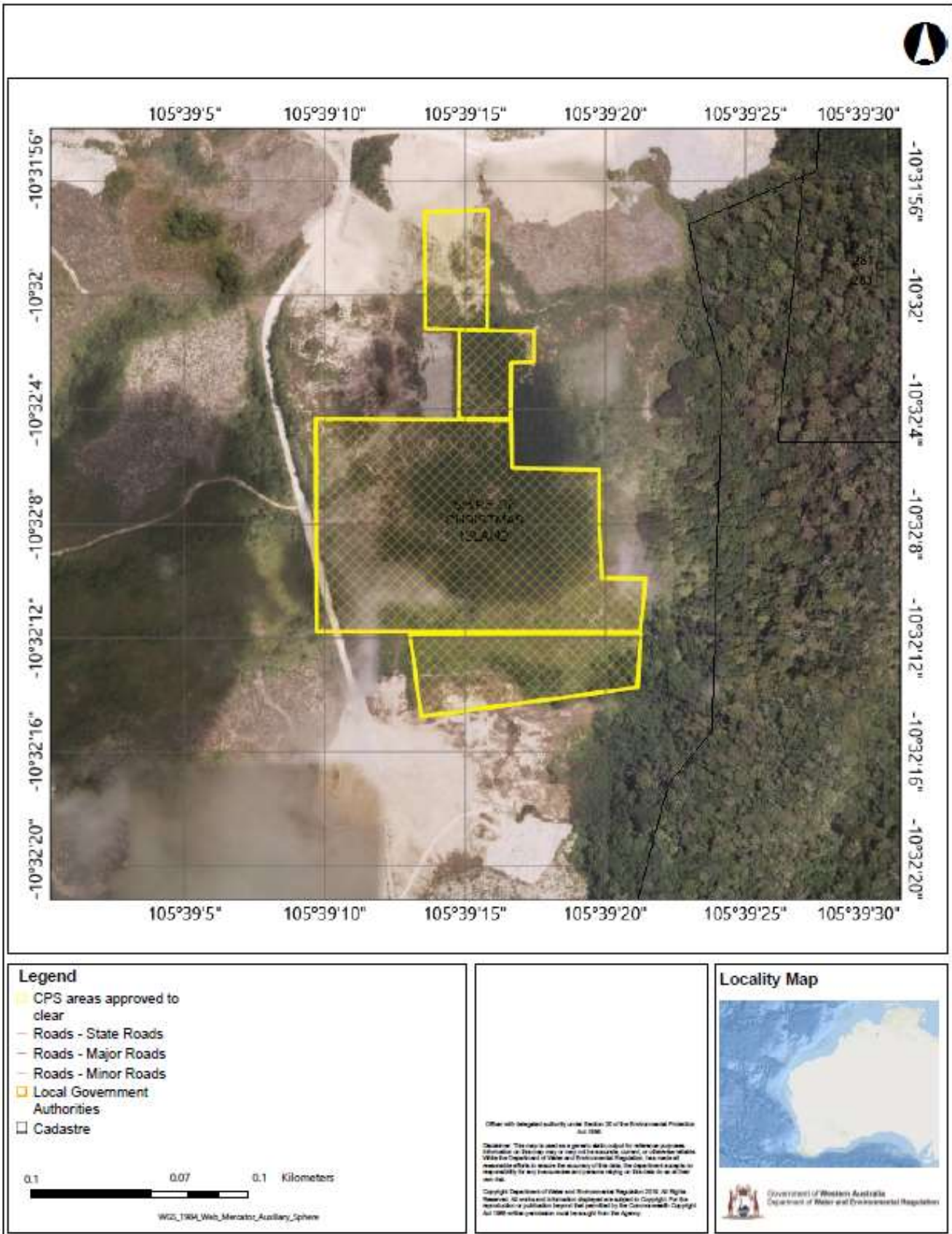


Figure 5 Map of the application area within ML101 F17 MB4, ML101 F17 MB12, ML101 F17 MB14 and ML101 F17 MB15

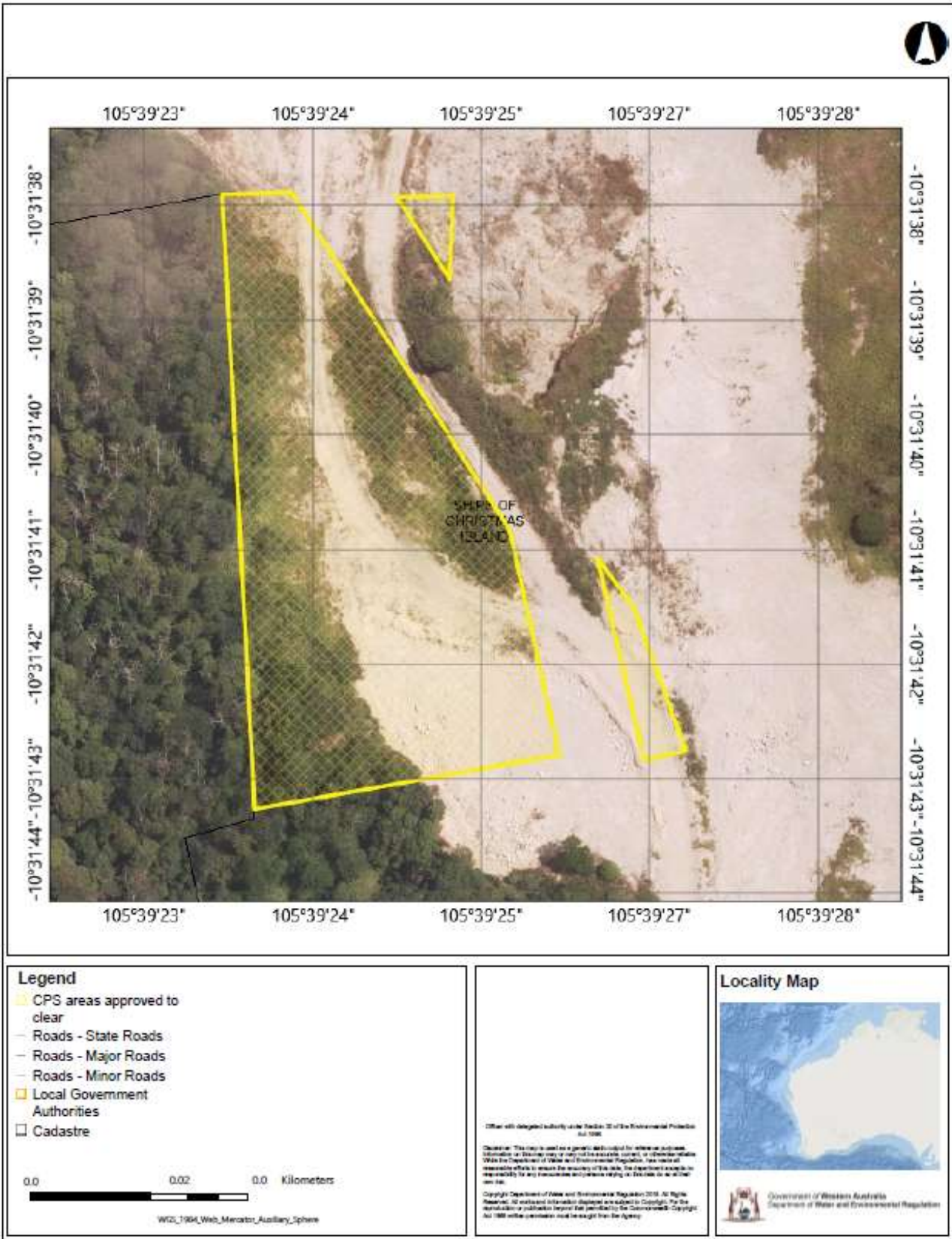


Figure 6 Map of the application area within ML101 F17 MB22



Legend

- CPS areas approved to clear
- Roads - State Roads
- Roads - Major Roads
- Roads - Minor Roads
- Local Government Authorities
- Cadastre

0.0 0.02 0.0 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere

Other will be kept solely under Section 32 of the Environmental Protection Act 1986

Disclaimer: This map is used as a general guide only for reference purposes. Information on this map may not be accurate, current, or otherwise reliable. While the Department of Water and Environmental Regulation has made all reasonable efforts to ensure the accuracy of this data, the Department accepts no responsibility for any inaccuracies or omissions relating to this data or its use.

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Locality Map

Government of Western Australia
Department of Water and Environmental Regulation

Figure 7 Map of the application area within ML101 F17D MB49

The area(s) crosshatched yellow indicate(s) the area(s) authorised to be cleared under the granted clearing permit.

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment include:

- The key guidance documents which inform this assessment are:
- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant advised that impacts of clearing have been minimised by delineating the orebodies and advising that they will not be clearing until the area is required (PRL, 2022). Proposed clearing occurs within areas that have been historically used, periodically, for phosphate mining over the last 30 years.

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

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix D) identified that the impacts of the proposed clearing present a risk to biological values (fauna, adjacent flora and vegetation) and conservation areas. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

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

Assessment

The applicant has advised that the application areas consist of eleven distinct areas within Mining Lease 70 (see Table 1) that consist of:

- Stockpile built by Christmas Island Phosphates
- Areas dominated by vegetation dominated by fern
- Areas dominated with weed species
- Areas with secondary regrowth
- Areas contained within previous permit areas which have expired
- Areas previously cleared under previous clearing permits that have expired but have now had vegetation regeneration.

Table 1 Proposed Clearing Areas

Location	Application Area	Total Mine Block Area ha
ML100 SPW MB15	0.1	5.5
ML100 SPW MB18	0.72	4.6
ML101 F17 MB4	2.36	3.6

ML101 F17 MB12	0.63	1.15
ML101 F17 MB14	6.84	2.46
ML101 F17 MB15	0.89	8.6
ML101 F17 MB22	1.39	5.73
ML101 MB49	1.28	3.9
ML133 MB11/MB12	1.69	3.66
ML140 MB1	2.50	3.4
ML140 STP26B	1.16	1.9
Total Area	18.1	44.5

The boundaries of the National Park and those of the original mining lease were determined from aerial photography. Excluding the National Park, all cleared and mined areas include low grade stockpile dumps. The areas operated under the mining lease have all been previously cleared and under the lease conditions no primary rainforest can be cleared for mining operations.

According to available mapping, aerial imagery and photographs provided by the applicant, the majority of the application areas consists of weed dominated regrowth with some pioneer species that occur in a degraded to good (Keighery, 1994) condition.

Christmas Island provides habitat for several species of fauna indigenous to the island including fourteen native bird species and nine species of seabird which use the island for breeding. Four seabird taxa and nine land bird taxa are endemic to the island. A further 108 migratory or vagrant bird species have been recorded on the island. Six of the island's endemic birds are listed as threatened under the EPBC Act.

Abbott's booby

Abbott's booby is a large seabird, with the only known extant nesting colony on Christmas Island. Abbott's booby is listed as Endangered under the EPBC Act and is listed as Critically Endangered under the IUCN Red List. Most recent surveys have estimated the population to be 2500 pairs. On Christmas Island most nests are situated on the central and western areas, in tall plateau forest within the Christmas Island National Park. Abbott's booby prefers nest sites on the lee side of slopes and gullies, with a clear area below and immediately downwind to facilitate take-off and landing.

Southeast trade winds prevail between April and November. Wind tunnel experiments have demonstrated that clearing forest increases turbulence in the canopy (Brett, 1989 in Boland et al. 2012), lowering fidelity, and increasing adult mortality of Abbott's Booby nesting in surrounding areas (Reville et al. 1990 in Boland et al. 2012). Studies have shown that birds nesting within 300 metres of the areas cleared for mining activities suffered lower breeding success and increased mortality because of greater wind turbulence (Reville et al. 1990 and Brett, 1989 in Boland et al. 2012).

According to available databases, there are no known Abbott Booby nesting sites within the areas under application. Photographs provided by the applicant, indicate that the vegetation within the application areas is not considered to represent significant habitat for this species.

Several nests have been previously recorded within 300 metres of application areas ML140 MB1 and ML140 STP 26 B, with the closest being 130 metres west of ML140 MB1 and 150 metres east of ML140 STP 26B. The proposed clearing of the application area within ML140 STP 26B is unlikely to significantly impact this nest given that it is located downwind of the proposed clearing. The photographs of the vegetation within site ML 140 MB1 indicate that the site is dominated by mixed weeds and pioneer species less than 5-10 metres in height and has been previously disturbed by mining activities. Due to the condition of the vegetation of the site, this area is unlikely to negatively impact upon Abbott's Booby if it was to be cleared, in the form of an increase in wind turbulence. This is due to the application areas having been previously cleared and that the regrowth vegetation is lower in height than the surrounding forest.

Land Crabs

Christmas Island is noted for its land crab populations, including the conservation significant Christmas Island blue crab (*Discoplax celeste*), Christmas Island red crab (*Gecarcoidea natalis*) and robber crab (*Birgus latro*) (Director of National Parks 2014). The assessment areas do not contain habitat for blue crabs, which occupy wetland areas on the terraces, but red crabs and robber crabs both occupy the plateau vegetation.

There are approximately 40-100 million red crabs on the Island and they are considered a keystone species (Director of National Parks 2014). Habitat critical to their survival occurs throughout the whole Island (Director of National Parks 2014). The only habitat they are not found in are the areas cleared of rainforest and stripped of soil for phosphate mining. The majority of sites proposed to be cleared are not located in areas where high densities of red crabs have been identified. Proposed clearing area 140-MB1 is located in close proximity of an area of high red crab burrow density, however this site is dominated by weeds and is not thought to be significant habitat for this species.

At the beginning of the wet season (around October to December) every year adult red crabs migrate from the forest to the coast, to breed and spawn. The application areas are not considered to be located within important migration pathways for this species.

Robber Crabs (*Birgus latro*) are found on most parts of Christmas Island, from the shore terrace to the highest plateau areas (Orchard, 2015). The Robber Crabs are habitat generalists and all areas of previously uncleared rainforest are considered critical to this species. Although it is likely that this species will be present in the areas under application it is unlikely that the areas under application provide significant habitat given that they have been previously cleared.

Christmas Island Pipistrille Bat

The Christmas Island Pipistrille Bat (Critically Endangered under the EPBC Act) is a small insectivorous bat known only from Christmas Island and was once widespread and common in primary and secondary rainforest where it roosted under exfoliating bark on trunks, under dead fronds, beneath strangler figs, trunks of canopy trees and within tree hollows (DotE, 2015e). In the 1990s, this species showed a marked reduction in abundance and primarily occurred within the western side of Christmas Island, with the last known recordings in 2009 south of mining blocks ML140 and ML139. The Pipistrelle is an edge specialist that forages on a variety of flying insects and favours vegetation ecotones, tracks and small gaps in primary rainforest. All of the sites in the western area of the island being ML140 and ML139 have been highlighted by Parks Australia (Parks Australia, 2009) as being potential foraging areas for this species. The applicant has provided a management plan (Richards, 2015) for this species to ensure the proposed clearing does not impact on any remaining individuals.

Other Species

The Island Thrush (Christmas Island) (*Turdus poliocephalus erythropleurus*) is Endangered and has a restricted geographic distribution with an extent of occurrence of approximately 135 km². The estimated population is 15,000. There has been an observed decline in the habitat and reproductive success of this species and an inferred decline in the population due to the spread of Crazy Ant super colonies. The Christmas Island thrush is found 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). It is most common in tall closed evergreen rainforest and open semi-deciduous rainforest on the coastal and higher terraces and plateau of Christmas Island. It is least common in disturbed habitats (such as regrowth and post-mining wasteland) and in suboptimal endemic vegetation such as Pandanus thickets and patches of low vegetation in coastal areas (Department of the Environment, 2014). It is therefore unlikely to be impacted from the proposed clearing.

The Emerald Dove (*Chalcophaps indica natalis*) occupies most forested habitat on Christmas Island, including secondary regrowth dominated by the introduced Japanese Cherry (*Muntingia calabura*). The subspecies of Emerald Dove (Christmas Island) is endemic to Christmas Island and builds low flimsy stick nests.

The Christmas Island Goshawk (*Accipiter faciatus natalis*) is listed as Endangered under the EPBC Act and is considered the rarest endemic bird on Christmas Island where it occurs in all habitats from primary and marginal rainforests to suitable areas of secondary regrowth vegetation. Gibson and Hill (1947) reported that Christmas Island Goshawks seemed to prefer areas of slightly thinner growth on the edge of thick jungle or the borders of clearings. Using the precautionary principle and the criteria provided by the EPBC Act, habitat critical for the survival of the Christmas Island Goshawks is defined as all Primary Rainforest, Marginal rainforest and possibly second-regrowth forest suitable for nesting. The areas under application contain some secondary growth forest and therefore may support populations of Christmas Island Goshawks.

The Emerald Dove, Christmas Island Goshawk, Christmas Island Thrush can be found in secondary regrowth, which indicates that the proposed clearing areas may represent habitat for these fauna. However, these species are widespread and highly mobile and therefore the proposed clearing is not likely to significantly impact upon these species. In addition, approximately 64 per cent of the island is National Park which provides better quality habitat for these species.

Giant Gecko

Giant gecko (*Cyrtodactylus sadleiri*) is endemic to Christmas Island and is listed as Endangered under the EPBC Act. This species is 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). Available databases indicate that this species have previously been recorded 340 metres from the application area within ML100 SPW MB15 and 320 metres from the application area within ML100 SPW MB18.

As some of the application areas contain dense regrowth, suitable habitat for this species may occur. However, this species is found in all island habitats and therefore the proposed clearing is not likely to significantly impact upon these species. In addition, approximately 64 per cent of the island is National Park which provides better quality habitat for these species.

Conclusion

The application areas have been previously cleared and contain regrowth vegetation predominantly of weeds species and does not contain the vegetation types (evergreen tall, closed forest, semi-deciduous closed forest, and deciduous scrub) that provides the predominant habitat for conservation significant fauna on Christmas Island. However, based on the above assessment, the proposed clearing may result in direct impact to individuals of red crabs and the Christmas Island Pipistrelle.

As required by the applicant's mining lease, the application areas will be rehabilitated as part of the Christmas Island Minesite to Forest Rehabilitation Program. The program is funded by a conservation levy (\$2.40 per tonne exported) paid to the Territory Administration by the applicant as a provision under their Mining Lease.

Conditions

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

- The Permit Holder must implement and adhere to the document 'A Management Plan for the Christmas Island Pipistrelle in relation to Vegetation Clearing on Mining Leases, May 2015'.
- Rehabilitation
The Permit Holder shall notify the General Manager having responsibility for the Indian Ocean Territories, Department of Infrastructure and Regional Development, Australian Government within one month after the completion of phosphate mining activities within each lease area.

3.2.2. Biological values (flora) - Clearing Principle (c)

Christmas Island has 240 native flora species, including 18 endemic species which are not found anywhere else in the world (Director of National Parks 2014). Christmas Island is home to three flora species listed as Threatened under the EPBC Act. These three species are *Asplenium listeri* (Christmas Island Spleenwort), *Tectaria devexa* var. *minor* and *Pneumatopteris truncate*. No priority flora species are listed for Christmas Island.

Tectaria devexa var. *minor* grows 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). Numerous populations of this species have been identified on Christmas Island, with the majority of these occurring in the National Park. No known populations of *Tectaria devexa* var. *minor* have been identified within the proposed clearing areas. Application areas within mining blocks ML100 SPW MB18 and ML101 F17 MB12 occur within 50 metres and 82 metres, respectively, from previously recorded population of this species. Habitat critical to the survival of *T. devexa* var. *minor* is considered to include all areas within 50 m of the area occupied by the species (Director of National Parks 2014). It is not considered for the application areas to provide critical habitat for this species given that they predominantly consist of weed dominated regrowth and are at least 50 metres from known populations.

Pneumatopteris truncata is known from two sites on Christmas Island (Department of National Parks 2015) and grows within permanently moist sites in semi deciduous closed forest (Department of National Parks 2015). Neither of the known locations are within or near the application areas. It is not considered for suitable habitat for this species to occur within the application areas.

Asplenium listeri is known from a very small number of localities growing among rocks and on cliffs of exposed limestone outcrops (Butz M, 2004). It is not considered for suitable habitat for this species to occur within the application areas.

Conclusion

It is considered that a 50-metre buffer and weed management practices is considered sufficient to mitigate potential impact of the proposed clearing, at sites ML100 SPW MB18 and ML101 F17 MB12, to *Tectaria devexa* var. *minor*.

Conditions

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

- A minimum buffer distance of 50 metres to *Tectaria devexa* var. *minor* to be maintained.
- Weed management measures

3.2.3. Conservation areas- Clearing Principle (h)

Christmas Island is predominantly covered by Christmas Island National Park (approximately 64 per cent). Two of the eleven application areas within mining blocks ML140 MB1 and ML140 STP 26B, are within close proximity to this conservation area.

The application areas within mining block ML140 MB1 occur within two to three metres from the boundary of Christmas Island National Park on the northwest and southern sides. The application area within mining block ML140 STP 26B occurs 10 metres at its closest point to 30 metres from the boundary of Christmas Island National Park. Both of these application areas are connected to the National Park through continuous rainforest vegetation.

The majority of weeds on Christmas Island cannot survive in primary rainforest mainly due to low light and consumption by crabs. Potential plant invaders of intact rainforest must possess two key traits: the ability to establish and grow under heavy shade, and the ability of both seeds and seedlings to tolerate, evade, or resist consumption by red crabs (Green et al., 2003). The majority of weeds on Christmas Island do not have these key traits and are therefore unable to penetrate primary rainforest. However, there are some shade tolerant species that can spread into forested areas.

Conclusion

Adequate buffers (minimum of five metres) and weed management practices, is considered sufficient to ensure that the environmental values of the Christmas Island National Park are not compromised.

Conditions

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

- A minimum buffer distance of five metres to Christmas Island National Park must be maintained.
- Weed management measures

3.2.4. Biological Values (wetlands) - Clearing Principle (f)

The proposed clearing within the western application areas (ML140 MB1 and ML140 STP26B) are adjacent to the Dales RAMSAR site boundary and are approximately 400 metres from the start of the No.1 Dale stream. The Dales cover an area of 580 hectares on the western side of Christmas Island and comprises a system of seven watercourses. One of the main threats to The Dales is groundwater extraction which will result in a decrease in flow and loss of permanent surface water. Phosphate mining on Christmas Island does not intercept groundwater.

The proposed clearing within ML140 MB1 and ML140 STP26B are between 20 and 30 metres from the RAMSAR site boundary and is separated by dense vegetation. Given the distance to the No.1 Dale stream, vegetation buffers and surface water flow pathways estimated from contour heights identified within the Dales ecological character description (Butcher& Hale 2010) it is not likely that clearing of these sites will impact on the Dales themselves.

Conclusion

Using the precautionary principle, a condition requiring surface water management aimed at mitigating any potential impacts from runoff from the proposed clearing areas will mitigate and minimise any potential impact.

Conditions

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

- Drainage management condition to prevent discharge of sediments, from the application areas into The Dales RAMSAR listed wetlands.

3.3. Relevant planning instruments and other matters

Phosphate Resources Limited (PRL) was granted Mining Lease MCI 70/1A on the 4th August 1997; in 2013, the lease was extended until 2034 and operates phosphate mining, processing and shipping operations from Christmas Island over approximately 1636 hectares, under the trading name Christmas Island Phosphates (CIP) (CIP, 2022). Under conditions of the mining lease, no primary rainforest can be cleared for mining operations. CIP must comply with the requirements of an approved Environmental Management Plan, implement a dust suppression program and pay a conservation levy to the Commonwealth for the rehabilitation of mining leases on Christmas Island (CIP, 2022).

CIP have a Part V prescribed premises licence issued to them under the EP Act for the control and abatement of pollution from the loading and unloading activities and processing activities (beneficiation of metallic or non-metallic ore) on Christmas Island.

The Shire of Christmas Island advised that local government approvals are not required, and that they have no objections to the proposed clearing (Shire of Christmas Island, 2022).

There are no Aboriginal Sites of Significance or Native Title Claims on Christmas Island.

End

Appendix A. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best available information to DWER at the time of this assessment. This information was used to inform the assessment against the Clearing Principles, contained in Appendix B.

A.1. Site characteristics

Characteristic	Details														
Local context	<p>Christmas Island retains approximately 75 per cent native vegetation, of which 84 per cent (64 per cent of total island area) is protected as National Park. The proposed clearing of 18.1 hectares is over 11 locations and is surrounded by intact forest and therefore is not considered to be an important remnant of vegetation in a highly cleared landscape.</p> <p>The application areas have previously cleared for the purpose of phosphate mining and consists of degraded regrowth and weed species.</p>														
Ecological linkage	The application areas are not part of a formal or informal ecological linkage.														
Conservation areas	Two of the 11 application areas are adjacent to Christmas Island National Park.														
Vegetation description	<p>Photographs and site visit information supplied by the applicant indicate the vegetation within the proposed clearing area consists of the following:</p> <table border="1"> <thead> <tr> <th>Site</th> <th>Vegetation description from site visit report (CIP, 2022)</th> </tr> </thead> <tbody> <tr> <td>ML100 SPW MB15</td> <td>Weed dominated regrowth with some pioneer species. <i>Macaranga tanarius</i>, <i>Dysoxylum gaudichaudianum</i>, <i>Mariscus javanicus</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i> and <i>Cordia curassavica</i></td> </tr> <tr> <td>ML100 SPW MB18</td> <td>Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i>, <i>Dysoxylum gaudichaudianum</i>, <i>Mariscus javanicus</i>, <i>Melochia umbellate</i>, <i>Terminalia catappa</i>, <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Mimosa pudica</i> and <i>Ipomoea cairica</i>.</td> </tr> <tr> <td>ML101 F17 MB4</td> <td>Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i>, <i>Dysoxylum gaudichaudianum</i>, <i>Mariscus javanicus</i>, <i>Melochia umbellate</i>, <i>Terminalia catappa</i>, <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Cordia curassavica</i> and <i>Psidium guajava</i>.</td> </tr> <tr> <td>ML101 F17 MB12</td> <td>Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i>, <i>Mariscus javanicus</i>, <i>Melochia umbellate</i>, and <i>Nephrolepis biserrata</i>, <i>Maclura cochinchinensis</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Cordia curassavica</i> and <i>Papaya</i>.</td> </tr> <tr> <td>ML101 F17 MB14</td> <td>Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i>, <i>Schefflera elliptica</i>, <i>Dysoxylum gaudichaudianum</i>, <i>Claoxylon indicum</i>, and <i>Nephrolepis biserrata</i>, <i>Maclura cochinchinensis</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i> and <i>Cordia curassavica</i>.</td> </tr> <tr> <td>ML101 F17 MB15</td> <td>Weed dominated regrowth with some pioneer species. The following species were found within the application area, <i>Macaranga tanarius</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Papaya</i> and <i>Cordia curassavica</i>.</td> </tr> </tbody> </table>	Site	Vegetation description from site visit report (CIP, 2022)	ML100 SPW MB15	Weed dominated regrowth with some pioneer species. <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> and <i>Cordia curassavica</i>	ML100 SPW MB18	Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , <i>Terminalia catappa</i> , <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Mimosa pudica</i> and <i>Ipomoea cairica</i> .	ML101 F17 MB4	Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , <i>Terminalia catappa</i> , <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Cordia curassavica</i> and <i>Psidium guajava</i> .	ML101 F17 MB12	Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , and <i>Nephrolepis biserrata</i> , <i>Maclura cochinchinensis</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Cordia curassavica</i> and <i>Papaya</i> .	ML101 F17 MB14	Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i> , <i>Schefflera elliptica</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Claoxylon indicum</i> , and <i>Nephrolepis biserrata</i> , <i>Maclura cochinchinensis</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> and <i>Cordia curassavica</i> .	ML101 F17 MB15	Weed dominated regrowth with some pioneer species. The following species were found within the application area, <i>Macaranga tanarius</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Papaya</i> and <i>Cordia curassavica</i> .
Site	Vegetation description from site visit report (CIP, 2022)														
ML100 SPW MB15	Weed dominated regrowth with some pioneer species. <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> and <i>Cordia curassavica</i>														
ML100 SPW MB18	Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , <i>Terminalia catappa</i> , <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Mimosa pudica</i> and <i>Ipomoea cairica</i> .														
ML101 F17 MB4	Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , <i>Terminalia catappa</i> , <i>Microsorium scolopendria</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Cordia curassavica</i> and <i>Psidium guajava</i> .														
ML101 F17 MB12	Weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i> , <i>Mariscus javanicus</i> , <i>Melochia umbellate</i> , and <i>Nephrolepis biserrata</i> , <i>Maclura cochinchinensis</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Cordia curassavica</i> and <i>Papaya</i> .														
ML101 F17 MB14	Weed dominated regrowth with some pioneer species. The following species were found within the application area. <i>Macaranga tanarius</i> , <i>Schefflera elliptica</i> , <i>Dysoxylum gaudichaudianum</i> , <i>Claoxylon indicum</i> , and <i>Nephrolepis biserrata</i> , <i>Maclura cochinchinensis</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> and <i>Cordia curassavica</i> .														
ML101 F17 MB15	Weed dominated regrowth with some pioneer species. The following species were found within the application area, <i>Macaranga tanarius</i> and <i>Nephrolepis biserrata</i> , dominant weed species within the area include <i>Leaucenea leucocephala</i> , <i>Mutungia calabra</i> , <i>Papaya</i> and <i>Cordia curassavica</i> .														

Characteristic	Details
	<p>ML101 F17 MB22</p> <p>Vegetation within the application area is a compiled of weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i>, <i>Dysoxylum gaudichaudianum</i>, <i>Mariscus javanicus</i>, <i>Arenga listeri</i>, <i>Barringtonia racemose</i>, <i>Pandanus elatus</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Cordia curassavica</i>, <i>Candlenut</i> and <i>Psidium guajava</i>. small area in southwest corner mapped as regrowth 10-15 m.</p>
	<p>ML101 MB49</p> <p>Vegetation within the application area is a compiled of weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i>, <i>Terminalia catappa</i>, <i>Arenga listeri</i>, <i>Maclura cochinchinensis</i> and <i>Nephrolepis biserrata</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Cordia curassavica</i> and <i>Mimosa pudica</i>.</p>
	<p>ML133 MB11/MB12</p> <p>Vegetation within the application area is compiled of weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i>, <i>Dysoxylum gaudichaudianum</i> and <i>Mariscus javanicus</i> dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Cordia curassavica</i> and <i>Mimosa pudica</i>. small area mapped along southeastern corner as regrowth 5-10 m.</p>
	<p>ML140 MB1</p> <p>Vegetation within the application area is a compiled of weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Macaranga tanarius</i> and <i>Mariscus javanicus</i>, dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i> and <i>Cordia curassavica</i>.</p>
	<p>ML140 STP 26B</p> <p>Vegetation within the application area is a compiled of weed dominated regrowth with some pioneer species. The following species were found within the application area - <i>Claoxylon indicum</i>, <i>Macaranga tanarius</i>, <i>Mariscus javanicus</i> and <i>Melochia umbellate</i> dominant weed species within the area include <i>Leaucenea leucocephala</i>, <i>Mutungia calabra</i>, <i>Mimosa pudica</i> and <i>Cordia curassavica</i>.</p>
	<p>Representative photos are available in Appendix DD.</p> <p>This is consistent with the mapped vegetation type within the previously mined areas:</p> <ul style="list-style-type: none"> • Regrowth: Generally well developed regrowth vegetation over 5 metres mean tree eight. May include weed species. • 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. • Fern Field : Expanse of low lying ferns often growing on limestone pinnacles. Indicator species include <i>Nephrolepis biserrata</i>, <i>Microsorium scolopendria</i>, and <i>Psilotum nudum</i>. <p>(Dy Puy, 1993, Geoscience Australia, 2014)</p>
Vegetation condition	<p>Photographs supplied by the applicant indicate the majority of the vegetation within the proposed clearing area is in a degraded to good (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.</p>
Climate and landform	<p>Christmas Island is the summit of a submarine mountain. It rises steeply to a central plateau dominated by stands of rainforest. The plateau reaches heights of up to 361 metres and consists mainly of limestone with layers of volcanic rock. The Island's 80-kilometre coastline is an almost continuous sea cliff, ranging in height to 20 metres. In a few places (about 13) breaks in the cliff give way to shallow bays and small sand and coral beaches. The climate is tropical, and temperatures range from 21°C to 32°C. Humidity is around 80-90%, and the average rainfall is 2,000 mm per annum.</p>
Soil description	<p>The soil is mapped as unconsolidated material, mostly phosphatic soils.</p>

Characteristic	Details
Land degradation risk	Christmas Island soils are generally highly permeable and there is little runoff or erosion. However, in the wet season when the soils are saturated, runoff can occur during heavy rainfall, causing some risk of soil erosion and sedimentation movement. Due to the porous nature of the soils on Christmas Island waterlogging is unlikely.
Waterbodies	<p>Perennial surface water on Christmas Island is limited to spring fed streams on coastal or sloping areas of the Island. Hosnie Springs and The Dales are both listed as RAMSAR wetlands and are listed in the Directory of Important Wetlands in Australia.</p> <p>The desktop assessment and aerial imagery indicated that the closest wetland/watercourse is 'The Dales' RAMSAR wetland, located 20 metres from the western application areas. No watercourses are located within the application area.</p>
Flora	<p>Christmas Island is home to 240 native plant species, including 18 endemic species which are not found anywhere else in the world.</p> <p>Christmas Island is home to three flora species listed as Threatened under the EPBC Act. These three species are <i>Asplenium listeri</i>, <i>Tectaria devexa</i> var. <i>minor</i> and <i>Pneumatopteris truncata</i>. No priority flora species are listed for Christmas Island.</p>
Ecological communities	No threatened ecological communities occur on Christmas Island
Fauna	<p>Christmas Island provides habitat for several species of fauna indigenous to the island including fourteen native bird species and nine species of seabird which use the island for breeding. Four seabird taxa and nine land bird taxa are endemic to the island.</p> <p>A further 108 migratory or vagrant bird species have been recorded on the island. Six of the island's endemic birds are listed as threatened under the EPBC Act.</p> <p>One endemic native mammal, the Christmas Island Flying fox and five endemic reptiles, also occur on Christmas Island. Christmas Island also supports 20 crab species with three species being conservation significant, they being red crab, robber crab and the blue crab.</p>

A.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Tectaria devexa</i> var. <i>minor</i>	Endangered under the EPBC Act	N	N	N	50 m	N/A
<i>Asplenium listeri</i>	Critically endangered under EPBC Act	N	N	N	630 m	N/A
<i>Pneumatopteris truncata</i>	Critically endangered under EPBC Act	N	N	N	1.3 km	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Abbott's Booby (<i>Papasula abbotti</i>)	Endangered under the EPBC Act	N	N	0.12 km	N/A
Christmas Island Giant Gecko (<i>Cyrtodactylus sadleiri</i>)	Endangered under the EPBC Act	N	N	0.3 km	N/A
Robber Crab (<i>Birgus latro</i>)		Y	Y	Unknown	N/A
Red Crab (<i>Gecarcoidea natalis</i>)		Y	Y	widespread	N/A
Blue Crab (<i>Discoplax celeste</i>)		N	N	0.4km	N/A
Christmas Island Thrush (<i>Turdus poliocephalus erythropleurus</i>),	Endangered under the EPBC Act	Y	Y	unknown	N/A
Christmas Island Pipistrille Bat	Extinct under the EPBC Act	N	N	0.5km	N/A
Emerald Dove (<i>Chalcophaps indica natalis</i>).	Endangered under the EPBC Act	Y	Y	unknown	N/A
Christmas Island Goshawk (<i>Accipiter fasciatus natalis</i>)	Endangered under the EPBC Act	Y	Y	unknown	N/A

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain significant flora, fauna, habitats, assemblages of plants.</p>	Not likely to be at variance	No
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains habitat for conservation significant fauna.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain suitable habitat for flora species listed under the BC Act or the EPBC Act. However, the proposed clearing is within 50 metres of known record of threatened flora and therefore may impact the vegetation necessary for the continued existence of this flora.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that indicate a threatened ecological community (TEC). No TECs occur on Christmas Island.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, the proposed clearing may have an impact on the environmental values of adjacent Christmas Island National Park through the spread or introduction of weeds.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f)</u>: <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment</u>:</p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is not at variance to this principle.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g)</u>: <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment</u>:</p> <p>The soil proposed to be removed is phosphatic and is not likely to cause wind erosion or salinisation. The potential for water erosion in high rainfall events is unlikely due to the soil being removed down to the pinnacles.</p>	Not likely to be at variance	No
<p><u>Principle (i)</u>: <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment</u>:</p> <p>The proposed clearing within the mining block ML140 MB1 and ML140 STP 26B are adjacent to the Dales RAMSAR site boundary and are approximately 400m from the start of the No.1 Dale water source. With consideration to the distance to the No.1 Dale water source, vegetation buffer and surface water flow pathways it is not likely that clearing of these application areas will impact on the quality of surface water.</p>	Not likely to be at variance	No
<p><u>Principle (j)</u>: <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment</u>:</p> <p>The clearing as proposed is not likely to cause or exacerbate water-logging or flooding as the application areas are elevated in the landscape, geology is considered highly porous and the application areas are surrounded by vegetation.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

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

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

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

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

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

Appendix D. Photographs of the vegetation (PRL, 2022)

ML100 SPW MB15

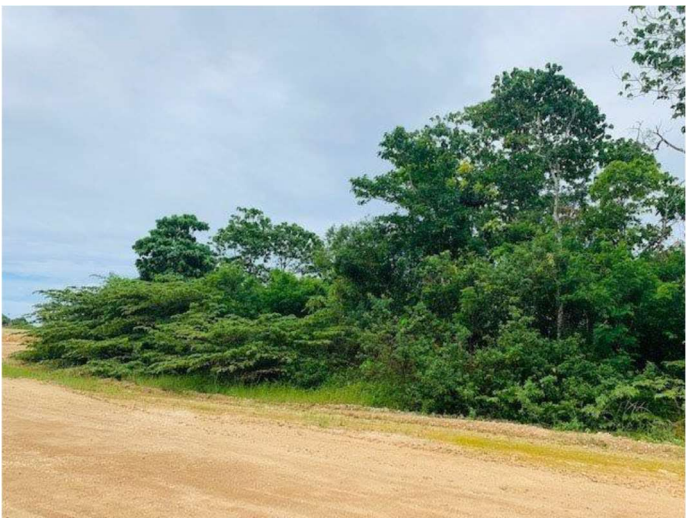


ML100 SPW MB18





ML101 F17 MB4

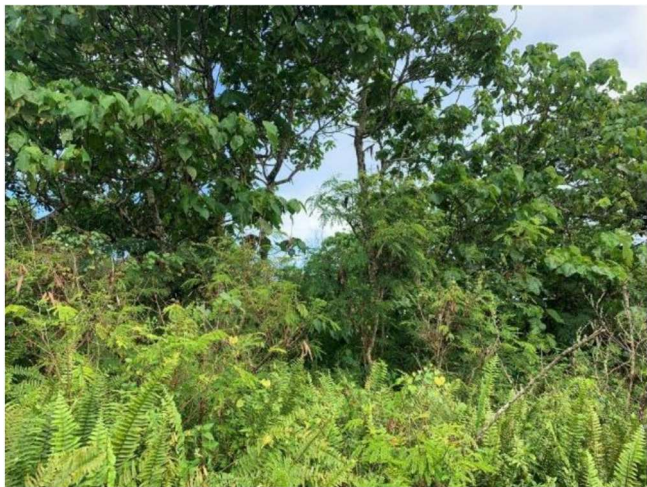


ML101 F17 MB12



ML101 F17 MB14





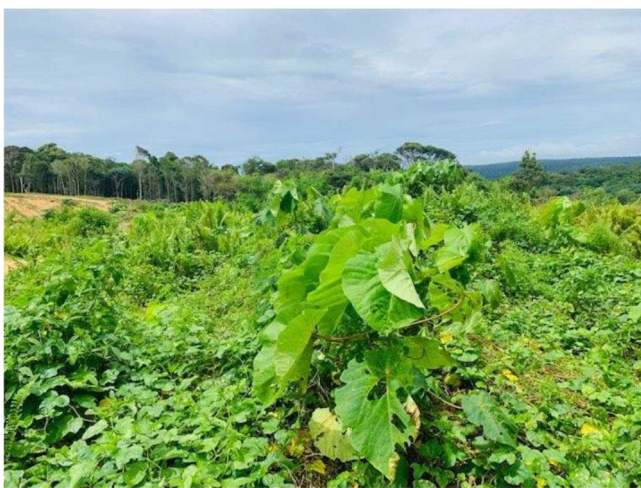
ML101 F17 MB15



ML101 F17 MB22



ML101 MB49



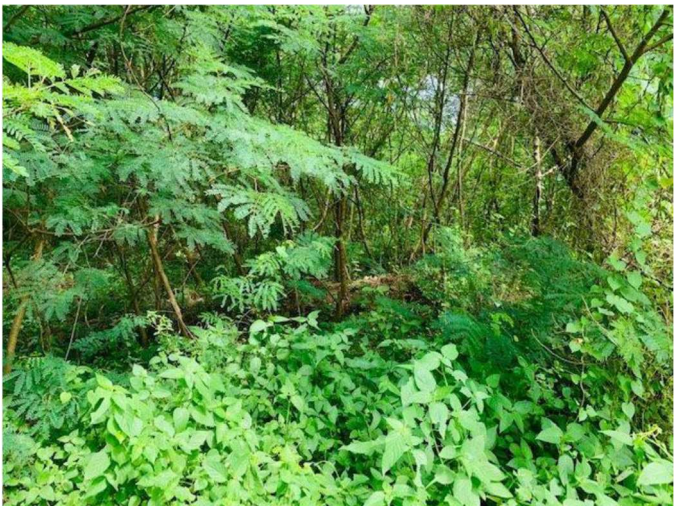
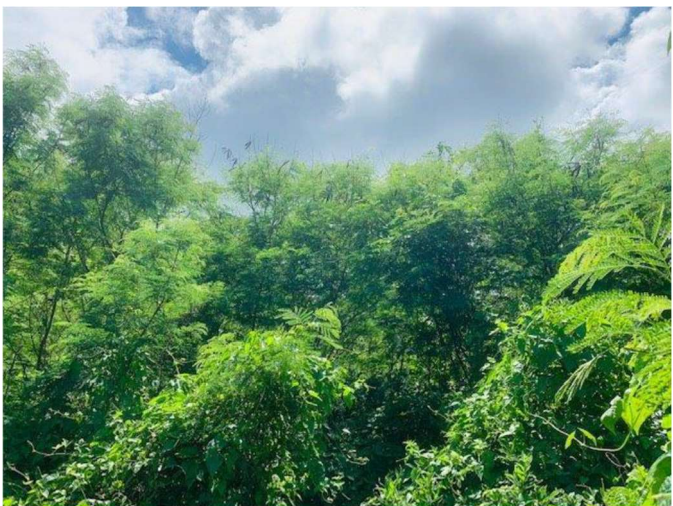
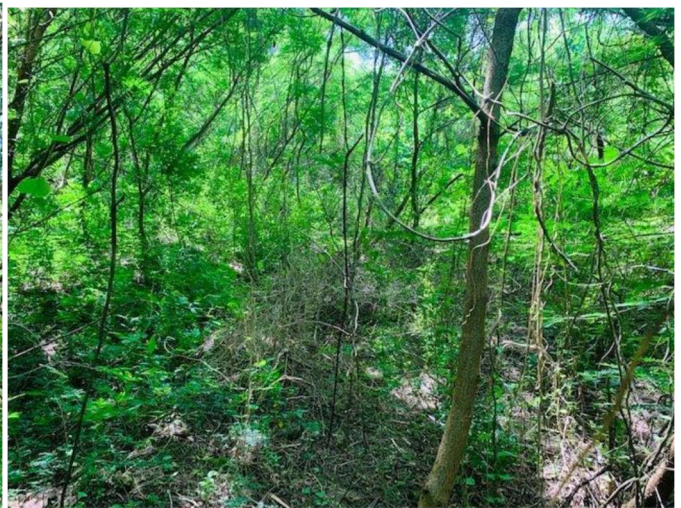
ML133 MB11/MB12



ML140 MB1



ML140 STP26B





Appendix E. Sources of information

E.1. GIS databases

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

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

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Red Crab Burrow Density Grid
- Abbott Booby Nests (2012)
- Known Giant Gecko locations (2013)
- Known Abbotts Locations (2015)
- Red Crab Fence
- Vegetation Level 1 (2013)
- National Park Boundary
- RAMSAR Wetlands (2013)

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