

REFERRAL REPORT RIO TINTO GOVE OPERATIONS – POND 2 WEST CLOSURE WORK

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RioTinto

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Cover Image: Subject Area, West of Pond 2 Rio Tinto Gove Operations,

Publication Statement:

This publication has been prepared by Simon McVeigh, Principal of Terra Tech Consulting Pty Ltd. Simon McVeigh is a Member of Closure Planning Practitioners Association, and has 16 years' experience in the planning of mine closure works across Australia. Mr McVeigh holds a Masters Environmental Management and a Bachelor of Science (Geology) from the University of Wollongong.

EXECUTIVE SUMMARY

RTA Gove Pty Ltd (RTA Gove) is undertaking closure works at the Residue Disposal Area (RDA) in accordance with the Mining Management Plan (MMP), developed pursuant to the requirements of the *Northern Territory Mining Management Act 2001* (MM Act). Tenure for the RDA comprises SML 11 (Part 2) and the RDA lease (issued under Section 19 of the *Commonwealth Aboriginal Land Rights (NT) Act 1976* (ALRA)).

The RDA includes Pond 2, a permanent storage location for bauxite residue and hydrotalcite, and is currently subject to development of detailed closure designs for execution in 2025. Closure designs have been developed consistent with agreed closure outcomes specified in the MMP which are to develop safe, stable, non-polluting landform designs. During the design process, it has been determined that a small portion (an area totalling 70 m²) lies outside the RDA lease. In addition, to execute the agreed closure design works are required to be undertaken within a larger portion of land which is also outside the current RDA lease (Figure 1). The proposed maximum disturbance outside of the RDA lease required is 1.9 ha and would be undertaken within NT Portion 1193 (Figure 2).

The off-lease works are limited to undertaking civil works which would ensure long term stability of the final Pond 2 landform. No storage of waste would occur as a result of closure works, and the subject area will be rehabilitated and revegetated with species derived from appropriate native analogue sites.

The proposed off-lease works and activities include:

- Clearing of a working area.
- Bulk earthworks (cut to fill), construction of access roads, erosion and sediment control works.
- Construction of embankment batters.
- Revegetation of the final Pond 2 landform with both native vegetation including grasses and other groundcover and a selection of local, native midstory species.
- Ongoing monitoring and maintenance including surface water quality, vegetation and erosion performance.

The Northern Territory framework for the assessment of environmental impact uses fourteen environmental factors to provide a systematic approach to organising environmental information and to establish environmental objectives against which proposals will be assessed. Pre-referral screening of the Proposed Works undertaken by Alan Irving and Associates (2024) identified that the proposal has the potential to impact two of the fourteen environmental factors. Table 1 provides a summary the results of the pre-referral screening and the results of a range of studies undertaken to inform determination of likelihood of significant impacts¹.

The proposed works account for the key principles of environmental protection and management² including minimisation of impacts to sensitive vegetation, implementing management measures to account for the impacts of a

¹ *Northern Territory Environmental Management Act 2019* Section 11 *Meaning of significant impact*.

² As specified in Part 2 of the *Northern Territory Environment Protection Act 2019*.

changing climate and a range of design aspects which mitigate adverse impacts on the environment to the greatest extent practicable. Further summary detail is provided in Table 4.

By implementing the works, and the associated mitigation and avoidance strategies, it is not anticipated that the proposed works would result in residual significant environmental impacts.

Table 1 Environmental Factors with Potential for Significant Impact

Environmental Factor	Reason for potential impact	Residual Impact
Terrestrial Ecosystems	The proposed development would require clearing of 0.8 ha of vegetation (Mangroves) a “sensitive” vegetation type under the Northern Territory Land Clearing Guidelines.	<p>Rio Tinto Gove will endeavour to reduce any clearing requirements within the works zone, and 0.8 ha would be the maximum area of Mangrove Forest which would require clearing.</p> <p>A terrestrial biodiversity assessment undertaken (Metserve, 2024) indicated “Given the small size of this mangrove community, its low species richness and lack of threatened species, it qualifies as being of low value”. A Construction Environmental Management Plan (CEMP) will be implemented and will include mitigation and management strategies to limit impacts to Terrestrial Ecosystems.</p> <p>The proposed works are unlikely to have a significant impact to the environmental values identified in baseline screening (Section 6).</p>
	The subject area is located within Dhimurru Indigenous Protected Area (IPA)	The Dhimurru IPA is a large, contiguous area which covers East Arnhem Land. The proposed works are unlikely to have a significant impact to the environmental and cultural values which are subject to management within the IPA.
Culture and Heritage	The subject area is located on land with Aboriginal rights and interests under the Commonwealth Aboriginal Land Rights (Northern Territory) Act 1976;	Rio Tinto Gove have undertaken pre-referral consultation about the proposed works including conducting a cultural heritage survey with Traditional Owners (Rio Tinto, 2024). The survey deemed the area to be highly disturbed and void of in-situ tangible and intangible heritage. No objection was raised in relation to the proposed works and their potential to impact cultural heritage values. A CEMP will be implemented and include unexpected find protocols for items of potential heritage and archaeological value.

1 INTRODUCTION

The Residue Disposal Area (RDA) at Rio Tinto's Gove Operations is located within the RDA lease (Lease number 749656) issued under Section 19 of the Commonwealth Aboriginal Land Rights (NT) Act 1976 (ALRA). Within the RDA lease, closure works are being planned and executed in accordance with the closure requirements set out in Gove Operations Mining Management Plan (MMP) and agreements with Traditional Owners for closure of RDA landforms (Rirratingu, 2021).

The RDA includes Pond 2, a permanent waste storage facility for bauxite residue and hydrotalcite. To realise long term stability of the Pond 2 landform, the Western Embankments must be flattened, with associated disturbance of land extending to the West of Pond 2 (The Proposed Works), outside of the current RDA lease (The Subject Land).

The Subject Land is located approximately 8 km West of Nhulunbuy, East Arnhem Land NT (Figure 1). Proposed works required to be undertaken within the Subject Land include:

- Clearing of a working area (totalling 1.9 ha).
- Bulk earthworks (cut to fill), construction of access roads, erosion and sediment control works.
- Construction of embankment batter toe areas.
- Revegetation of the final Pond 2 landform with both native vegetation including grasses and other groundcover and a selection of local, native midstory species.
- Ongoing monitoring and maintenance including surface water quality, vegetation and erosion performance.

This referral report has been prepared in accordance with the guidance set out in *Referring a proposal to the NT EPA (NT EPA, 2022)* and aims to provide sufficient information for assessment of the proposed action and their potential for significant impact as defined in the *Northern Territory Environment Protection Act 2019*. Specifically, the report:

- Describes the Proposed Works.
- Defines the direct impact of the Proposed Works on the Subject Area and any indirect impacts to the surrounding environment.
- Describes stakeholder consultation undertaken to date in relation to the Proposed Works.
- Describes environmental factors which have been considered in the design process to ensure potential impacts are managed and mitigated to the degree practicable.
- Summarises the outcomes of consultation and pre-referral screening undertaken to date.

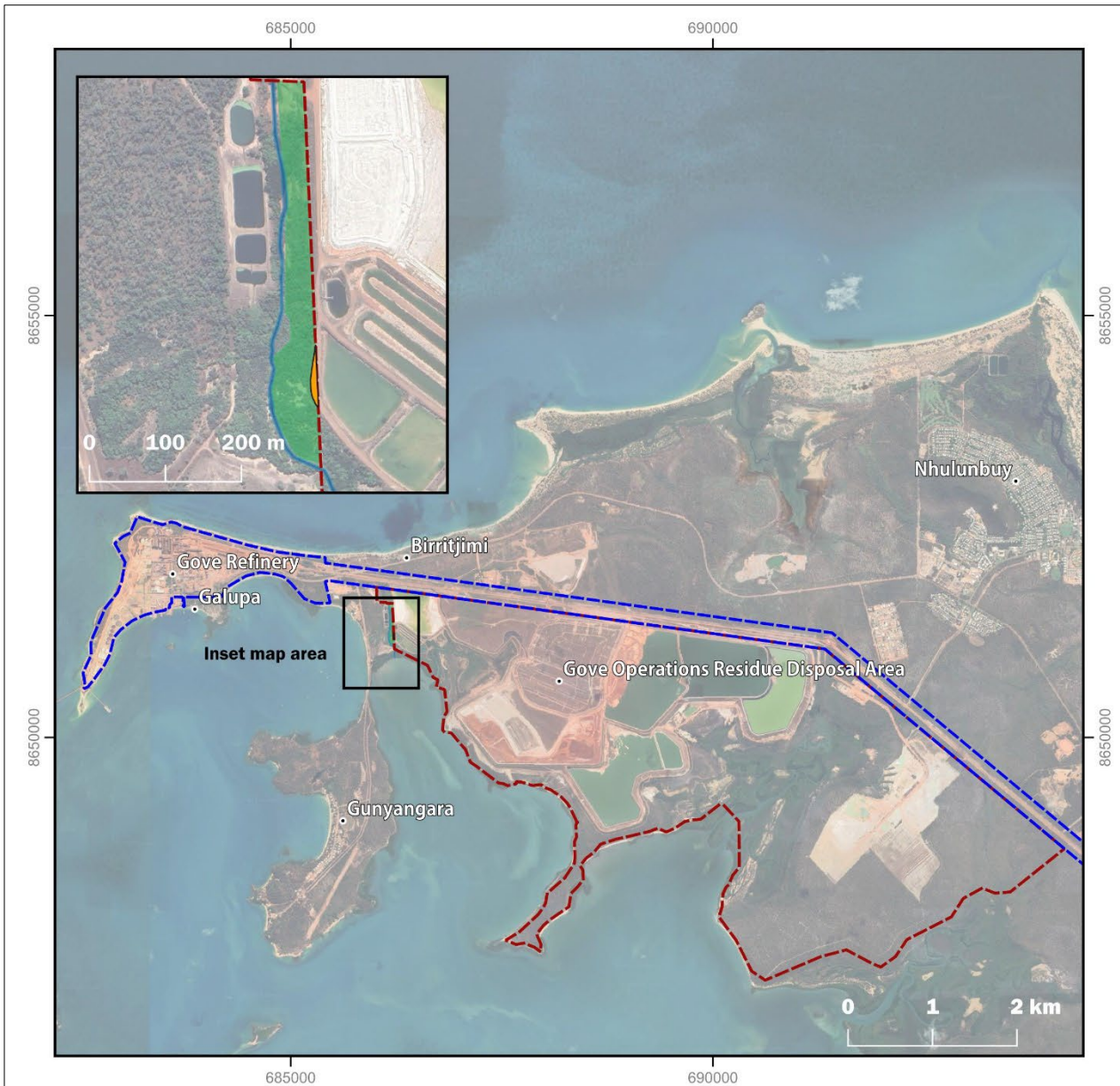


Figure 1. Residue Disposal Area and Pond 2 West

1:60000 Map Datum GDA 94 Zone 53
 Data Sources:
 Google (2020) CNES, Maxar technologies
 Rio Tinto (2024) Closure Designs Pond 2
 Geoscience Australia (2024) 1:250k Topographic mapping
 Northern Territory (2024) Cadastre and Mining Tenure
 Drawn by: S McVeigh
 26/07/2024

Legend

- Minerals Tenure
- RDA Lease Polygon
- Point of Interest
- Existing portion outside RDA lease
- Subject area of referral



Figure 1. Subject Land and Gove Residue Disposal Area

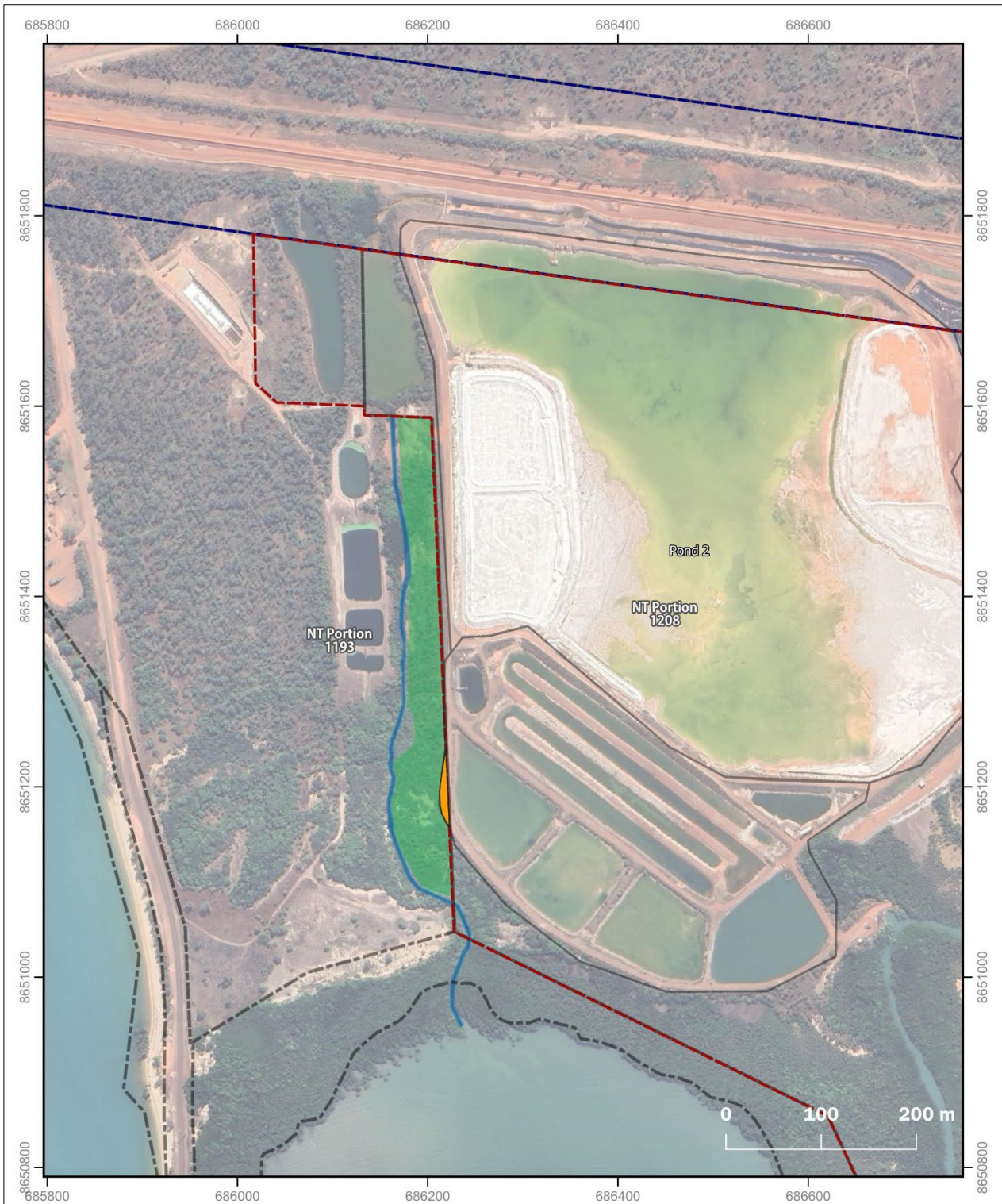


Figure 2. Relevant Cadastre and Tenure

1:5000 Map Datum GDA 94 Zone 53
 Data Sources:
 Google (2020) CNES, Maxar technologies
 Rio Tinto (2024) Closure Designs Pond 2
 Geoscience Australia (2024) 1:250k Topographic mapping
 Northern Territory (2024) Cadastre and Mining Tenure
 Drawn by: S McVeigh
 26/07/2024

Legend

- Minerals Tenure
- RDA Lease
- Cadastral boundaries
- Point of Interest
- Subject area of referral
- Creek Line
- Existing portion outside RDA lease

Figure 2 Tenure and Cadastre

2 PROPOSAL DESCRIPTION

2.1 Key Components

The Proposed Works (activities and work which will occur outside the current RDA lease) are limited to undertaking civil works which would ensure long term stability of the final closed Pond 2 landform. No storage of waste would occur as a result of closure works, and the subject area will be rehabilitated and revegetated will be, comprised of species derived from appropriate native analogue sites.

The proposed maximum disturbance outside of the RDA lease is 1.9 ha and would be undertaken within NT Portion 1193 (Figure 2). The proposed off-lease works and activities include:

- Clearing of a working area.
- Bulk earthworks (cut to fill), construction of access roads, erosion and sediment control works.
- Construction of embankment batters (which would be within the RDA lease but require temporary works outside of the RDA lease).
- Revegetation of the final Pond 2 landform with both native vegetation including grasses and other groundcover and a selection of local, native midstory species.
- Ongoing monitoring and maintenance including surface water quality, vegetation and erosion performance.

The location of these works relative to surrounding landforms is shown in Figure 3. The design for works within the Subject Area is currently progressing and may be subject to minor modifications however the total proposed maximum disturbance is 1.9 ha. Table 2 provides estimated areas of the key proposal components, derived on the basis of the design detail at the time of referral. Key proposal features including the total area, proposed timing, associated workforce and closure period are summarised in Table 3.

Table 2 Key Proposal Components

	Component	Size
Proposal Infrastructure	Embankment works zone (includes scour protection, cut and fill civil works, reprofiling and revegetation)	1 ha
	Temporary Works Area (includes staging area, stockpiling, temporary access and revegetation)	0.9 ha

Table 3 Key Proposal Features

	Feature	Size
Key Proposal Features	Proposal Area	1.9 ha
	Timing	Commencement April 2025, being undertaken over a two-year construction period, subject to necessary approvals, weather and dependent works being undertaken on-schedule.
	Workforce	The workforce which would undertake Proposed Works would be derived from a broader construction contract for Pond 2 closure works. The estimated workforce specific to the Proposed Works is 25 persons.
	Tenure	Tenure is being sought via a sub-lease arrangement with the current leaseholders for the Subject Area (Narrariyal I Aboriginal Corporation).
	Closure Period	Following works a three-year monitoring period is proposed to confirm that native vegetation is established and reflects the composition of target species specified for native revegetation prescribed in Section 6.4.6 of the Gove Operations MMP.

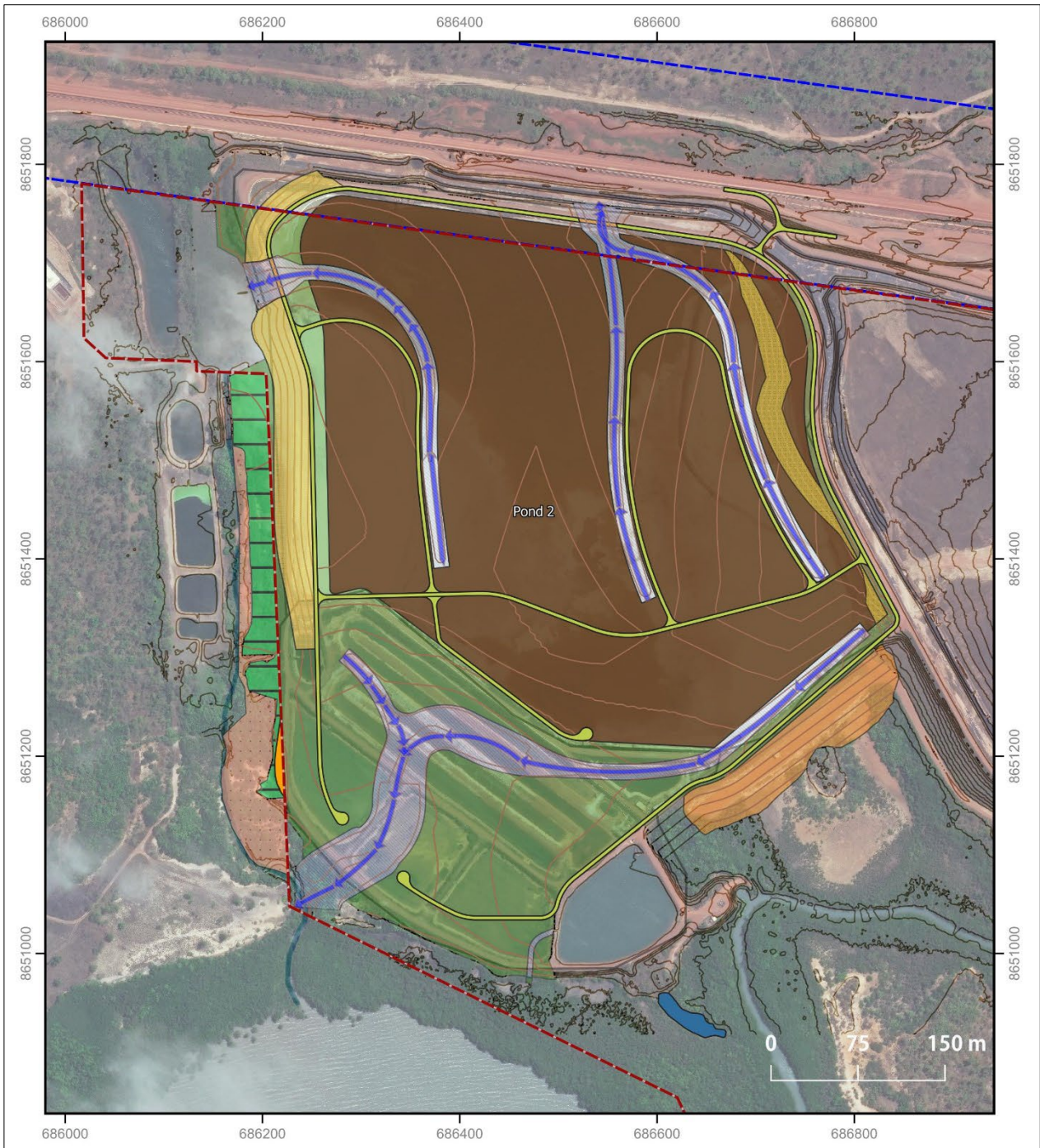


Figure 3. Pond 2 Closure Designs and Subject Area Works

1:1250 Map Datum GDA 94 Zone 53
 Data Sources:
 Red Earth Engineering (2024) Closure Designs Pond 2
 Rio Tinto (2024) Aerial Orthophoto Aug 2023
 Northern Territory Government (2024) Cadastre and Mining Tenure
 Drawn by: S McVeigh
 24/09/2024

- Legend**
- RDA Lease
 - Minerals Tenure
 - Access Roads
 - Extent of Liner
 - Flow Direction
 - Drains
 - Batter 1:7
 - Currently Outside P2
 - Native Vegetation Area
 - CH Exclusion Area
 - Off-Lease Works Areas**
 - Embankment works
 - Temporary Works Area

Figure 3 Pond 2 Closure Designs and Subject Area

2.2 Proposal Description -Location and regional context

2.2.1 Location and regional context

The RDA is located approximately 8km West of the town of Nhulunbuy, East Arnhem Land, Northern Territory. The Subject Land (areas to be disturbed outside RDA tenure) is located on NT portion 1193 Part B, Survey Plan S71/301. The Subject Land is Aboriginal Freehold land held in trust by Arnhem Land Aboriginal Land Trust (ALALT). The subject land is leased by Njarrariyal Aboriginal Corporation on a 99-year lease.

Surrounding land use(s) are:

- Immediately to the East of the Subject Land is the RDA which is comprises SML 11 (Part 2) and the RDA lease (issued to Rio Tinto under Section 19 of the Commonwealth Aboriginal Land Rights (NT) Act 1976 (ALRA). Within this area closure and water management works are underway.
- Immediately to the West of the Subject Land is the remaining portion of NT portion 1193 which includes redundant sewage infrastructure, and on freehold Aboriginal Land, currently leased to Njarrariya IAboriginal Corporation on a 99-year lease.
- Immediately South of the Subject Land is Drimmie Arm, a small bay which is a component of Melville Bay located in the Arafura Sea.
- Immediately to the North of the Subject Land is mining tenure (MLN955) which is part of the wider Rio Tinto Gove Operations. The area includes a conveyor which transports ore from the mine to the port, water management infrastructure and roads.

The subject area has been previously disturbed with historical clearing observed in the terrestrial biodiversity assessment undertaken to inform this referral (Metserve, 2024). This document is included as Appendix A. The proposed works would support the broader RDA closure objectives of delivering safe, stable and non-polluting landforms and improve the environmental amenity of the Subject Area through revegetation with target species.

The location of the Subject Land relative to surrounding land is shown in Figure 2.

2.2.2 Description of the existing environment

A terrestrial ecological assessment of the Subject Land was undertaken by METServe in January 2024 (Appendix A) of a 1.9-ha survey area between the RDA's western boundary and the unnamed tidal creek that flows into Drimmie Arm of Melville Bay. This assessment found that much of the survey area had been previously cleared during the construction of Pond 2, and now comprises regrowth of *Acacia leptocarpa*, *Acacia torulosa* and *Melaleuca acacioides*, among other species. This regrowth contains a high cover of weeds, including the two class B declared species, *Mesosphaerum suaveolens* (Hyptis) and *Azadirachta indica* (Neem). This regrowth lacks mature, hollow trees and coarse, fallen, woody debris. The remainder of the survey area (primarily along the creek, but extending east to the edge of the survey area in places) supports an intertidal mangrove community described as "*Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest". This community qualifies as a "sensitive" vegetation type under the Northern Territory Land Clearing Guidelines. This community is located primarily along the tidal creek that formed the

western boundary of the survey area, but in some southern areas, mangroves occurred to the base of the pond embankment. All non-tidal portions of the survey area appear to have been previously cleared and currently support regrowth. This conclusion is based on the following observations:

- Large trees were absent.
- Species that are dominant components of local forest communities (e.g., *Eucalyptus tetradonta*, *Eucalyptus miniata* and/or *Corymbia polycarpa*) were absent.
- The soil appears to be a mix of local coastal sand and unconsolidated fill.
- Weed densities were high.
- The survey area lacked hollow trees. There was also very little shelter for terrestrial fauna; coarse woody debris (logs with a diameter >10 cm) was absent, and the only rocks present were in the far north of the survey area, outside the sampled full characterisation sites.

The survey site did not contain any “important fauna sites”, defined by the Guidelines for Assessment of Impacts on Terrestrial Biodiversity (NTEPA, 2013) as major breeding areas, fauna congregations, isolated permanent water sources, caves, large boulder piles or escarpments.

Two “important fauna sites” are located in close proximity to the survey area. The Gunyangara Sewage Works are located immediately west and, despite being an artificial habitat, qualify as an important fauna site due to being a permanent water source and probably supporting fauna aggregations. Due to poor public access, these ponds have not been subjected to any survey effort by local birdwatchers; however, other sewage ponds in the local region (at Nhulunbuy and Yirrkala) regularly support aggregations of several threatened and migratory bird species. Aggregations of threatened and migratory species also regularly inhabit the estuary located 200 m of the survey area. The estuary contains expansive exposed mudflats at low tide and a wide fringe of mangroves.

2.3 Proposal Description –Alternatives (options)

Due to the proximity of the Western embankment of Pond 2 and the requirement to undertake closure works on the Pond 2 landform, including at the toe of the current embankment, there is no scope for consideration of alternatives to the Proposed Works. (Figure 1). The proposed works are required to ensure that closure objectives for the RDA are fulfilled.

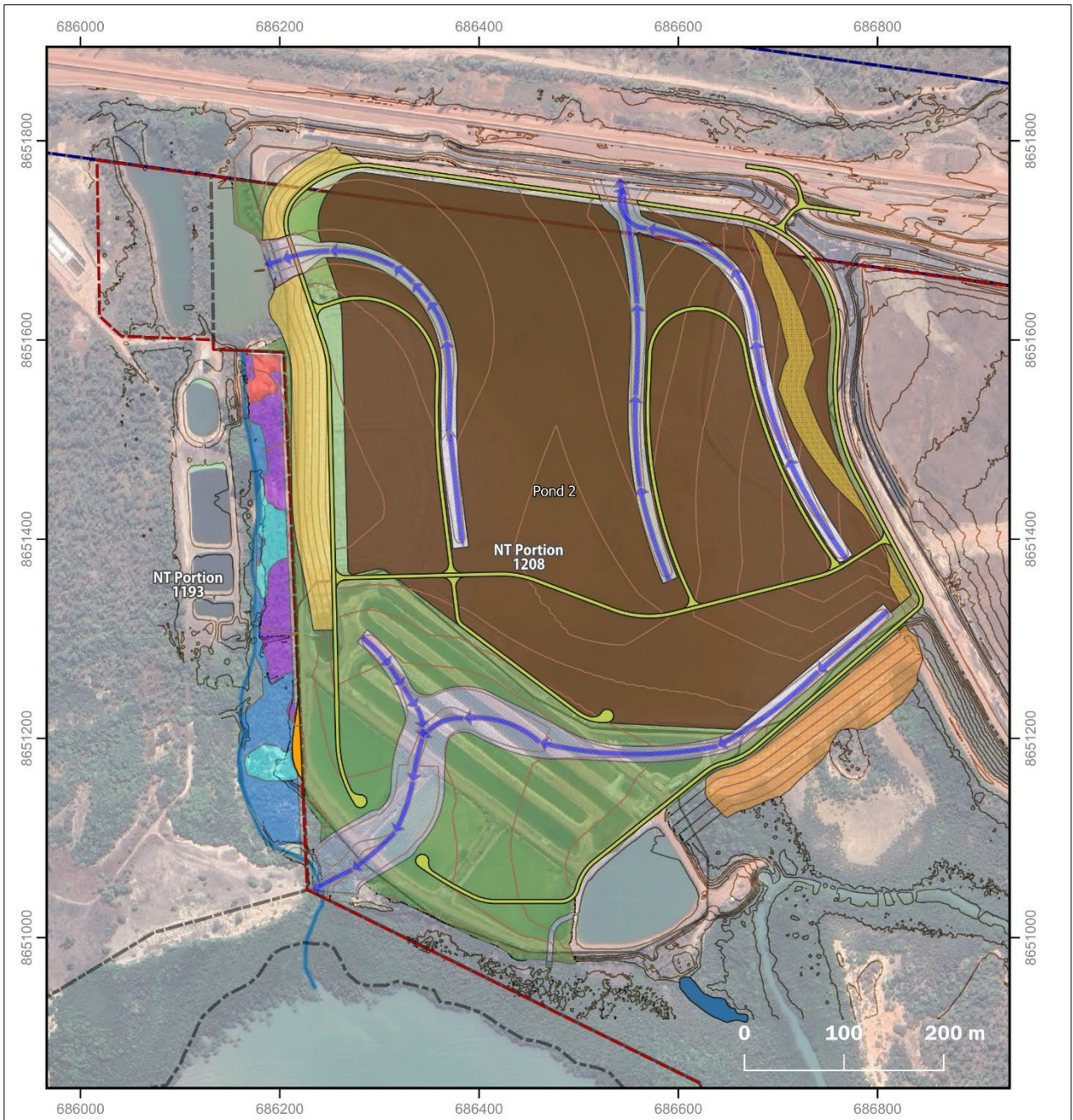


Figure 4. Pond 2 Closure Designs and Subject Area Vegetation

1:5000 Map Datum GDA 94 Zone 53

Data Sources:

Google (2020) CNES, Maxar technologies

Rio Tinto (2024) Closure Designs Pond 2

Geoscience Australia (2024) 1:250k

Topographic mapping

Northern Territory (2024) Cadastre

Drawn by: S McVeigh

26/07/2024

Legend

Minerals Tenure

RDA Lease

Point of Interest

Cadastral boundaries

Creek Line

Embankment 1:10 Gradient

Embankment 1:7 Gradient

CH Exclusion Area

Surface water drain

Capped portion of Pond 2

Elevation Contours

Flow Direction

Labrynth native revegetation

Access Roads

Vegetation Communities (Subject Area)

Acacia spp. low woodland

Mangroves low closed forest

Cleared area

Melaleuca acacioides tall open shrubland

Figure 4 Vegetation Communities in Subject Area

3 PRINCIPLES OF ENVIRONMENT PROTECTION AND MANAGEMENT

The proposed works, and their design include included mitigation measures prevent harm to the environment in accordance with the principles of environment protection and management, specified in Part 2 of the EP Act 2019. Specifically, the works are:

- Temporary in nature (limited to a period of no more than 5 years total) and aimed at restoring environmental amenity to the area as part of approved closure works for the RDA.
- Planned in such a way to limit disturbance to a small area, West of Pond 2 and East of a small creek (No-name creek).
- Planned to limit impacts to vegetation described as “sensitive” vegetation (Mangrove communities) under the Northern Territory Land Clearing Guidelines.
- Planned to include erosion and sediment control measures to prevent impacts to the receiving environment, specifically the small creek to the West of the Subject Area.

A summary of how the principles of environment protection and management are included in Table 4.

To inform the designs and assessments of potential impacts, Rio Tinto have undertaken targeted baseline environmental studies to ensure that potential impacts are identified and managed. These studies have included:

- Metserve, (2024) Habitat Quality Assessment of RDA Pond 2 for Rio Tinto Gove (Appendix A)
- Rio Tinto (2023) Cultural Heritage Survey of Pond 2 Closure Areas. (Appendix B)

Based on these assessments and to ensure that the Proposed Works would be undertaken in accordance Rio Tinto’s general environmental duties pursuant to the Section 43 of the EP Act Rio Tinto have applied the mitigation hierarchy via principles of environmental protection and management in the design and control of the proposed works³. These considerations are summarised in Table 4.

³ As specified in Part 2 of the *Northern Territory Environment Protection Act 2019*.

Table 4 Application of the principles of environment protection and management

Principles of environment protection and management. Comment

<i>Have the following principles of ecologically sustainable development been taken into consideration in the design of the proposed action?</i>	
Decision-making principle	The proposal has considered both temporary and permanent impacts and benefits of the proposal as a decision-making principle. The works are required to meeting commitments to stakeholders including landholders, the community and government, the commitment to meeting statutory requirements and commitments to our community holds primacy in terms of decision making and therefore the requirement to undertake these works within the subject area was identified.
Precautionary principle	This assessment is based on previous studies and specific studies undertaken for the proposal that have enabled evidence-based decision making' 'As such, there is a defensible level of scientific knowledge and understanding underpinning the environmental evaluation and control effectiveness. As a pre-caution these studies were undertaken as soon as it was determined that there was potential for works to occur outside the current RDA tenure.
Principle of evidence-based decision-making	
Principle of intergenerational and intergenerational equity	The proposed works aim to support Rio Tinto achieving its closure objectives specified in the MMP and agreed to with stakeholders. These objectives take into consideration communities & social performance
Principle of sustainable use	Water for the proposal would be supplied by Rio Tinto from their existing bore network, located within the RDA which is monitored and utilised efficiently across the operation.
Principle of conservation of biological diversity and ecological integrity	Ecological assessments were undertaken which identified the presence of sensitive vegetation. The extents of disturbance within these areas have been limited to the extents practicable.

Principles of environment protection and management. **Comment**

Principle of improved valuation, pricing and incentive mechanisms

This principle requires accounting for both short-term and long-term external environmental costs. This would be achieved by the proposed development by meeting the approved closure objectives specified within the Gove Operations Mining Management Plan and associated agreements with traditional owners relating to closure standards for the RDA, specifically in relation to capped landforms.

The polluter pays principle applies to the proposed works where costs of closure works required as a result of operating the RDA, are borne by the operator.

Have the following management hierarchies been taken into consideration in the design of the proposed action?

Environmental decision-making hierarchy

The design delivers long term stability for adjoining landform at Pond 2 which is a fundamental requirement for Rio Tinto in meeting it's agreed closure objectives. Proposed works have been designed to minimise impacts where they cannot be avoided, for example by limiting the clearing of mangrove communities to 0.78 ha.

Waste management hierarchy

Waste generation through construction is anticipated to be minimal due to the nature of the works (i.e. predominantly earthworks).

Any commitments of which waste is one made by Contractors will form part of their respective contracts, against which their performance will be assessed.

Other considerations

Have communities that may be affected by the proposed action been provided with information and opportunities for consultation?

Extensive consultation about the scope of the Proposal including on country surveys have been undertaken by Rio Tinto. Section 4 provides a summary of consultation to date.

Principles of environment protection and management. Comment

<p>Has consultation with affected communities, including Aboriginal communities' been undertaken in a culturally appropriate manner?</p>	<p>Consultation between Rio Tinto and Njarrariyal Aboriginal Corporation has been undertaken about the proposed works, access and tenure requirements. In principle agreement for the proposed works has been achieved as detailed in the letter of support included as Appendix E.</p>
<p>Has community knowledge and understanding (including scientific and traditional knowledge and understanding) of the natural and cultural values of areas that may be impacted by the proposed action been sought and documented?</p>	<p>Aboriginal values, rights and interests have been recognised through the consultation process. There is ongoing engagement with Njarrariyal Aboriginal Corporation about the proposed works and associated tenure requirements. In addition, for the RDA, Rirratingu Aboriginal Corporation have been engaged in relation to the development of closure designs, specified in the Gove Operations Mining Management Plan.</p>

4 CONSULTATION

4.1 Objectives

The objectives and purpose of stakeholder engagement undertaken to date are:

- Communicating the scope of the project.
- Identifying the specific communication needs of potentially affected communities and identifying culturally appropriate methods of communication.
- Communicating and introducing the proposal to stakeholders and finding out their perceptions, concerns, interests, aspirations and issues with the proposal which in turn may inform aspects of proposal design, operation and closure.
- Gaining local support and maximising positive benefits.
- Gathering information to identify risks resulting in better environmental impact assessment.
- Meeting legislative requirements to engage with stakeholders for land access, agreements and approvals.
- Increasing efficiency of assessment and approval.

4.2 Engagement

The stakeholders which have been engaged about the Proposed Works and potential impacts to the Subject Land and surrounding environment are:

- Njarrariyal Aboriginal Corporation (via Gumatj Aboriginal Corporation);
- Rirratingu Aboriginal Corporation.
- The Northern Territory Environmental Protection Agency (NT EPA); and
- Department of Environment, Parks and Water Security (DEPWS).

It should be noted that Rio Tinto has established, formalised and long-standing engagement pathways for engagement with Traditional Owners, on who's land Gove Operations is located, including the Subject Area. This occurs via mechanisms established under a contractual arrangement entered into by Swiss Aluminium Australian Limited (A subsidiary of Rio Tinto) with relevant Traditional Owners dated 26 May 2011 (referred to as Rio Tinto Alcan Gove Traditional Owners Agreement). These mechanisms include a quarterly forum for discussions on operations and the implementation of agreed management actions between key representatives. These mechanisms have been utilised to ensure that the following information has been communicated to Traditional Owners in an appropriate manner:

- Information about the proposal.

- The extent to which activities will, or are likely to, affect the environment both inside and outside the affected land area.
- Estimated infrastructure and numbers of vehicles and people that are likely to be on the affected land.
- Proposed mechanisms for minimising social impact.
- Proposed methods for rehabilitation and closure.

This engagement was undertaken generally in accordance with the guidance provided in NT EPA (2010) Guidance on Stakeholder Engagement. Information which has been provided to stakeholders about the proposed development and a summary of the outcomes of this engagement is included in Table 5.

Table 5 Stakeholder Engagement Register

Stakeholder	Date	Content	Outcomes and Feedback
Northern Territory EPA	29/04/2024	Letter regarding Approval requirements associated with proposed closure works at Gove’s Residue Disposal Area Pond 2.	A letter providing details of the proposed works, subject area, environmental assessments undertaken to date was provided with a request for a meeting with the assessing agency was provided to NT EPA.
Department of Environment, Parks and Water Security (DEPWS).	30/05/2024	Meeting with DEPWS.	A meeting with DEPWS was undertaken to discuss potential approval requirements pursuant to the Northern Territory EP Act. DEPWS provided feedback on referral and approval requirements pursuant to the Act.
Rirraringu Aboriginal Corporation	8/11/2023	On country meeting with Rirraringu representatives.	Rio Tinto Gove Cultural Heritage Specialist (Dr Shaun Adams) attended the RDA with Rirratjingu Elders: Wanyubi Marika and Mandaka Marika, from Yirrkala Community to the RDA. The proposed works and subject area were discussed.
Njarrariyal Aboriginal Corporation	16/09/2024	Agreement making for tenure and access to the Subject Land to allow works, rehabilitation and monitoring to occur.	In principle agreement between Rio Tinto and Njarrariyal Aboriginal Corporation to formalise a sub-lease agreement providing consent for the proposed works to occur (Appendix E).

5 STRATEGIC AND STATUTORY CONTEXT

The Subject Land totals 1.9 ha within NT Portion 1193. The Subject Land is located approximately 8 km West of Nhulunbuy, East Arnhem Land NT. The Subject Land is Aboriginal Land (Scheduled under ALRA) and held in trust by Arnhem Land Aboriginal Land Trust.

The Arnhem Land Aboriginal Land Trust holds two deeds of grant over land in Arnhem Land in the Northern Territory. These grants were made on 30 May 1980 under the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth). The deeds of grant cover the area formerly comprising the Arnhem Land Aboriginal Reserve, the deed of grant extends to the low water mark.

Njarrariyal Aboriginal Corporation hold a 99-year lease from Arnhem Land Aboriginal Land Trust. To ensure continuity of the 99-year lease, a sub-lease arrangement between Rio Tinto Njarrariyal Aboriginal Corporation is being sought for the subject land.

All designs shall comply with all relevant government acts, by-laws and regulations, local, state and federal, including but not limited to:

- *Northern Territory Aboriginal Land Rights Act 1976,*
- *Northern Territory Environment Protection Act 2019,*
- *Northern Territory Environmental Protection Regulations, 2020*
- *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*
- *Northern Territory Planning Act, 1999*
- *Northern Territory Waste Management and Pollution Control Act, 1998*

Table 6 provides a summary of applicable legislation and how the design has considered aspects specific to the Proposed Works.

In addition to statutory regulations and requirements, Rio Tinto are committed to meeting the Global Industry Standard for Tailings Management (GISTM) and Rio Tinto D5 Standard and strive to adhere to ANCOLD guidelines for dam safety as far as practicable.

The overarching guidelines applicable to the design of the Proposed works include:

- Global Industry Standards on Tailings Management (GISTM), (Global Tailings Review, 2020)
- The Aluminium Stewardship Initiative (ASI), which Rio Tinto Aluminium is certified against specific to bauxite residue storage.
- Rio Tinto Group Procedure – D5 - Management of Tailings and Water Storage Facilities – Group Procedure v1.2, (Rio Tinto, 2021a)

- Australian Rainfall and Runoff: A Guide to Flood Estimation', (Ball, et al., 2019)
- International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control 2008, (IECA Australasia, 2008)
- Leading Practice Sustainable Development Program for the Mining Industry – Mine Closure, (Australian Government - Department of Industry Science and Resources, 2016a)
- National Environment Protection Council (NEPC) - National Environment Protection (Assessment of Site Contamination) Measure 1999, (NEPC, 2013)
- NT Government Department of Infrastructure, Planning and Logistics – Performance and Design Standards for Northern Territory Government Roads, (Northern Territory Government, 2017)

Table 6 Applicable Statutory Requirements

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	The EPBC Act requires that proponents must consider potential impacts to Matter of National Environmental Significance (MNES) associated with a proposed action.	An assessment of the likelihood that the Proposed Works may have a significant impact on a Matter of National Environmental Significance (MNES) was undertaken by Alan Irving and Associates (2024). (Appendix C) The assessment concluded that it is unlikely the proposed works would have a significant impact on MNES.
<i>Northern Territory Environment Protection Act 2019</i>	The NT EP Act requires that proponents must consider whether a proposed action has the potential to cause significant environmental harm.	Alan Irving & Associates (2024) were engaged by Rio Tinto Gove to make an assessment of whether the proposed works may have a significant environmental impact when assessed in accordance with the Northern Territory Environmental Protection Authority’s (NT EPA) “Pre-referral screening tool” (NT EPA 2022). This document is included as Appendix D. Proposals that have the potential to have a significant impact on the environment require referral to the NT EPA in accordance with the Environment Protection Act 2019 (EP Act). The assessment concluded that referral may be required ⁴
<i>Northern Territory Environment Protection Act 2019 (Cont)</i>		

⁴ Subject to engagement with NT EPA.

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
	<p>Rio Tinto have general environmental duty in relation to the proposed works. This means works must not be carried out where an activity causes or is likely to cause environmental harm, unless measures to prevent or minimise the harm have been taken; and</p> <p>To inform the administering authority and landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm.</p>	<p>The objectives of the proposed works are to render the area safe, stable and non-polluting and to improve the environmental amenity of the Subject Area by:</p> <ul style="list-style-type: none"> • Reprofiting and placement of growth media for revegetation. • Undertaking revegetation of the Subject Area with species derived from appropriate analogue sites. • Construction of erosion protection and scour protection infrastructure. <p>During the proposed works, potential for environmental harm will be managed by development and implementation of a Construction Environmental Management Plan (CEMP) for the Proposed Works (details of specific measures to be adopted and notification protocols are included in Section 6.3.2).</p>
<p><i>Northern Territory Planning Act 1999</i></p>	<p>Section 75c – Land must not be developed by clearing it of native vegetation except in accordance with a permit.</p>	<p>Rio Tinto will submit a land clearing application for approval pursuant to the <i>Northern Territory Planning Act 1999</i>.</p>
<p><i>Northern Territory Aboriginal Land Rights Act 1976</i></p>	<p>Section 77A - Where, for the purposes of the Act, the Traditional Aboriginal owners of an area of land are required</p>	<p>Rio Tinto has established, formalised and long-standing engagement pathways for engagement with Traditional Owners, on who’s land Gove Operations is located, including the Subject Area. This occurs via mechanisms established under a contractual arrangement entered into by Swiss</p>

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
	<p>to have consented, as a group, to a particular act or thing, the consent shall be taken to have been given if:</p> <p>(a) in a case where there is a particular process of decision making that, under the Aboriginal tradition of those traditional Aboriginal owners or of the group to which they belong, must be complied with in relation to decisions of that kind--the decision was made in accordance with that process.</p>	<p>Aluminium Australian Limited (A subsidiary of Rio Tinto) with relevant Traditional Owners dated 26 May 2011 (referred to as Rio Tinto Alcan Gove Traditional Owners Agreement).</p> <p>Accordingly, agreement for the Proposed Works from Njarrariyal Aboriginal Corporation was sought via these established mechanisms. A sub-lease is being sought from Njarrariyal Aboriginal Corporation, who hold a 99-year lease over the Subject Area from Arnhem Land Aboriginal Land Trust. In principle agreement for the proposed works and tenure arrangement has been provided by Njarrariyal Aboriginal Corporation and is included as Appendix E of this document.</p>

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
<i>Northern Territory Waste Management and Pollution Control Act 1998</i>	<p>Section 12. General environmental duty:</p> <p>(1) A person who:</p> <ul style="list-style-type: none"> a) conducts an activity that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste; or b) performs an action that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste, <p>must take all measures that are reasonable and practicable to:</p> <ul style="list-style-type: none"> c) prevent or minimise the pollution or environmental harm; and d) reduce the amount of the waste. 	<p>During the proposed works, potential for pollution associated with work will be mitigated by development and implementation of a Construction Environmental Management Plan (CEMP) for the Proposed Works (details of specific measures to be adopted and notification protocols are included in Section 6.3.2.</p>

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
<i>Northern Territory Weeds Management Act 2001</i>	<p>Section 9 General Duties for potential weeds:</p> <p>General duties for potential weeds</p> <ol style="list-style-type: none"> 1) A person has a duty to: <ol style="list-style-type: none"> a) comply with any weed management plan for a potential weed; and; b) ensure that, if the person uses a potential weed, the potential weed is used in accordance with any classification of the potential weed under section 7(4)(b), (c) or (d). 1) Except in accordance with a permit, a person has a duty to not do any of the following: <ol style="list-style-type: none"> a) propagate or scatter a potential weed; b) sell or offer to sell any equipment, device or any other thing that contains a potential weed; c) purchase or offer to purchase any equipment, device or any other thing that contains a potential weed; 	<p>During the proposed works, general duties in relation to weed management will be undertaken by development and implementation of a Construction Environmental Management Plan (CEMP) for the Proposed Works (details of specific measures to be adopted and notification protocols are included in Section 6.4.4.</p>

Applicable Legislation, policy and guidelines	Relevant aspect	Consideration
	<ul style="list-style-type: none">d) hire or offer for hire to another person any equipment, device or any other thing that contains a potential weed;e) hire or request to hire from another person any equipment, device or any other thing that contains a potential weed.f) If a person transports a potential weed to a designated weed disposal area, the person has a duty to secure and contain the potential weed during the course of transporting.	(see previous page)

6 ENVIRONMENTAL FACTORS

6.1 Environmental Factors and Objectives

The NT EPA has developed a framework for the assessment of environmental impact. The framework uses 14 environmental factors to provide a systematic approach to organising environmental information and to establish environmental objectives against which proposals will be assessed. Pre-referral screening of the Proposal undertaken by Alan Irving and Associates (2024) identified that the proposal has the potential to impact two of the fourteen environmental factors:

- Terrestrial Ecosystems (Section 0) ; and
- Culture and Heritage (Section 6.4).

For these factors potential environmental impacts were assessed by:

- Identification and characterisation of environmental values:
- Identification of potential impacts:
- Avoidance and mitigation:
- Assessment of residual impacts:

Appendix C provides a summary the results of the pre-referral screening and the results of a range of studies undertaken to inform determination of likelihood of significant impacts.

6.2 Approach to Assessment if Significance of Impact

Under Section 48 of the EP Act, a proponent must refer to the Northern Territory Environmental Protection Authority (NT EPA) for assessment a proposed action that has the potential to have a significant impact on the environment.

Section 11 of the EP Act defines the meaning of significant impact as:

A significant impact of an action is an impact of major consequence having regard to:

- a) the context and intensity of the impact; and
- b) the sensitivity, value and quality of the environment impacted on and the duration, magnitude and geographic extent of the impact.

When determining whether the proposed activity may have an impact of major consequence or not, an assessment undertaken by Alan Irving and Associates (2024), included as Appendix D was undertaken with consideration to the NT EPA's Pre-referral Screening Tool (NT EPA 2022) and the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Commonwealth of Australia 2013) included as Appendix C.

6.3 Terrestrial Ecosystems

The Terrestrial Ecosystems factor was identified for further consideration in this Referral due to:

- The presence of, and requirement to disturb a vegetation community which qualifies as a “sensitive” vegetation type under the Northern Territory Land Clearing Guidelines.
- The subject area is within Dhimurru Indigenous Protected Area.

6.3.1 Factor Objective

The NT EPA’s objective for the Terrestrial Ecosystems factor is to:

“Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.”

6.3.2 Presence of Environmental Values

The environmental values identified for assessment under the Terrestrial Ecosystems factor are:

- The presence of sensitive vegetation types which are valued due to their unique biodiversity values and are considered significant under the Land Clearing Guidelines (DEPWS, 2021). Subject vegetation types include an intertidal mangrove community described as *“Avicennia marina var. eucalyptifolia and Lumnizera racemosa var. racemosa low closed forest”*
- The Subject Area is within Dhimurru Indigenous Protected Area, however the potential for significant impact on terrestrial ecosystems which are subject to management within the IPA is low.

Habitats and vegetation

The assessment undertaken to inform pre-referral screening, and this referral report (Metserve 2024) found that much of the survey area had been previously cleared during the construction of Pond 2, and now comprises regrowth of *Acacia leptocarpa*, *Acacia torulosa* and *Melaleuca acacioides*, among other species. This regrowth contains a high cover of weeds, including the two class B declared species, *Mesosphaerum suaveolens* (Hyptis) and *Azadirachta indica* (Neem). This regrowth lacks mature, hollow trees and coarse, fallen, woody debris.

The remainder of the survey area (primarily along the creek but extending east to the edge of the survey area in places supports an intertidal mangrove community described as *“Avicennia marina var. eucalyptifolia and Lumnizera racemosa var. racemosa low closed forest”*.

The mapped vegetation communities in the Subject Area are shown in Figure 4.

Significant Vegetation.

The intertidal mangrove community, which totals 0.78 ha, within the subject area *“Avicennia marina var. eucalyptifolia and Lumnizera racemosa var. racemosa low closed forest*. Whilst this community is classified as significant under the

Land Clearing Guidelines (DEPWS, 2021), given the small size of this mangrove community, its low species richness and lack of threatened species, it qualifies as being of low value (Metserve, 2024).

Habitat Features

All non-tidal portions (areas outside the mangrove community) of the survey area appear to have been previously cleared and currently support regrowth. This conclusion is based on the following observations:

- Large trees were absent.
- The soil appears to be a mix of local coastal sand and unconsolidated fill.
- Weed densities were high.
- The survey area lacked hollow trees. There was also very little shelter for terrestrial fauna; coarse woody debris (logs with a diameter >10 cm) was absent, and the only rocks present were in the far north of the survey area, outside the sampled full
- The survey site did not contain any “important fauna sites”, defined by the Guidelines for Assessment of Impacts on Terrestrial Biodiversity (NTEPA, 2013) as major breeding areas, fauna congregations, isolated permanent water sources, caves, large boulder piles or escarpments.

Threatened Species

Based on the small size of the Subject Area, and the well-understood fauna ecology of the Gove Peninsula, no field surveys for fauna were undertaken. Nevertheless, incidental fauna sightings during the flora survey were recorded. Furthermore, targeted searches were undertaken for the nests of Ospreys, Water Mice and Estuarine Crocodiles.

Based on the habitat descriptions generated from the flora survey and known fauna records from nearby areas, the potential for protected fauna to inhabit the proposed disturbance footprint was assessed. The following sources of information were consulted for assessing likelihood of fauna presence:

- Occupancy of the Nhulunbuy Region by Black-footed Tree-rats (METServe 2019);
- Preclearance Fauna Survey of the Residue Disposal Borrow Area (METServe 2021);
- Terrestrial Flora and Vegetation Assessment: Pond 5 Feasibility Study (AECOM 2019a);
- Flora and Fauna Survey Report: Gove Pond 5 Pre-feasibility Study (RPS 2017);
- Gove Pond 5 Closure Feasibility Study: Intertidal Habitat Assessment (AECOM 2019b);
- Preclearance fauna survey reports for the Gove Mine between 2007-2018 (unpublished data of METServe);
- Protected Matters Search Tool;
- Northern Territory Fauna Atlas;

- eBird; and
- Atlas of Living Australia.

A total of 81 species of vascular plant and 37 species of vertebrate fauna were recorded within the survey area during the field survey. None of these species are of conservation significance; none are protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), and all are listed as “least concern” under the Territory Parks and Wildlife Conservation Act 1976 (TPWC Act). A detailed review of flora and fauna records across the Gove Peninsula revealed only two threatened species that may potentially inhabit the survey area: the critically endangered Northern, Blue-tongued Skink (*Tiliqua scincoides intermedia*) and Mitchell’s Water Monitor (*Varanus mitchelli*). However, the likelihood of occurrence for both is low, given that the habitat present is small, of low quality, and isolated by highly disturbed environments with abundant Cane Toads, the primary factor limiting populations of these two species.

6.3.1 Potential Impacts

The potential impacts to terrestrial biodiversity, associated with the proposed works include:

- Loss of significant vegetation caused by land clearing.
- Reduced quality of threatened species habitat –both flora and fauna – caused by weed/invasive species introduction/spread.
- Impacts to surface water quality caused by erosion.
- Impacts to surface water quality due to exposure of potential acid sulphate soils.

6.3.2 Mitigation

Mitigation of construction related impacts will be implemented in accordance with a Construction Environmental Management Plan (CEMP). Specific measures to be implemented include but not limited to:

- Installing sediment barriers downslope from any earthworks, coupled with sediment and water quality monitoring within the creek to monitor efficacy of sediment control measures.
- Investigating the presence of acid sulphate soils in areas where soil is to be excavated and managing risks of acidification to prevent impacts to nearby and downstream environments.
- Implementation of weed control measures including vehicle washdown during construction and weed management post construction.
- The storage and handling of flammable and combustible liquids. Corrosive substances will be managed in accordance with AS 3780 *The Storage and Handling of Corrosive Substances*.
- Demarcation of the project boundary.

- Rehabilitating all areas where disturbance occurs with species derived from appropriate analogue sites to ensure that impacts to vegetation have limited duration.

Through implementation of the CEMP and associated controls, there is a low or negligible risk that vegetation clearance within the survey area would significantly impact any flora or fauna of conservation significance.

6.3.3 *Residual Impact*

Through implementation of the CEMP, the likelihood of significant impacts as defined in Section 11 of the NT EP Act, arising from the Proposed Works is considered unlikely.

6.4 **Culture and Heritage**

The Culture and Heritage factor was identified for further consideration in this referral due to the subject area being located on land with Aboriginal rights and interests under the Commonwealth Aboriginal Land Rights (Northern Territory) Act 1976.

6.4.1 *Factor Objective*

The NT EPA's objective for the Terrestrial Ecosystems factor is to: *Protect culture and heritage.*

6.4.2 *Presence of Environmental Values*

The subject area is located on land with Aboriginal rights and interests under the Commonwealth Aboriginal Land Rights (Northern Territory) Act 1976. The Subject Land is located on NT portion 1193 Part B, Survey Plan S71/301. The Subject Land is Aboriginal Freehold land held in trust by Arnhem Land Aboriginal Land Trust (ALALT). The subject land is leased by Njarrariyal Aboriginal Corporation on a 99-year lease.

6.4.3 *Potential Impacts*

A survey with Traditional Owners and trained archaeologists deemed the area to be highly disturbed and void of in-situ tangible and intangible heritage (Rio Tinto, 2023). Nevertheless, for works to commence, an agreement with Gumatj Aboriginal Corporation (GAC) was also required. Engagement with GAC and Rio Tinto is underway. This engagement aims to define appropriate terms for access to the area during construction for a period of up to, but no more than 5 years.

6.4.4 *Mitigation*

Within the CEMP, protocols for identification and management of unexpected finds, including for items of potential archaeological and heritage significance.

6.4.5 *Residual Impact*

On the basis of the archaeological and heritage survey undertaken, and in consideration of the proposed mitigation measures to be included in the CEMP, the likelihood for significant impacts in relation to culture and heritage is considered unlikely.

7 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

An assessment of the likelihood that proposed works may have a significant impact on Matters of National Environmental Significance was undertaken by Alan Irving and Associates (2024). This document is included as Appendix C. The assessment concluded that it is unlikely the proposed works would have a significant impact on MNES.

8 REFERENCES

(AECOM 2019a) Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment

(AECOM 2019b) Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment

Alan Irving and Associates (2024) Pre-referral Screening of Pond 2 Closure Works.

Alan Irving and Associates (2024) Assessment of Impact of Pond 2 Closure Works on Matters of National Environmental Significance

DEPWS (2021). Land Clearing Guidelines version 1.3. Northern Territory Planning Scheme, Department of Environment, Parks and Water Security, Darwin

Department of the Environment (2015). Draft Referral Guideline for 14 Birds Listed as Migratory Species under the EPCB Act. Australian Government, Canberra.

Northern Territory Environmental Protection Authority (2013). Guidelines for Assessment of Impacts on Terrestrial Biodiversity version 2.0. Northern Territory Environmental Protection Authority, Darwin.

MetServe (2024) Habitat Quality Assessment of RDA Pond 2 for Rio Tinto Gove.

Rio Tinto (2023) Cultural Heritage Survey of Pond 2 Closure Areas.

Appendix A

Metserve (2024) Habitat Quality Assessment of RDA Pond 2 for Rio Tinto Gove

REPORT



Habitat Quality Assessment of RDA Pond 2 for Rio Tinto Gove

30/01/2024

Rio Tinto


METSERVE
Mining & Energy Technical Services Pty Ltd

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Executive Summary

Rio Tinto is currently undertaking the staged decommissioning and rehabilitation of its alumina refinery and residue disposal area (RDA) at Gove, Northern Territory. In order to undertake works required for closure of Pond 2 at the RDA, a small amount of disturbance will be required outside the currently approved disturbance footprint, and outside the boundaries of the RDA (NT Portion 1208, survey plan S 71/301).

A terrestrial ecological assessment was undertaken by METSERVE in January 2024 of a 1.9-ha survey area between the RDA's western boundary and an unnamed tidal creek that flows into Drimmie Arm of Melville Bay. This assessment found that much of the survey area had been previously cleared during the construction of Pond 2, and now comprises regrowth of *Acacia leptocarpa*, *Acacia torulosa* and *Melaleuca acacioides*, among other species. This regrowth contains a high cover of weeds, including the two class B declared species, *Mesosphaerum suaveolens* (Hyptis) and *Azadirachta indica* (Neem). This regrowth lacks mature, hollow trees and coarse, fallen, woody debris. The remainder of the survey area (primarily along the creek, but extending east to the edge of the survey area in places) supports an intertidal mangrove community described as "*Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest". This community qualifies as a "sensitive" vegetation type under the Northern Territory *Land Clearing Guidelines*. Therefore, any clearing applications that disturb this vegetation type, or others within a 50 m buffer (i.e., the entire survey area), must provide justification for the clearing, along with mitigation or management strategies for avoiding impacts.

A total of 81 species of vascular plant and 37 species of vertebrate fauna were recorded within the survey area during the field survey. None of these species are of conservation significance; none are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and all are listed as "least concern" under the *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act). A detailed review of flora and fauna records across the Gove Peninsula revealed only two threatened species that may potentially inhabit the survey area: the critically endangered Northern Blue-tongued Skink (*Tiliqua scincoides intermedia*) and Mitchell's Water Monitor (*Varanus mitchelli*). However, the likelihood of occurrence for both is low, given that the habitat present is small, of low quality, and isolated by highly disturbed environments with abundant Cane Toads, the primary factor limiting populations of these two species.

Five migratory species protected under the EPBC Act (Common Sandpiper *Actitis hypoleucos*, Fork-tailed Swift *Apus pacificus*, Lesser Frigatebird *Fregata ariel*, Arafura Fantail *Rhipidura dryas* and Estuarine Crocodile *Crocodylus porosus*) are likely to visit the survey area, and three species (Barn Swallow *Hirundo rustica*, Oriental Cuckoo *Cuculus optatus* and Osprey *Pandion haliaetus*) are possible visitors. Of these, Barn Swallows, Ospreys, Lesser Frigatebirds and Fork-tailed Swifts are expected to fly overhead and not normally utilise any of the on-ground habitats present. Common Sandpipers and Estuarine Crocodiles would be restricted to the creek channel and its banks. Only the Arafura Fantail and Oriental Cuckoo could be expected to utilise vegetated habitats within the survey area, and both species are expected to visit in small numbers (0-5 individuals in any one year). Such small numbers do not qualify as an ecologically significant proportion of the population of either species, in accordance with definitions presented in the *Draft Referral Guideline for 14 Birds Listed as Migratory Species under the EPBC Act*, and significant impacts on these species are therefore unlikely within the survey area.

Provided actions within the survey area do not cause indirect impacts on downstream estuarine environments, there is a low risk that vegetation clearance within the survey area would significantly impact any flora or fauna of conservation significance. However, ten species of threatened shorebirds, three non-threatened migratory shorebirds, four threatened turtles and two migratory terns feed in estuarine habitats around the mouth of the creek that passes through the survey area. Therefore, measures should be taken to ensure that water quality within the creek is not affected by the actions. Such measures should include:

- installing sediment barriers downslope from any earthworks, coupled with sediment and water quality monitoring within the creek to monitor efficacy of sediment control measures;
- investigating the presence of acid sulphate soils in areas where soil is to be excavated, and managing risks of acidification to prevent impacts to nearby and downstream environments;
- rehabilitating all areas where mangroves are to be removed to facilitate recolonisation by mangrove communities post-disturbance, to ensure that any impacts have limited duration.

To ensure compliance with the *Weeds Management Act 2001*, the following actions are recommended:

1. Weeds should be controlled prior to site disturbance, to limit contamination of topsoil and machinery with weed seeds;
2. Weed-infested and non-weed-infested areas should be managed/disturbed separately, and all machinery should be thoroughly cleaned after contact with weed-infested areas and before entry into non-weed-infested areas. Topsoil extracted from weed-infested and non-weed-infested areas should be handled and stored/used separately.
3. Areas where topsoil from weed-infested areas is placed should be subjected to an intensive weed control program for several years after soil placement, to eradicate germinating weeds and prevent their establishment at new sites.

1 Introduction

1.1 Background

Rio Tinto operates a bauxite mine and former refinery at Gove, Northern Territory. Following the closure of the refinery, the associated residue disposal area (RDA) is progressively being decommissioned and rehabilitated. The decommissioning and closure of Pond 2 at the RDA will require the disturbance of a small area that is not currently approved for disturbance. This disturbance is required to allow machinery access to the western foot of the Pond 2 embankment. Baseline environmental data for this area is required to inform self-assessment and engagement requirements, and to ensure the works are compliant with Rio Tinto's obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act), *Environment Protection Act 2019*, *Mining Management Act 2001* and *Planning Act 1999*.

1.2 Location

The survey area is located along the eastern boundary of NT Portion 1193 (480 Melville Bay Road), where it meets the western edge of the RDA (NT Portion 1208, survey plan S 71/301). The survey area lies between the embankment of Pond 2 and a small, unnamed, tidal creek that is fed from the Gunyanjara Sewage Works and the RDA water management network (**Figure 2.1**). The survey area is 1.9 ha in size, 500 m long and 30-60 m wide. At the time of report preparation, the disturbance footprint had not been defined (this will be informed by environmental constraints highlighted in this report). It is anticipated that disturbance will be contained within the survey area, but not affect the entire survey area.

1.3 Objectives

The objectives of this report are as follows:

- To describe and map the vegetation communities present within the survey area;
- To compile an inventory of the flora (including weeds) present within the survey area;
- To identify the presence of important habitat features, such as rocks, caves, hollow trees, nests and fallen woody debris;
- To review recent and historical records of flora and fauna of conservation significance from the local region and assess the likelihood of their presence within the survey area; and
- To identify potential ecological constraints on the proposed works.

2 Methodology

2.1 Flora Surveys

Vegetation communities were sampled across five full characterisation sites (**Figure 2.1**), as described by the *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping* (Brocklehurst et al. 2007).



Path: S:\Projects\AG025_RDA_Pond_2_Habitat_Assessment\Map\GIS\Project_Files\Projects\AG025_RTG_Pond2_Habitat_Survey_Jan2024.aprx

Legend

- Full Characterisation Sites
- Creek
- Survey Area
- Cadastral Boundaries

Source: Northern Territory Government (Department of Infrastructure, Planning and Logistics) 2024, METServe 2024, Maxar.

Rio Tinto Closure

Survey Area and Sampling Locations

0 50 100 150

Meters

Scale: 1:5,000 (A4)

30/01/2024

Datum: GDA2020
Projection: MGA53

RioTinto

METSERVE

Mining & Energy Technical Services Pty Ltd

FIGURE 2.1

Each site comprised a 20 m × 20 m quadrat, in which the following structural and floristic characteristics were recorded:

- basal area of woody vegetation was estimated using a single basal sweep with a basal wedge (Bitterlich gauge);
- landform, soil and drainage features;

all vascular plants and their percentage cover and height (mean and range), recorded separately for each vegetation stratum (upper, middle and ground). Height was measured with a rangefinder, while cover was estimated by measuring crown projection along a 40 m transect.

Flora taxonomy followed the Checklist of the Vascular Plants of the Northern Territory (Cowie *et al.* 2017). Vegetation units were described in accordance with the Level VI National Vegetation Information System (NVIS) hierarchy, as recommended by the *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping* (Brocklehurst *et al.* 2007).

2.2 Review of Existing Flora and Fauna Data

Given the small scale of the proposed disturbance, and the well-understood fauna ecology of the Gove Peninsula, no field surveys for fauna were undertaken. Nevertheless, incidental fauna sightings during the flora survey were recorded. Furthermore, targeted searches were undertaken for the nests of Ospreys, Water Mice and Estuarine Crocodiles.

Based on the habitat descriptions generated from the flora survey and known fauna records from nearby areas, the potential for protected fauna to inhabit the proposed disturbance footprint was assessed. The following sources of information were consulted for assessing likelihood of fauna presence:

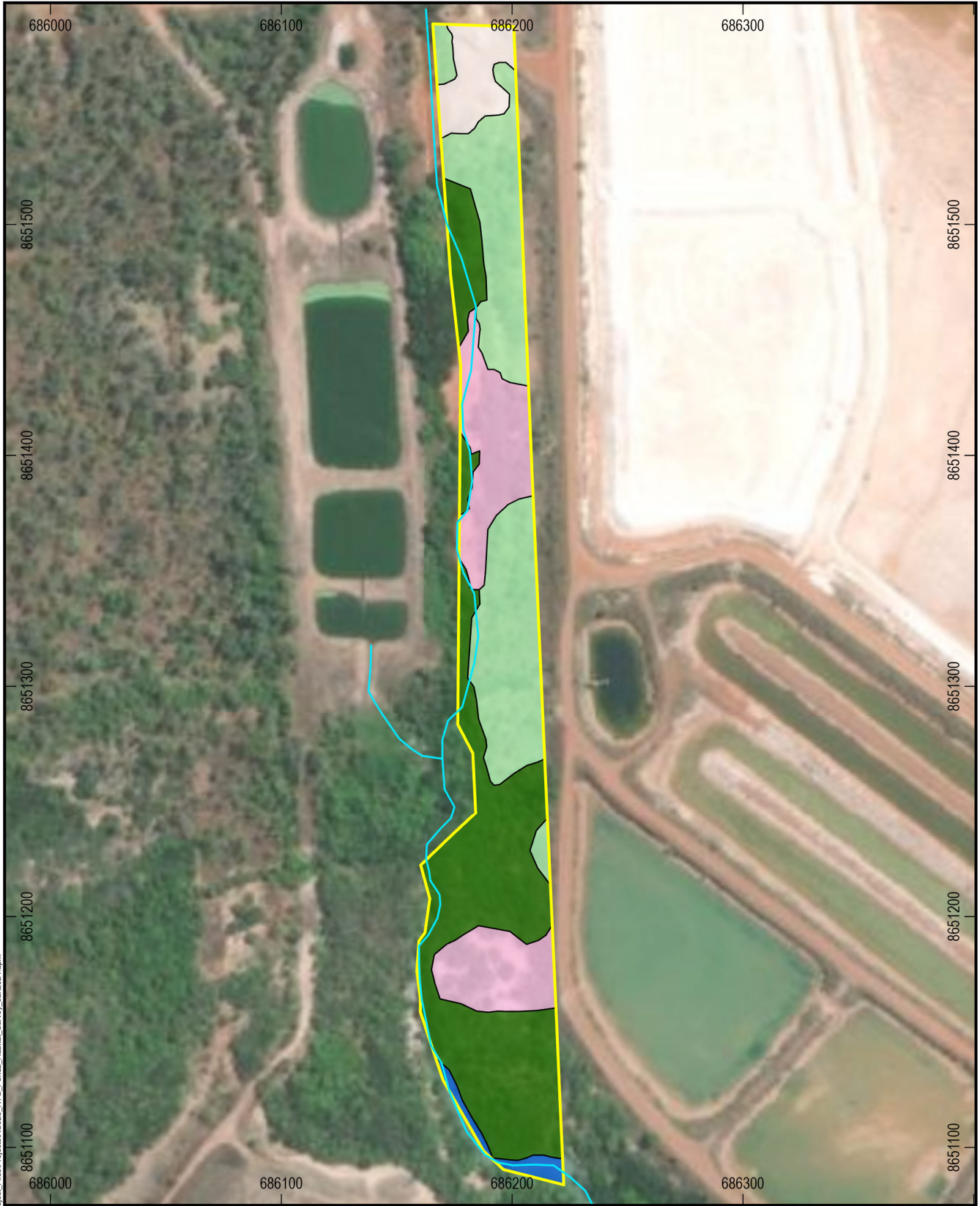
- *Occupancy of the Nhulunbuy Region by Black-footed Tree-rats* (METServe 2019);
- *Preclearance Fauna Survey of the Residue Disposal Borrow Area* (METServe 2021);
- *Terrestrial Flora and Vegetation Assessment: Pond 5 Feasibility Study* (AECOM 2019a);
- *Flora and Fauna Survey Report: Gove Pond 5 Pre-feasibility Study* (RPS 2017);
- *Gove Pond 5 Closure Feasibility Study: Intertidal Habitat Assessment* (AECOM 2019b);
- Preclearance fauna survey reports for the Gove Mine between 2007-2018 (unpublished data of METServe);
- Protected Matters Search Tool;
- Northern Territory Fauna Atlas;
- eBird; and
- Atlas of Living Australia.

3 Results

3.1 Flora

A total of 81 species of vascular plants were recorded within the survey area. Of these, 16% were non-native species. These non-native species made up an average of 24.8% of the total vegetation cover within the survey area (ranging from 0% at full characterisation sites T1 and T2 to 74.2% at T3). In general, weed abundance and richness was greatest closest to the pond embankment (along the eastern edge of the survey area) and least in intertidal areas along the western edge of the survey area. Two weed species occurring within the survey area (*Azadirachta indica* and *Mesosphaerum suaveolens* [declared under the synonym *Hyptis suaveolens*]) are class B declared weeds under the *Weeds Management Act 2001*.

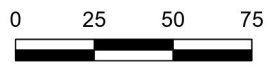
No plant species recorded in the survey area is of conservation significance; none are protected under the EPBC Act and all are listed as “least concern” under the TPWC Act. None of the vegetation communities present within the survey area (**Figure 3.1**) constitute federally listed Threatened Ecological Communities.



Path: S:\Projects\AG025_RDA_Para2_Habitat_Assessment\KucGIS\Project_Files\Projects\AG025_RTG_Para2_Habitat_Survey_Jan2024.aprx

- Legend**
- Creek
 - Survey Area
 - Vegetation Communities**
 - Acacia* spp. low woodland
 - Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest
 - Melaleuca acacioides* tall open shrubland
 - Cleared area
 - Creek Channel

Rio Tinto Closure
**Vegetation Communities
 within the Survey Area**



Meters
 Scale: 1:2,400 (A4)

30/01/2024

Datum: GDA2020
 Projection: MGA53

FIGURE 3.1



Source: Northern Territory Government (Department of Infrastructure, Planning and Logistics) 2024, METServe 2024, Maxar.

Approximately half the survey area was below the highest astronomical tide and supported a simple mangrove community classified as “*Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest”. This was primarily located along the tidal creek that formed the western boundary of the survey area, but in some southern areas, mangroves occurred to the base of the pond embankment. Mangroves represent a “sensitive” vegetation type defined by the *Land Clearing Guidelines* (DEPWS 2021).

The remainder of the survey area appeared to be regrowth on a mixture of coastal sand and lateritic fill, which was probably cleared during the construction of the adjacent Pond 2. These areas support “*Melaleuca acacioides* tall open shrubland” and “*Acacia* spp. low woodland”. The weed *Azadirachta indica* (Neem Tree) was co-dominant in some areas. Along the Pond 2 embankment, the ground layer was dominated by non-native *Chloris gayana* (Rhodes’ Grass) and *Mesosphaerum suaveolens* (Hyptis), among other weeds. Away from the embankment, native groundcovers, especially *Chrysopogon elongatus*, were dominant.

A list of all plant species recorded in the survey area is provided in **Appendix A** and the vegetative characteristics at each full characterisation survey site is described in **Appendix C**.

3.2 Habitat Features

All non-tidal portions of the survey area appear to have been previously cleared and currently support regrowth. This conclusion is based on the following observations:

- Large trees were absent.
- Species that are dominant components of local forest communities (e.g., *Eucalyptus tetradonta*, *Eucalyptus miniata* and/or *Corymbia polycarpa*) were absent.
- The soil appears to be a mix of local coastal sand and unconsolidated fill.
- Weed densities were high.

The survey area lacked hollow trees. There was also very little shelter for terrestrial fauna; coarse woody debris (logs with a diameter >10 cm) was absent, and the only rocks present were in the far north of the survey area, outside the sampled full characterisation sites.

The survey site did not contain any “important fauna sites”, defined by the *Guidelines for Assessment of Impacts on Terrestrial Biodiversity* (NTEPA 2013) as major breeding areas, fauna congregations, isolated permanent water sources, caves, large boulder piles or escarpments.

Two “important fauna sites” are located in close proximity to the survey area. The Gunyanara Sewage Works are located immediately west and, despite being an artificial habitat, qualify as an important fauna site due to being a permanent water source and probably supporting fauna aggregations. Due to poor public access, these ponds have not been subjected to any survey effort by local birdwatchers; however, other sewage ponds in the local region (at Nhulunbuy and Yirrkala) regularly support aggregations of several threatened and migratory bird species. Aggregations of threatened and migratory species also regularly inhabit the estuary located 200 m of the survey area. The estuary contains expansive exposed mudflats at low tide and a wide fringe of mangroves.

A total of 33 bird species, 2 amphibian species and 2 reptile species were recorded within the survey area during the field survey (**Appendix B**). None of these are protected under the EPBC Act and all are listed as least concern under the TPWC Act.

3.3 Matters of Conservation Significance

Forty-one threatened species protected under the EPBC Act and/or the TPWC Act were flagged by database searches as being potentially present in the vicinity of the survey area. Based on their habitat preferences and nearby records, most of these species are unlikely to be present within the survey area (**Table 3-1**). Two species, the critically endangered Northern Blue-tongued Skink (*Tiliqua scincoides intermedia*) and Mitchell’s Water Monitor (*Varanus mitchelli*), possibly occur on site. However, the likelihood of occurrence is low, given that the habitat present is small and isolated by highly disturbed

environments with abundant Cane Toads, the primary factor limiting populations of these two species. Furthermore, shelter sites for the Northern Blue-tongues Skink were mostly absent.

Twenty-one additional species flagged by database searches as being potentially present in the vicinity of the survey area are protected as migratory species under the EPBC Act (**Table 3-2**). Of these, five species (Common Sandpiper *Actitis hypoleucos*, Fork-tailed Swift *Apus pacificus*, Lesser Frigatebird *Fregata ariel*, Arafura Fantail *Rhipidura dryas* and Estuarine Crocodile *Crocodylus porosus*) are likely to visit the survey area, and three species (Barn Swallow *Hirundo rustica*, Oriental Cuckoo *Cuculus optatus* and Osprey *Pandion haliaetus*) are possible visitors. Of these, Barn Swallows, Ospreys, Lesser Frigatebird and Fork-tailed Swifts are expected to fly overhead and not normally utilise any of the on-ground habitats present. Common Sandpipers and Estuarine Crocodiles would be restricted to the creek channel and its banks. Only the Arafura Fantail and Oriental Cuckoo could be expected to utilise vegetated habitats within the survey area, and both species are expected to visit in small numbers (0-5 individuals in any one year). Such small numbers do not qualify as an ecologically significant proportion of the population of either species, in accordance with definitions presented in the *Draft Referral Guideline for 14 Birds Listed as Migratory Species under the EPBC Act* (Department of the Environment 2015), and significant impacts on these species are therefore unlikely within the survey area.

Despite the few matters of conservation significance expected to inhabit the survey area, many protected matters are known or likely to inhabit downstream estuarine habitats. Ten species of threatened shorebirds, three non-threatened migratory shorebirds, four threatened turtles and two migratory terns are expected to feed in estuarine habitats around the mouth of the creek that passes through the survey area (**Table 3-1** and **Table 3-2**). Additional aquatic matters of significance not covered by this terrestrial ecological assessment (e.g., sawfish and cetaceans) may also be present downstream. These estuarine habitats lie 200 m downstream of the survey area.

Table 3-1 Threatened species potentially present on the Gove Peninsula and their likelihood of presence within the survey area

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
Bare-rumped Sheath-tail Bat (<i>Saccolaimus saccolaimus</i>)	Vulnerable	Near threatened	Inhabits old-growth eucalypt forest on floodplains, especially near riverine vine forest. Roosts during the day in hollow trees, including <i>Eucalyptus tetradonta</i> and <i>Eucalyptus miniata</i> . Foraging habitat is poorly known but it is thought to favour forest edges.	The species has never been recorded on the Gove Peninsula, despite extensive surveys in <i>E. tetradonta</i> and <i>E. miniata</i> forest at Gove Mine, employing full-spectrum song meters that could have identified the species. The nearest known record is from the Roper River (a specimen collected in 2001 and held at the Northern Territory Museum), 310 km south-west of the survey area.	Unlikely. Hollows are absent within the survey area and the site is in a highly modified landscape lacking mature forest.
Ghost Bat (<i>Macroderma gigas</i>)	Vulnerable	Near threatened	Roosts and breeds in caves, with the largest colonies in disused underground mines, and large cave systems in sandstone and limestone. Smaller colonies roost in ironstone and granite piles. Major roosts and maternity sites are all in deep cave systems containing elevated roosting chambers with stable microclimates. Shallow caves, shelters and deep overhangs may be used for temporary shelter by itinerant Ghost Bats. They prefer to forage in open habitats (agricultural land, grasslands, open woodlands and along ephemeral watercourses) up to 12 km from their diurnal roosts (Augusteyn 2018; Bullen 2021).	The species was recorded in the vicinity of the Garma Cultural Centre, 23 km south of the survey area, in 1990 (a record by D. Milne stored in the N.T. Fauna Atlas).	Unlikely. There are no caves within or near the survey area.
Brush-tailed Rabbit-rat (<i>Conilurus penicillatus</i>)	Vulnerable	Endangered	Inhabits lowland eucalypt forests and woodland, particularly those dominated by <i>Eucalyptus miniata</i> and/or <i>E. tetradonta</i> . Forests with large trees, abundant hollows and protection from recent, severe fire are preferred (Woinarski <i>et al.</i> 2017).	The species has never been recorded from the Gove Peninsula, but possibly occurred there historically. The nearest known populations are on large offshore islands, including Groote Eylandt (155 km south of the survey area) and Inglis Island (45 km north-west of the survey area).	Unlikely. The large amount of survey effort expended to date for the Black-footed tree-rat across the Gove Peninsula would have detected this species if it still occurred locally.
Northern Hopping-mouse (<i>Notomys aquilo</i>)	Endangered	Vulnerable	Inhabits open forests, heathlands or grasslands on deep sandy soils. Preferred sites have a floristically diverse shrub and ground layer, with ground cover averaging 5–30% (Threatened Species Scientific Committee 2021).	The species' presence on the Gove Peninsula has never been confirmed and there are no known extant populations on the mainland of the Northern Territory. The only known population is on Groote Eylandt, 155 km south of the survey area.	Unlikely. There have been extensive surveys for this species on the Gove Peninsula, which have all failed to detect the species or convincing signs of its presence.
Black-footed Tree-rat (<i>Mesembriomys gouldii gouldii</i>)	Endangered	Endangered	Inhabits open eucalypt forests and woodlands, especially taller, denser forests with abundant hollows and a floristically diverse shrub layer.	This species is widespread on the Gove Peninsula and is one of the most often recorded mammals during ecological surveys at the Gove Mine. Large-scale camera-based surveys undertaken across the	Unlikely. Habitats within the survey area lacked hollow trees and were isolated from nearby occupied habitats by tidal creeks and estuaries. An occupancy model

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
				Nhulunbuy area in 2018 (METServe 2019) recorded Black-footed Tree-rats at cameras 160 m and 380 m west/north-west of the survey area.	predicted the cell containing the survey area has a low probability of occupancy by this species (METServe 2019).
Water Mouse (<i>Xeromys myoides</i>)	Vulnerable	Data deficient	Inhabits mangrove forests and nearby saltmarshes and freshwater swamps.	The species is known from fewer than 10 sites in the Northern Territory, none of which are on the Gove Peninsula. The nearest known population is 190 km west of the survey area. Its habitat is poorly surveyed in the Northern Territory due to dangers associated with crocodiles.	Unlikely. Despite the existence of potential habitat for the species, the survey area was thoroughly searched and no nest mounds or other signs of occurrence were located.
Pale Field-rat (<i>Rattus tunneyi</i>)	(not listed)	Vulnerable	Occurs in a wide range of habitats, including tall grasslands, rocky slopes, woodlands and monsoon forests with dense understoreys dominated by grasses and sedges. It has never been recorded from the <i>Eucalyptus tetradonta</i> and <i>E. miniata</i> open forests at the Gove Mine, but nearby records to the south were from a mosaic of grasslands and monsoon vine forest near floodplains.	The species has been recorded from Rangura Beach (30 km south-east of the survey area), as recently as 2009. The species has never been recorded on any Rio Tinto leases on the Gove Peninsula, despite intensive survey effort over many years.	Unlikely. The species was not recorded during extensive camera trapping of the Nhulunbuy region (METServe 2019), despite this method being effective at detecting other rodents.
Northern Quoll (<i>Dasyurus hallucatus</i>)	Endangered	Critically endangered	Inhabits eucalypt open forests with hollow logs, rock crevices, caves and tree hollows for den sites. Rocky areas are favoured.	The species occurred on the Gove Peninsula at the time of European settlement (records from Yirrkala in 1948 and Cape Arnhem in 1936). However, there have been no records in the past 75 years, despite a large amount of survey effort by Rio Tinto and indigenous ranger groups. The nearest extant populations are on islands such as Groote Eylandt (155 km south), the English Company Islands (41 km north-west) and Marchinbar Island (85 km north).	Unlikely. The species is locally extinct on the Gove Peninsula.
Northern Brush-tailed Phascogale (<i>Phascogale pirata</i>)	Vulnerable	Endangered	Most records are from tall open forests dominated by <i>Eucalyptus miniata</i> and <i>E. tetradonta</i> , but the ecology of the species is poorly known.	A single specimen was collected by W.E. Harney at Yirrkala and is held at the Australian Museum. The date of collection was not reported but, as Harney died in 1962, this record is at least 60 years old. There have been no records of this species in the last 25 years within 400 km of the survey area.	Unlikely. Given the lack of records despite the intensity of fauna surveys across the Gove Peninsula in the past 20 years, this species is probably locally extinct. In any case, their favoured habitat is lacking from the survey area.
Northern Brushtail Possum (<i>Trichosurus vulpecula arnhemensis</i>)	Vulnerable	Near threatened	Inhabits tall eucalypt forests, mangroves, monsoon vine forests and urban environments. Hollow trees or artificial structures (in urban areas) are used for dens.	Northern Brushtail Possums are rarely recorded in intact forests at the Gove Mine (recorded on 0.4% of cameras installed in 2016: METServe 2016) but are one of the most widespread native mammals around the township of Nhulunbuy (recorded at 20.1% of cameras	Unlikely. The species was not recorded at any of the four cameras installed in 2018 that were closest to the survey area. Furthermore, no possums were recorded at any of the 14 cameras installed along

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
				installed in 2018: METServe 2019). The nearest record to the survey area is 900 m north-west.	the southern edge of the RDA ponds, suggesting that this is not a frequently used dispersal corridor. Hollows were absent from the survey area.
Nabarlek (<i>Petrogale concinna canescens</i>)	Endangered	Endangered	Inhabits rugged sandstone or granite rocky areas, especially on steep slopes with large boulders, caves and crevices. They may move several hundred metres into surrounding black soil plains to forage.	The nearest records are from cliffs adjacent to the Arafura Swamp, 210 km west of the survey area. The species has never been recorded in East Arnhem Land.	Unlikely. The survey area is outside the known distribution of the species and suitable habitat is absent.
Eastern Curlew (<i>Numenius madagascariensis</i>)	Critically endangered*	Critically endangered	Feeds on open, intertidal sandflats and mudflats, around rockpools, amongst rubble on coral reefs and on ocean beaches. They roost at high tide on sand spits, sand dunes, low saltmarsh or sparse mangroves.	The species is a regular summer visitor to beaches across the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Bar-tailed Godwit (<i>Limosa lapponica baueri</i>)	Vulnerable*	Vulnerable	Feeds on large intertidal sandflats, mudflats and seagrass beds at low tide and roosts at high tide on sand bars, sandy beaches and saltmarsh.	The species is occasionally recorded at Galaru (East Woody Beach) in Nhulunbuy, with a single individual present in 2016 (based on eBird records).	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Black-tailed Godwit (<i>Limosa limosa</i>)	Endangered*	Near threatened	Feeds on intertidal mudflats in sheltered estuaries, open saltmarshes and freshwater floodplains. Favoured habitats are open and unvegetated, but they sometimes forage along the edges of mangroves. They roost at high tide on sand bars, clay pans and saltmarshes.	The species is occasionally recorded from the Nhulunbuy Golf Course, sewage ponds and town lagoon (eBird records as recently as 2021), but not on local beaches or estuaries.	Unlikely. Favoured foraging and roosting habitat is absent from the survey area, and intertidal areas are too densely wooded by mangroves to be utilised by the species.
Greater Sand Plover (<i>Charadrius leschenaultii</i>)	Vulnerable*	Vulnerable	Feeds on sheltered sandy, shelly or muddy beaches and estuarine lagoons. They roost at high tide on sand spits, exposed rocks near the water's edge or on nearby saltmarshes and clay pans.	This is a common summer visitor to beaches across the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Lesser Sand Plover (<i>Charadrius mongolus</i>)	Endangered	Endangered	Feeds on intertidal sandflats and mudflats in estuaries and beaches. They roost at high tide on sand spits, exposed rocks near the water's edge or on nearby saltmarshes and clay pans.	This is a common summer visitor to beaches across the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	Vulnerable*	Least concern	Feeds on muddy edges of shallow fresh or brackish wetlands, and on intertidal mudflats in sheltered estuaries. The roost in open areas at the water's edge, including among short, sparse vegetation.	This is a common summer visitor to freshwater wetlands and estuaries across the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
Great Knot (<i>Calidris tenuirostris</i>)	Critically endangered*	Critically endangered	Feeds on large, intertidal mudflats or sandflats in coastal and near-coastal locations. They roost at high tide in large groups in open areas near the water's edge.	This is an occasional visitor to the Gove Peninsula. It has been recorded (in 2016) feeding on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Red Knot (<i>Calidris canutus</i>)	Endangered*	Endangered	Feeds on intertidal mudflats, sandflats, reefs and salt marshes. They roost in open sand spits, islets, saltmarshes and clay pans.	This is a scarce summer visitor to the Gove Peninsula. The nearest record is from a clay pan 5 km north-east of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species. No roost habitat was present.
Curlew Sandpiper (<i>Calidris ferruginea</i>)	Critically endangered*	Critically endangered	Feeds on open mudflats in estuaries, sewage ponds and coastal lagoons. They generally roost at high tide on open beaches, spits and islets, or in dunes or saltmarshes. They rarely roost among mangroves.	This is a common summer visitor to muddy substrates across the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species for foraging. It is also unlikely to be used for roosting given the proximity to more favourable locations (such as the adjacent sewage ponds)
Common Greenshank (<i>Tringa nebularia</i>)	Endangered	Least concern	Feeds on the muddy edges of open swamps, rivers, lakes, flooded grasslands, saltmarsh, and sheltered estuaries.	This is a common summer visitor to the Gove Peninsula. It is known to feed on intertidal mudflats 200 m south of the survey area.	Unlikely. Intertidal areas of the survey area were too densely wooded by mangroves to be utilised by this species for foraging. It is also unlikely to be used for roosting given the proximity to more favourable locations (such as the adjacent sewage ponds)
Australian Painted Snipe (<i>Rostratula australis</i>)	Endangered	Endangered	Shallow, muddy, freshwater or brackish wetlands with abundant rank vegetation (e.g., grasses, sedges, rushes and saltmarsh) at the water's edge.	This species has never been recorded on the Gove Peninsula, despite high survey effort by ecologists and recreational birdwatchers. The nearest record (from prior to 1976, in the Historical Bird Atlas) was from 360 km south-west of the survey area.	Unlikely. The species is unlikely to occur locally, and no favourable habitats are present within the survey area.
Masked Owl (<i>Tyto novaehollandiae kimberli</i>)	Vulnerable	Vulnerable	Inhabits tall open eucalypt forest dominated by <i>E. miniata</i> and <i>E. tetradonta</i> , but also roosts in vine forest and forages in adjacent open areas. They nest in hollow trees.	Despite the presence of apparently suitable habitat, Masked Owls have never been recorded from the Gove Peninsula, recently or historically. The nearest population is on Groote Eylandt, 155 km south.	Unlikely. Tall forests and hollow trees were absent from the survey area and the species has never been recorded nearby.
Red Goshawk (<i>Erythrotriorchis radiatus</i>)	Endangered	Vulnerable	Prefers tall open eucalypt forest and riparian areas (including paperbark forest and gallery forests) and prefers habitats near permanent water. They nest in large trees near watercourses. Red Goshawks require largely intact	The nearest record (from 2020) is from the vicinity of Daliwoi Bay, 26 km south-east of the survey area. During his exploration of East Arnhem Land, Humphries (1947) recorded the species "occasionally	Unlikely. Given the lack of nearby sightings, and the highly modified landscapes surrounding the survey area, its utilisation by Red Goshawks is unlikely.

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
			landscapes and are sensitive to clearing. Breeding success declines when greater than 25% of forest is cleared within 4 km of nesting birds (Baker-Gabb 2013).	in areas bordering swamp country”, but did not provide site locations. Despite much search effort from resident and visiting birdwatchers, the species has never been recorded in the vicinity of Nhulunbuy and the RDA.	No tall trees or nests were present within the survey area.
Northern Shrike-tit (<i>Falcunculus frontalis whitei</i>)	Vulnerable	Near threatened	Populations around Katherine inhabit open <i>Eucalyptus</i> and <i>Corymbia</i> dominated woodlands. However, all records in northern Arnhem Land are in <i>Melaleuca viridiflora</i> woodlands along drainage lines and on floodplains.	The species has not been recorded on the Gove Peninsula, although suitable <i>Melaleuca</i> habitats occur there and are poorly surveyed (due to being located away from bauxite resources). The nearest record (from 2009) is from 70 km south-west of the survey area.	Unlikely. The survey area is far from known populations and is isolated from other populations by highly modified urban and mining landscapes. The habitats present are also unsuitable.
Gouldian Finch (<i>Erythrura gouldiae</i>)	Endangered	Vulnerable	Breeding occurs on wooded hills with hollow-bearing <i>Eucalyptus brevifolia</i> , <i>E. leucophloia</i> or <i>E. tintinans</i> within 2 to 4 km of small waterholes or springs that persist throughout the dry season. During the early wet season, the species moves from the hills into lowland areas to feed on seeding perennial grasses.	The species has never been recorded on the Gove Peninsula and it is rarely reported from East Arnhem Land. The nearest record (in eBird from 2009) is from 78 km south-west of the survey area. There are no other records from within 190 km.	Unlikely. The survey area is far from known populations, lacks breeding habitat and is in a highly modified landscape unlikely to be utilised by the species.
Green Turtle (<i>Chelonia mydas</i>)	Vulnerable*	Near threatened	Juveniles drift on ocean currents. Adults feed on coral and rocky reefs, and on seagrass beds. Nesting occurs on dunes above sandy beaches.	The species has been recorded nesting along many sandy beaches on the Gove Peninsula, the nearest of which is near Crocodile Creek (Lombuy), 1.7 km north-east of the survey area.	Unlikely. The survey area does not contain any sand dunes that could be used for nesting.
Loggerhead Turtle (<i>Caretta caretta</i>)	Endangered*	Vulnerable	Juveniles drift on ocean current. Nesting occurs on beaches in subtropical parts of Australia, but the species regularly disperses to the NT to feed, where they inhabit rocky or coral reefs, muddy bays, sandflats and seagrass meadows.	The nearest record is from waters off Oyster Beach (Lurrupukurru), 43 km south-west of the survey area.	Unlikely. The species does not nest locally and there is no foraging habitat within the survey area.
Flatback Turtle (<i>Notator depressus</i>)	Vulnerable*	Data deficient	Feeds in turbid, shallow inshore waters and nests on sandy beaches, especially on islands.	The nearest records are from Bremer Island (13 km north-east of the survey area), where the species is known to breed.	Unlikely. The survey area does not contain any sand dunes that could be used for nesting.
Leatherback Turtle (<i>Dermochelys coriacea</i>)	Endangered*	Critically endangered	Feeds in deeper oceans, especially where currents converge with steep bathymetric contours, and nests on sandy beaches.	The nearest record (from 2015 in the Fauna Atlas N.T.) is from the sea near Cape Wilberforce, 25 km north-west of the survey area.	Unlikely. The survey area does not contain any sand dunes that could be used for nesting.
Hawksbill Turtle (<i>Eretmochelys imbricata</i>)	Vulnerable*	Vulnerable	Juveniles drift on ocean currents. Adults settle and forage on tropical reef and rocky habitats. They nest in dunes along sandy beaches.	The species has been recorded foraging in Melville Bay, 3 km south of the survey area. It is known to breed on Bremer Island and at Cape Arnhem.	Unlikely. The survey area does not contain any sand dunes that could be used for nesting.

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
Olive Ridley Turtle (<i>Lepidochelys olivacea</i>)	Endangered*	Vulnerable	Juveniles drift on ocean currents. Adults settle and forage on soft-bottomed seas on the continental shelf off northern Australia, but rarely on shallow, inshore, seagrass habitats. They nest in dunes along sandy beaches.	The nearest record (from 2019 in the Fauna Atlas N.T.) is from Bremer Island, 12 km north-east of the survey area.	Unlikely. The survey area does not contain any sand dunes that could be used for nesting.
Northern Blue-tongued Skink (<i>Tiliqua scincoides intermedia</i>)	Critically endangered	Data deficient	Inhabits a broad range of vegetation types, including riparian forest, monsoon rainforest, pandanus-lined gorges, melaleuca forest, eucalypt woodland and savanna, sparse and dense shrubland, and spinifex and tussock grassland. They spend an average of 95% of their time in small, fragmented patches of relatively dense vegetation that provide cool, shaded, and damp conditions.	The species is regularly recorded at the Gove Mine, 13 km south-east of the survey area. It was also recorded on the eastern edge of the RDA in 2009, and at the refinery in 1987 (both in the Fauna Atlas N.T.). Both records are within 4 km of the survey area. These latter records pre-dated the arrival of the Cane Toad at Gove, and it is not known if the species still persists at the RDA.	Possible. A small amount of possible habitat is present on site but is isolated from other habitats by intertidal mangroves, cleared ponds and other barriers to dispersal. Toads were present.
Plains Death Adder (<i>Acanthophis hawkei</i>)	Vulnerable	Vulnerable	In the Top End, the species occurs on flat, treeless, cracking soil floodplains of the Adelaide, Mary and Alligator Rivers. It may occur in other, less-surveyed coastal floodplains.	The species has never been recorded in East Arnhem Land. The nearest known population is located 400 km west of the survey area.	Unlikely. Suitable habitat is absent from the survey area.
Mertens' Water Monitor (<i>Varanus mertensi</i>)	Endangered	Vulnerable	Forages within 5-10 m of freshwater such as streams, rivers, seeps, lagoons and artificial drainage channels. They shelter in cracks between rocks or burrows dug into the banks of watercourses near the water level. Areas lacking Cane Toads are critical habitats.	This species is relatively common along watercourses on the Gove Peninsula, but may be declining with increasing Cane Toad densities. The species was recorded in drainage channels within the RDA as recently as 2021.	Unlikely. There are no freshwater habitats within the survey area.
Mitchell's Water Monitor (<i>Varanus mitchelli</i>)	Critically endangered	Vulnerable	Inhabits freshwater and saline wetlands, including creeks, rivers, gorges, lagoons, swamps and mangroves. Areas where monitors survive in the presence of Cane Toads are critical habitats.	The species has only been recorded once on the Gove Peninsula, along the Latram River in 2011, which is 13 km south-east of the survey area. This record was approximately four years after the arrival of Cane Toads, but before the toads had reached large densities.	Possible. As the species has been recorded inhabiting mangroves, potential habitat is present within the survey area. It is unknown if the species persists on the Gove Peninsula.
Yellow-spotted Monitor (<i>Varanus panoptes</i>)	(not listed)	Vulnerable	Inhabits a broad range of habitats, including beaches, floodplains, grasslands and woodlands.	The species is occasionally recorded during fauna surveys at the Gove Mine (most recently in 2020). This species has never been recorded at the RDA, despite numerous fauna surveys over the past five years.	Unlikely. While potential habitat is present, this is isolated from other habitat by unfavourable intertidal and cleared areas. Given the lack of records in well-surveyed nearby areas, their existence on site is unlikely.
Erythroxylum sp. Cholmondely Creek (J.R. Clarkson 9367)	Vulnerable	Endangered	<i>Eucalyptus tetradonta</i> open forest on bauxite plateaux.	There is only one wild population of this species known in the NT, and this is located at the Gove Mine, 15 km south-east of the survey area. This population spreads	Unlikely. Given the lack of seed production within the wild population and the distance between this and the survey

Species	Status (Aus)	Status (NT)	Habitat	Nearby records	Likelihood of presence
				clonally and does not produce seed. Extensive searches for the species elsewhere on the Gove Peninsula have failed to locate other populations.	area, this species is highly unlikely to occur within the survey area.
<i>Mapania macrocephala</i>	(not listed)	Vulnerable	This robust sedge grows on the edges of coastal vine thickets with a high water table.	The only population known from mainland NT is on the opposite side of Melville Bay from the survey area, 21 km to the north-west.	Unlikely. The habitat at the survey area is unsuitable, and this highly detectable species has never been recorded locally.
<i>Pternandra coerulescens</i>	(not listed)	Vulnerable	This small tree grows in riparian vine thickets along permanent water courses.	The nearest population is along the Latram River (13 km south-east of the survey area), where it is relatively common.	Unlikely. Habitat within the survey area is unsuitable for the species, and a thorough survey failed to detect the species.
Shiny Fan Fern (<i>Sticherus flabellatus</i> var. <i>compactus</i>)	(not listed)	Vulnerable	This fern is confined to riparian vine thickets.	The only known population of this species in the NT is at the Rindarry Creek Jungle, 18 km south-west of the survey area.	Unlikely. Habitat within the survey area is unsuitable for the species, and a thorough survey failed to detect the species.

*In addition to being threatened, these species are also listed as migratory species under the EPBC Act.

Table 3-2 Migratory species potentially present on the Gove Peninsula and their likelihood of presence within the survey area

Species	Habitat	Nearby records	Likelihood of presence
Barn Swallow (<i>Hirundo rustica</i>)	A non-breeding summer visitor that forages over damp, open areas such as wetlands, pastures, crops and grassland. It roosts on dead trees in wetlands and on overhead wires.	This is a semi-regular summer visitor to wetlands at Nhulunbuy and Yirrkala. The nearest recorded sighting is from 7 km east of the survey area.	Possible. Favoured habitat (e.g., marshes, sewage ponds, towns) is absent from the survey area but is widespread elsewhere in the region. Small numbers may pass through the survey area, but this is unlikely to provide important foraging habitat for the species.
Red-rumped Swallow (<i>Cecropis daurica</i>)	A scarce non-breeding summer visitor to the NT, which forages over damp, open areas such as wetlands and well-watered grasslands.	This species has never been recorded on the Gove Peninsula. The nearest sighting was on Groote Eylandt in 1999, which is 200 km south of the survey area.	Unlikely. It is possible that occasional vagrants pass through the Gove region in some summers, but these are more likely to stop at nearby coastal lagoons than the highly disturbed landscapes surrounding the survey area.
Oriental Reed-warbler (<i>Acrocephalus orientalis</i>)	Inhabits tall, emergent aquatic vegetation (e.g., <i>Typha</i> , <i>Phragmites</i>) along waterways and water bodies.	The species has never been recorded on the Gove Peninsula. The nearest sighting was at Numbulwar in 2014, which is 240 km south of the survey area.	Unlikely. Suitable habitat is absent from the survey area and the species is expected to rarely visit the region.
Common Sandpiper (<i>Actitis hypoleucos</i>)	Usually forages along the steep, narrow banks (muddy or rocky) of creeks, estuaries, billabongs and dams. Favoured habitats can be freshwater or salt water.	This is a common summer visitor to muddy and rocky substrates along the edges of fresh and salt water across the Gove Peninsula. It is known to feed along the causeway 400 m south-west of the survey area.	Likely. Individuals are expected to occasionally forage along the banks of the creek that flows along the western boundary of the survey area, especially in the north of the survey area, where the mangrove canopy has been opened by past clearing. The sewage ponds immediately west of the survey area are likely to be particularly favoured by the species.

Species	Habitat	Nearby records	Likelihood of presence
Wood Sandpiper (<i>Tringa glareola</i>)	Inhabits open, shallow, muddy edges of freshwater wetlands, especially where there is short, damp grass or other herbage.	This is a common summer visitor to the Nhulunbuy town lagoon and sewage ponds, 7 km north-east of the survey area.	Unlikely. While the species is a likely visitor to the sewage ponds immediately west of the survey area, the habitat contained within the survey area is unsuitable.
Marsh Sandpiper (<i>Tringa stagnatilis</i>)	Inhabits a variety of open swamps, lagoons, salt pans, estuaries, and flooded grasslands, where they feed in shallow water and on soft mud.	This is a common summer visitor to freshwater wetlands around Nhulunbuy, and small numbers visit nearby estuaries, including the one 200 m downstream of the survey area.	Unlikely. While the species is a likely visitor to the sewage ponds immediately west of the survey area, the habitat contained within the survey area is unsuitable.
Pectoral Sandpiper (<i>Calidris melanotos</i>)	Inhabits fresh and saltwater wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire.	This species has never been recorded on the Gove Peninsula. The nearest record is from Inglis Island, 60 km north-west of the survey area.	Unlikely. While the species is a possible visitor to the sewage ponds immediately west of the survey area, the habitat contained within the survey area is unsuitable.
Oriental Plover (<i>Charadrius veredus</i>)	Shortly after arriving in Australia in spring, the species inhabits mudflats, sandy beaches and near-coastal grasslands, before dispersing inland to barren plains and short, open grassland.	This species was recorded at Cape Arnhem, 30 km south-east of the survey area, in 1995 (Fauna Atlas N.T. record).	Unlikely. Suitable treeless habitats are absent from the survey area.
Oriental Pratincole (<i>Glareola maldivarum</i>)	Inhabits open plains, floodplains and short grassland with extensive bare areas.	This is a semi-regular transient visitor to claypans of the Gove Peninsula in the early wet season. The nearest records (from 2017 in eBird) are from a salt pan located 5 km north-east of the survey area.	Unlikely. Suitable treeless habitats are absent from the survey area.
White-tailed Tropicbird (<i>Phaethon lepturus</i>)	The species breeds on tropical islands and atolls, and forages and disperses widely across oceans off northern Australia. They do not normally land on the Australian mainland, except during cyclones.	This species is rarely recorded in the shallow waters of the Arafura Sea or Gulf of Carpentaria. There is a single historical record (a specimen collected in 1921 from somewhere between Groote Eylandt and Cape York) from the broader region, but the species has never been observed on or near the Gove Peninsula.	Unlikely. The survey area is outside the usual distribution of the species, and breeding and foraging habitat is absent.
Oriental Cuckoo (<i>Cuculus optatus</i>)	Ecotones and edges between patches of monsoon vine forest, eucalypt forest, acacia woodland and riparian areas.	This is a regular summer visitor in small numbers to the Gove Peninsula. The nearest record is from Galuru (East Woody Beach) in 2016 (eBird record), 5.5 km north-east of the survey area.	Possible. Habitat within the survey area is suitable for the species but is small and isolated. It may be used as a brief stopover by transient individuals.
Common Noddy (<i>Anous stolidus</i>)	Breeds on small islets or cays of coral or sand, and forages for fish over open seas.	Colonies inhabit small, rocky islets to the north-east of Bremer Island, and foraging individuals have been recorded at Bremer Island but not closer to the mainland of the Gove Peninsula.	Unlikely. The survey area does not contain nesting or foraging habitat for the species.

Species	Habitat	Nearby records	Likelihood of presence
Little Tern (<i>Sternula albifrons</i>)	Inhabits sheltered coastal environments, including estuaries, river mouths, bays and some ocean beaches. They forage over shallow water and nest on sand spits and sandy beaches just above the high tide mark.	This is a common resident of coastlines across the Gove Peninsula. It has been recorded (as recently as 2018) foraging in the estuary 200 m south of the survey area.	Unlikely. The survey area does not contain any nesting or foraging habitat for the species.
Gull-billed Tern (<i>Gelochelidon nilotica</i>)	Australian Terns (<i>G. macrotarsa</i>) were formerly included under the Gull-billed Tern in the listing for the latter species. Australia Terns breed on shallow freshwater wetlands and forage over coastal bays, estuaries, beaches, freshwater marshes, lagoons and sometimes dry plains.	This is a regular visitor to the Gove Peninsula. The species has been recorded foraging in the estuary 200 m south of the survey area.	Unlikely. The survey area does not contain any nesting or foraging habitat for the species.
Roseate Tern (<i>Sterna dougallii</i>)	Nests on islands and forages over open water on nearby reefs and seas.	This is a year-round resident of the Gove Peninsula. It is regularly recorded roosting at the Gove Port, 3.5 km west of the survey area. It breeds on rocky islets off Bremer Island.	Unlikely. The survey area does not contain any nesting or foraging habitat for the species.
Osprey (<i>Pandion haliaetus</i>)	Forages for fish in extensive areas of open fresh, brackish or saline water (e.g., lakes, large rivers, coasts and estuaries). They build nests on dead trees, cliffs, rock stacks, artificial structures and deserted beaches.	This is a common, year-round resident of the Gove Peninsula. The species has been recorded foraging in the estuary 200 m south of the survey area. The nearest known nest site is on refinery infrastructure 2.5 km west of the survey area.	Possible. The species is likely to fly over and occasionally perch in trees located within the survey area. No nests or potential nest sites were present, and no foraging habitat is present.
Fork-tailed Swift (<i>Apus pacificus</i>)	Forages on flying insects in airspace over a wide variety of natural and modified habitats. The species moves fast and widely, following low pressure systems, and rarely remains in one place for more than one day at a time.	This is an occasional visitor (all records are from October-December) to the Gove Peninsula. The nearest record (from 2021 in eBird) is from the refinery, 2.4 km west of the survey area.	Likely. The species is likely to occasionally forage in airspace over the survey area. Usage of the site is likely to be brief (for less than one day) and irregular (once a year or less), given the irregularity of sightings in the region.
Great Frigatebird (<i>Fregata minor</i>)	Nests and roosts on small, remote islands and forages over seas, usually within 80 km of a colony or roost. When not breeding, they may roam widely over tropical oceans, almost always foraging out of sight of land.	The species has only been recorded once from the Gove Peninsula, flying high over Nhulunbuy in October 2014.	Unlikely. The survey area is outside the usual distribution of the species and does not contain habitat for foraging, roosting or nesting.
Lesser Frigatebird (<i>Fregata ariel</i>)	Nests and roosts on small, remote islands and forages over nearby seas. When not breeding, they may roam widely over tropical oceans.	This species is regularly recorded flying over the Gove Peninsula during windy conditions at any time of year. The nearest record is from the refinery 2.5 km west of the survey area.	Likely. Individuals are expected to occasionally fly over the survey area, but are not expected to use this for foraging, nesting or roosting.

Species	Habitat	Nearby records	Likelihood of presence
Rufous Fantail (<i>Rhipidura rufifrons</i>)	Arafura Fantails (<i>R. dryas</i>) were formerly included under the Rufous Fantail and are included in the listing for the latter species. Arafura Fantails inhabit monsoon vine forest, riparian thickets and mangroves.	Arafura Fantails are common dry season visitors to the Gove Peninsula. The nearest record is from mangroves 500 m south-west of the survey area.	Likely. Small numbers (1-5 individuals) are expected to visit mangroves and other dense vegetation within the survey area annually.
Estuarine Crocodile (<i>Crocodylus porosus</i>)	Inhabits estuaries, tidal rivers, floodplains and swamps. Nests on the banks of rivers and freshwater lagoons, preferring areas with tall vegetation close to water.	This is a common species across the Gove Peninsula. The nearest record is from within the RDA, 200 m from the survey area. Staff at the RDA reported observing the species within the survey area.	Likely. The species is known to occur in the creek that flows along the western boundary of the survey area. No nest sites were observed within the survey area, despite the survey coinciding with the breeding season.

4 Ecological Constraints on the Project

A clearing permit is required under the *Planning Act 1999* if the proposed clearing will result in more than 1 ha in aggregate of land (including areas already cleared) being cleared on a single property. The survey area lies within unzoned NT Portion 1193, which already contains cleared footprints for sewage works, the Gove Boat Club and other facilities, which exceed 1 ha in total area. All additional clearing will therefore require approval.

Sites previously cleared in accordance with a permit issued under the *Planning Act 1999* can be re-cleared without permission. However, regrowth vegetation that was cleared prior to the introduction of controls or subject to a permit is not exempt. While vegetation contained in the survey area had been previously cleared, it is likely that this past clearing took place during the construction of Pond 2, which pre-dated the *Planning Act 1999*. Any vegetation clearing within the survey area will therefore require consent from the Minister for Infrastructure, Planning and Logistics (assessed via the Department of Environment, Parks and Water Security). The mangrove community present within the survey area qualifies as a “sensitive” vegetation type under the Northern Territory *Land Clearing Guidelines* (DEPWS 2021). Where possible, clearing this vegetation type is to be avoided when designing the disturbance footprint for the proposed works. Given the small size of this mangrove community, its low species richness and lack of threatened species, it qualifies as being of low value. Nevertheless, the *Land Clearing Guidelines* (DEPWS 2021) specify that a buffer with a width of 50 m should be retained around low-value mangrove communities. As the entire survey area falls within this buffer zone, the clearing application must provide justification for the clearing, along with mitigation or management strategies for avoiding impacts. Such mitigation strategies could include the following:

- installing sediment barriers downslope from any earthworks, coupled with sediment and water quality monitoring within the creek to monitor efficacy of sediment control measures;
- investigating the presence of acid sulphate soils in areas where soil is to be excavated, and managing risks of acidification to prevent impacts to nearby and downstream environments;
- rehabilitating all areas where mangroves are to be removed to facilitate recolonisation by mangrove communities post-disturbance, to ensure that any impacts have limited duration.

Prior to lodgement of a clearing application, the significance of the impacts on the environment should be self-assessed under the *Environment Protection Act 2019*. Significant impacts on the environment must be referred to the NT Environment Protection Authority. No threatened species or ecological communities protected under the EPBC Act or TPWC Act, or migratory species protected under the EPBC Act, are likely to be significantly affected by works in the survey area, provided there are negligible indirect impacts on downstream estuaries.

During any closure works, Rio Tinto will be obliged to prevent the spread of *Mesosphaeum suaveolens* and *Azadirachta indica* (Class B declared weeds), which occur at high densities within parts of the survey area. In accordance with sections 9E and 9F of the *Weeds Management Act 2001*, the following actions are an offence:

- propagating or scattering a declared weed;
- storing, growing or using a declared weed or anything that contains or carries a declared weed;
- transporting or carrying on their person a declared weed or anything that contains a declared weed.

To prevent scattering or transporting declared weeds during earthworks undertaken within the survey area, the following actions are recommended:

1. Weeds should be controlled prior to site disturbance, to limit contamination of topsoil and machinery with weed seeds;
2. Weed-infested and non-weed-infested areas should be managed/disturbed separately, and all machinery should be thoroughly cleaned after contact with weed-infested areas and before entry into non-weed-infested areas. Topsoil extracted from weed-infested and non-weed-infested areas should be handled and stored/used separately.

3. Areas where topsoil from weed-infested areas is placed should be subjected to an intensive weed control program for several years after soil placement, to eradicate germinating weeds and prevent their establishment at new sites.

5 References

- AECOM (2019a). *Terrestrial Flora and Vegetation Assessment: Pond 5 Feasibility Study*. Report to Alcan Gove Pty Ltd by AECOM Australia Pty Ltd, Perth.
- AECOM (2019b). *Gove Pond 5 Closure Feasibility Study: Intertidal Habitat Assessment*. Report to Alcan Gove Pty Ltd by AECOM Australia Pty Ltd, Perth.
- Augusteyn, J., J. Hughes, G. Armstrong, K. Real and C. Pacioni (2018). Tracking and tracing central Queensland's *Macroderma* – determining the size of the Mount Etna ghost bat population and potential threats. *Australian Mammalogy* **40**, 243-253.
- Baker-Gabb, D.J. (2013). Red Goshawk *Erythrotriorchis radiatus* surveys and monitoring on the Tiwi Islands, northern Australia during 2001–11. Program and abstracts, Australasian Raptor Association conference, Adelaide, August 2013.
- Brocklehurst, P., D. Lewis, D. Napier and D. Lynch (2007). *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping*. Technical Report No. 02/2007D. Department of Natural Resources, Environment and the Arts, Palmerston.
- Bullen, R.D. (2021). A review of ghost bat ecology, threats and survey requirements. Report prepared for the Department of Agriculture, Water and Environment by Bat Call WA Pty Ltd, Hillarys, Western Australia.
- Cowie, I.D., N.J. Cuff, D.L. Lewis and P. Jobson (eds) (2017). *Checklist of the Vascular Plants of the Northern Territory*. Northern Territory Herbarium, Department of Environment and Natural Resources, Palmerston.
- Department of the Environment (2015). *Draft Referral Guideline for 14 Birds Listed as Migratory Species under the EPCB Act*. Australian Government, Canberra.
- DEPWS (2021). *Land Clearing Guidelines version 1.3*. Northern Territory Planning Scheme, Department of Environment, Parks and Water Security, Darwin.
- Humphries, C.B. (1947). Among the birds as Melville Bay. *Emu* **47**, 130-136.
- METServe (2016). Occupancy of the Gove Mine by Black-footed Tree-rats. Report to Rio Tinto Gove Operations by Mining and Energy Technical Services Pty Ltd, Brisbane.
- METServe (2019). Occupancy of the Nhulunbuy Region by Black-footed Tree-rats *Mesembriomys gouldii gouldii*. Report to Rio Tinto Gove Operations by Mining and Energy Technical Services Pty Ltd, Brisbane.
- METServe (2021). Preclearance Fauna Survey of the Residue Disposal Borrow Area. Report to Rio Tinto Closure by Mining and Energy Technical Services Pty Ltd, Brisbane.
- NTEPA (2013). *Guidelines for Assessment of Impacts on Terrestrial Biodiversity version 2.0*. Northern Territory Environmental Protection Authority, Darwin.
- RPS (2017). Flora and Fauna Survey Report Gove RDA Borrow Area. Report prepared for Alcan Gove Pty Ltd by RPS Australia East Pty Ltd, Townsville.
- Threatened Species Scientific Committee (2021). Conservation Advice *Notomys Aquilo* Northern Hopping-mouse. Canberra: Department of Agriculture, Water and the Environment.
- Woinarski, J.C.Z., B.M. Hill and S. Ward (2017). Recovery, Management and Monitoring Plan for the Brush-tailed Rabbit-rat *Conilurus penicillatus*. Department of Environment and Natural Resources, Darwin.

Appendix A

Flora recorded within survey area

Appendix A Flora recorded within survey area

Family	Species	Common Name
Acanthaceae	<i>Avicennia marina</i> var. <i>eucalyptifolia</i>	Grey Mangrove
Aizoaceae	<i>Sesuvium portulacastrum</i>	Sea Purslane
Apocynaceae	<i>Cynanchum carnosum</i>	
Apocynaceae	<i>Gymnanthera oblonga</i>	
Arecaceae	<i>Livistona humilis</i>	Sand Palm
Asparagaceae	<i>Asparagus racemosus</i>	Native Asparagus
Asteraceae	<i>Blumea saxatilis</i>	
Asteraceae	<i>Tridax procumbens</i> *	Tridax Daisy
Burseraceae	<i>Canarium australianum</i>	Mango Bark
Cannabaceae	<i>Celtis philippensis</i>	
Carophyllaceae	<i>Polycarpaea violacea</i>	
Casuarinaceae	<i>Casuarina equisetifolia</i>	Coastal She-oak
Combretaceae	<i>Lumnitzera racemosa</i> var. <i>racemosa</i>	Black Mangrove
Combretaceae	<i>Terminalia carpentariae</i>	
Commelinaceae	<i>Commelina ensifolia</i>	
Convolvulaceae	<i>Distimake dissectus</i> *	Merremia
Convolvulaceae	<i>Distimake quinatus</i>	
Convolvulaceae	<i>Ipomoea pes-caprae</i>	Goats-foot Convolvulus
Cyperaceae	<i>Fimbristylis ferruginea</i>	
Cyperaceae	<i>Fimbristylis sericea</i>	
Euphorbiaceae	<i>Euphorbia bifida</i>	
Euphorbiaceae	<i>Excoecaria ovalis</i>	Blind-your-eye
Euphorbiaceae	<i>Poranthera coerulea</i>	
Fabaceae	<i>Abrus precatorius</i> subsp. <i>precatorius</i>	Crab's Eye Vine
Fabaceae	<i>Acacia holosericea</i>	Silky Wattle
Fabaceae	<i>Acacia lamprocarpa</i>	Western Salwood
Fabaceae	<i>Acacia leptocarpa</i>	North Coast Wattle
Fabaceae	<i>Acacia torulosa</i>	
Fabaceae	<i>Cajanus marmoratus</i>	
Fabaceae	<i>Galactia tenuiflora</i>	
Fabaceae	<i>Glycine tomentella</i>	
Fabaceae	<i>Macroptilium atropurpureum</i> *	Siratro
Fabaceae	<i>Stylosanthes hamata</i> *	Caribbean Stylo
Fabaceae	<i>Stylosanthes scabra</i> *	Shrubby Stylo
Fabaceae	<i>Vigna vexillata</i>	
Flagellariaceae	<i>Flagellaria indica</i>	Whip Vine
Goodeniaceae	<i>Scaevola taccada</i>	Sea Lettuce
Lamiaceae	<i>Clerodendrum floribundum</i>	Lolly Bush
Lamiaceae	<i>Clerodendrum inerme</i>	
Lamiaceae	<i>Mesosphaerum suaveolens</i> *	Hyptis
Lamiaceae	<i>Premna serratifolia</i>	Coastal Premna
Lamiaceae	<i>Vitex acuminata</i>	
Lauraceae	<i>Cassytha filiformis</i>	Dodder Laurel
Malvaceae	<i>Thespesia populneoides</i>	Pacific Rosewood
Meliaceae	<i>Azadirachta indica</i> *	Neem Tree

Family	Species	Common Name
Menispermaceae	<i>Tinospora smilacina</i>	Snake Vine
Moraceae	<i>Ficus aculeata</i> var. <i>aculeata</i>	Sandpaper Fig
Moraceae	<i>Ficus virens</i>	White Fig
Myrtaceae	<i>Eucalyptus alba</i>	Khaki Gum
Myrtaceae	<i>Melaleuca acacioides</i>	Coastal Tea-tree
Myrtaceae	<i>Osbornia octodonta</i>	Myrtle Mangrove
Oleaceae	<i>Jasminum molle</i>	Native Jasmine
Orchidaceae	<i>Dendrobium dicuphum</i>	White Orchid
Pandanaceae	<i>Pandanus spiralis</i>	Screw Palm
Passifloraceae	<i>Passiflora edulis</i> *	Passionfruit
Passifloraceae	<i>Passiflora foetida</i> *	Stinking Passionfruit
Phyllanthaceae	<i>Breynia cernua</i>	
Phyllanthaceae	<i>Bridelia tomentosa</i>	
Phyllanthaceae	<i>Flueggea virosa</i>	
Phyllanthaceae	<i>Phyllanthus virgatus</i>	
Picrodendraceae	<i>Petalostigma banksii</i>	Smooth-leaved Quinine
Plumbaginaceae	<i>Aegialitis annulata</i>	Club Mangrove
Poaceae	<i>Alloteropsis semialata</i>	Cockatoo Grass
Poaceae	<i>Bothriochloa pertusa</i> *	Indian Couch
Poaceae	<i>Chloris barbata</i> *	Finger Grass
Poaceae	<i>Chloris gayana</i> *	Rhodes' Grass
Poaceae	<i>Chrysopogon elongatus</i>	Tall Tamil Grass
Poaceae	<i>Eriachne stipacea</i>	
Poaceae	<i>Heteropogon contortus</i>	Black Speargrass
Poaceae	<i>Megathyrsus maximus</i> *	Green Panic
Poaceae	<i>Sorghum plumosum</i>	
Poaceae	<i>Whiteochloa airoides</i>	
Rhizophoraceae	<i>Ceriops pseudodecandra</i>	Rib-fruited Spur Mangrove
Rhizophoraceae	<i>Rhizophora stylosa</i>	Red Mangrove
Santalaceae	<i>Exocarpos latifolius</i>	Native Cherry
Smilacaceae	<i>Smilax australis</i>	Barb-wire Vine
Sterculiaceae	<i>Brachychiton diversifolius</i>	Northern Kurrajong
Sterculiaceae	<i>Brachychiton paradoxus</i>	Red-flowered Kurrajong
Taccaceae	<i>Tacca leontopetaloides</i>	Tacca
Violaceae	<i>Afrohybanthus enneaspermus</i>	Spade Flower
Vitaceae	<i>Ampelocissus acetosa</i>	Wild Grape

Appendix B

Fauna recorded within the survey area

Appendix B Fauna recorded within the survey area

Common Name	Scientific Name
Birds	
Radjah Shelduck	<i>Radjah radjah</i>
Orange-footed Megapode	<i>Megapodius reinwardt</i>
Peaceful Dove	<i>Geopelia placida</i>
Bar-shouldered Dove	<i>Geopelia humeralis</i>
Rose-crowned Fruit-dove	<i>Ptilinopus regina</i>
Torresian Imperial-pigeon	<i>Ducula spilorrhoea</i>
Brush Cuckoo	<i>Cacomantis variolosus</i>
Pied Stilt	<i>Himantopus leucocephalus</i>
Masked Lapwing	<i>Vanellus miles</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Striated Heron	<i>Butorides striata</i>
Great-billed Heron	<i>Ardea sumatrana</i>
Australian White Ibis	<i>Threskiornis molucca</i>
Brown Goshawk	<i>Accipiter fasciatus</i>
Azure Kingfisher	<i>Ceyz azureus</i>
Blue-winged Kookaburra	<i>Dacelo leachii</i>
Rainbow Bee-eater	<i>Merops ornatus</i>
Dollarbird	<i>Eurystomus orientalis</i>
Red-tailed Black-cockatoo	<i>Calyptorhynchus banksii</i>
Red-backed Fairywren	<i>Malurus melanocephalus</i>
White-gaped Honeyeater	<i>Stomiopera unicolor</i>
Rufous-banded Honeyeater	<i>Conopophila albogularis</i>
Brown Honeyeater	<i>Lichmera indistincta</i>
Helmeted Friarbird	<i>Philemon buceroides</i>
Green-backed Gerygone	<i>Gerygone chloronota</i>
Large-billed Gerygone	<i>Gerygone magnirostris</i>
White-bellied Cuckooshrike	<i>Coracina papuensis</i>
Varied Triller	<i>Lalage leucomela</i>
Yellow Oriole	<i>Oriolus flavocinctus</i>
Lemon-bellied Flyrobin	<i>Microeca flavigaster</i>
Golden-headed Cisticola	<i>Cisticola exilis</i>
Mistletoebird	<i>Dicaeum hirundinaceum</i>
Double-barred Finch	<i>Stizoptera bichenovii</i>
Amphibians	
Cane Toad	<i>Rhinella marina</i> *
Laughing Tree-frog	<i>Litoria rothii</i>
Reptiles	
Rainbow Skink	<i>Carlia sexdentata</i>
Two-lined Dragon	<i>Diporiphora bilineata</i>

Appendix C

Vegetation characteristics at full characterisation sites

Appendix C Vegetation characteristics at full characterisation sites

SITE T1



Description: *Melaleuca acacioides* tall shrubland

Soil: Coastal sand just above high tide mark

Disturbance: Possibly regrowth after past clearing

Habitat Features: Hollow trees absent, coarse woody debris absent, and rocks absent.

Basal Area of Woody Vegetation: Nil.

Upper Stratum

Absent

Mid Stratum

Mean height (range): 1.5 m (1.0 m to 2.2 m)

Cover: *Melaleuca acacioides* 50%, *Exocarpos latifolius* 1%, *Acacia torulosa* 0.1%, *Gymnanthera oblonga* 0.1%; **total = 51.2%**

Ground Stratum

Mean height (range): 0.15 m (0.05 m to 0.3 m)

Cover: *Chrysopogon elongatus* 0.5%, *Polycarpaea violacea* 0.1%, *Poranthera coerulea* 0.1%; **total vegetation = 0.7%**, litter = 39.3%, bare = 60%.

SITE T2



Description: *Avicennia marina* and *Lumnitzera racemosa* low closed forest.

Soil: Muddy sand in intertidal zone. **Disturbance:** None apparent.

Habitat Features: Hollow trees absent, coarse woody debris absent, and rocks absent.

Basal Area of Woody Vegetation: 8.5 m²/ha of *Avicennia marina*, 10 m²/ha *Lumnitzera racemosa*.

Upper Stratum

Mean height (range): 3.8 m (2.5 m to 4.5 m)

Cover: *Avicennia marina* 68.8%, *Lumnitzera racemosa* 24.0%, *Excoecaria ovalis* 4.5%, *Melaleuca acacioides* 4%; **total = 89.5%**.

Mid Stratum

Mean height (range): 1.0 m (0.8 m to 1.6 m)

Cover: *Avicennia marina* 1.5%; **total = 1.5%**

Ground Stratum

Absent. Bare = 60%, litter = 40%.

SITE T3



Description: *Azadirachta indica** and *Acacia leptocarpa* low open woodland.

Soil: Coastal sand.

Disturbance: Probable regrowth after past clearing; high weed densities.

Habitat Features: Hollow trees absent, coarse woody debris absent, and rocks absent.

Basal Area of Woody Vegetation: 11 m²/ha of *Azadirachta indica**, 2 m²/ha *Acacia leptocarpa*.

Upper Stratum

Mean Height (range): 6.0 m (2.5 m to 9.0 m)

Cover: *Azadirachta indica** 8%, *Acacia leptocarpa* 1.3%, *Acacia torulosa* 4.5%; **total = 13.8%**.

Mid Stratum

Mean Height (range): 0.8 m (0.5 m to 1.5 m)

Cover: *Azadirachta indica** 4%, *Bridelia tomentosa* 1%, *Jasminum molle* 1%, *Exocarpos latifolius* 0.5%; **total = 6.5%**

Ground Stratum

Cover: *Mesosphaerum suaveolens** 10%, *Stylosanthes scabra** 2.5%, *Chloris gayana** 1%, *Distimake dissectus** 0.6%, *Ampelocissus acetosa* 0.3%, *Cassytha filiformis* 0.2%, *Commelina ensifolia* 0.1%, *Galactia tenuiflora* 0.1%, *Brachychiton paradoxus* 0.1%, *Passiflora edulis** 0.1%; **total vegetation = 15%**, bare = 15%, litter = 70%.

SITE T4



Description: *Melaleuca acacioides*, *Acacia leptocarpa*, *Clerodendrum inerme* tall open shrubland.

Soil: Coastal sand just above high tide mark.

Disturbance: Possible regrowth after past clearing.

Habitat Features: Hollow trees absent, coarse woody debris absent, and rocks absent.

Basal Area of Woody Vegetation: 1 m²/ha *Acacia leptocarpa*, 0.5 m²/ha *Melaleuca acacioides*.

Upper Stratum

Mean Height (range): 4.0 m (3.2 m to 4.8 m)

Cover: *Melaleuca acacioides* 3%, *Acacia leptocarpa* 2%; **total = 5%.**

Mid Stratum

Mean Height (range): 1.8 m (1.0 m to 2.5 m)

Cover: *Clerodendrum inerme* 20%, *Acacia leptocarpa* 0.5%, *Flagellaria indica* 0.1%; **total = 20.6%**

Ground Stratum

Cover: *Chrysopogon elongatus* 60%, *Gymnanthera oblonga* 2%, *Fimbristylis ferruginea* 2%, *Mesosphaerum suaveolens** 1%, *Bothriochloa pertusa** 1%, *Sesuvium portulacastrum* 0.5%, *Fimbristylis sericea* 0.3%, *Chloris gayana** 0.3%, *Sorghum plumosum* 0.1%, *Melaleuca acacioides* 0.1%, *Distimake quinatus* 0.1%, *Cajanus marmoratus* 0.1%; **total vegetation = 67.5%**, bare = 13.5%, litter = 19%.

SITE T5



Description: *Acacia leptocarpa*, *Azadirachta indica** low woodland.

Soil: Coastal sand just above high tide mark.

Disturbance: Possible regrowth after past clearing.

Habitat Features: Hollow trees absent, coarse woody debris absent, and rocks absent.

Basal Area of Woody Vegetation: 1.5 m²/ha *Acacia leptocarpa*, 1 m²/ha *Ficus virens*, 1 m²/ha *Brachychiton paradoxus*, 1.5 m²/ha *Azadirachta indica**.

Upper Stratum

Mean Height (range): 5.0 m (2.0 m to 7.0 m)

Cover: *Acacia leptocarpa* 11.5%, *Azadirachta indica** 7.5%, *Brachychiton paradoxus* 5%, *Ficus virens* 3%, *Flagellaria indica* 2%, *Acacia lamprocarpa* 1%, *Brachychiton diversifolius* 0.3%, *Premna serratifolia* 0.3%; **total = 30.3%**.

Mid Stratum

Mean Height (range): 1.7 m (0.6 m to 2.0 m)

Cover: *Jasminum molle* 1%, *Exocarpos latifolius* 1%, *Livistona humilis* 0.3%, *Melaleuca acacioides* 0.2%, *Flueggea virosa* 0.2%, *Terminalia carpentariae* 0.1%; **total = 2.8%**

Ground Stratum

Cover: *Chloris gayana** 13%, *Mesosphaerum suaveolens** 5%, *Gymnanthera oblonga* 1%, *Chrysopogon elongatus* 0.8%, *Sorghum plumosum* 0.6%, *Stylosanthes hamata** 0.4%, *Chloris barbata** 0.3%, *Asparagus racemosus* 0.2%, *Cassytha filiformis* 0.2%, *Eriachne stipacea* 0.2%, *Ampelocissus acetosa* 0.1%, *Livistona humilis* 0.1%, *Euphorbia bifida* 0.1%, *Afrohybanthus enneaspermus* 0.1%, *Stylosanthe scabra** 0.1%, *Alloteropsis semialata* 0.1%; **total vegetation = 22.3%**, bare = 19.7%, litter = 58%.



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Appendix B

Rio Tinto (2023) Cultural Heritage Survey of Pond 2 Closure Areas

Internal memo

From Shaun Adams
Department CSP Gove
To Seetha Sekar
CC Nick Preece
Reference Cultural Heritage Survey of Pond 2 Closure Areas
Date 13/12/2023

Summary

This Memo acts as a short report for a heritage survey carried out with Rirratjingu Aboriginal Corporation (RAC) board members and Elders around the Residual Disposal Area (RDA), Pond 2, Gove, NT (Figure 1). The survey was carried out to identify areas of archaeological and cultural sensitivity prior to potential clearing and earthworks during Pond 2 closure. Management options were discussed with Traditional Owners who were happy to see vegetation clearing and landform recontouring works across the majority of the area. However, one large midden area ~50 m south-east from the Pond 2 wall is considered sensitive due to the presence of a stratified shell midden with stone artefacts. Its proximity to recorded Macassan sites directly across Macassar Creek and the presence of heavily eroded iron fragments makes it possible that it also contains Macassan archaeology. Upon site inspection Rirratjingu Traditional Owners requested that the site remain undisturbed throughout closure of Pond 2.

Introduction

On Wednesday the 8th of November Rio Tinto Gove Cultural Heritage Specialist (Shaun Adams) escorted Rirratjingu Elders: Wanyubi Marika and Mandaka Marika, from Yirrkala Community to the RDA. Closure Projects consultant Simon McVeigh facilitated prestart, travel to the survey area and around the RDA.

The survey area was concentrated around the southern and western outskirts of Pond 2 on the RDA (Figure 1). The survey area was split into 2 sections:

- Pond 2 western wall and toe margins (Figure 2); and,
- Pond 2 southern wall and toe margins (Figure 3).

The western survey area consisted of heavily disturbed scoured sloping walls trending into cleared flat land made up of conglomerate material with refuse and dredge inclusions (Figure 4, Figure 5, Figure 6). The southern survey area included exposed sloping walls that trended into intertidal mud mangroves and sand spits (Figure 7). In the south-east pond walls consisted of granite rubble and a hardstand for a weather station (Figure 8).

Visibility was high throughout the western survey areas and sand spit areas to the south-east. The central survey areas exhibited thick mangrove stands leading to low visibility. These mud intertidal areas were viewed from the top of Pond 2 wall. The weather was fine, with no rain or other constraining factors.



Figure 1: Pond 2 Heritage Survey Area.

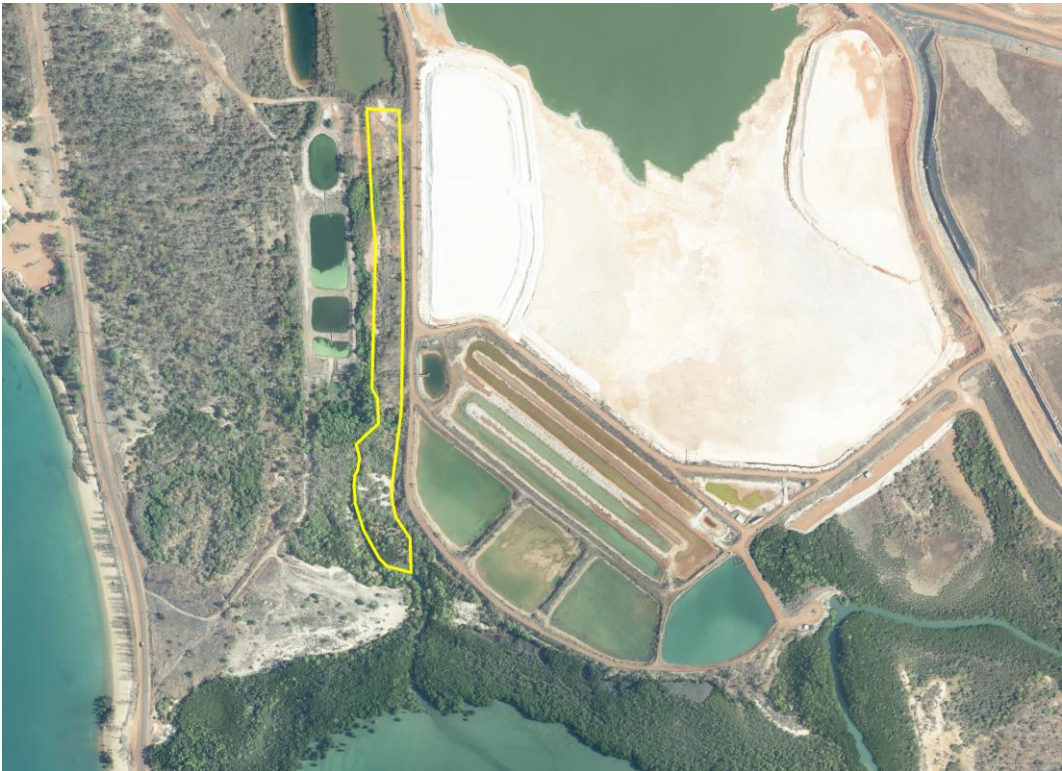


Figure 2: Pond 2 Western Survey Area.



Figure 3: Pond 2 Southern Survey Area.

Results

Survey of the western margins of Pond 2 demonstrated that the area is highly disturbed with sub-surface rubble recorded throughout the Pond 2 walls and up to 15-20 m from the base of the wall (Figure 8, Figure 9). Traditional Owners did not consider this western survey area culturally significant. They agreed that the area had been heavily disturbed after observing the eroded scours. Wanyubi Marika noted that the area was previously cleared when Pond 2 was constructed (*W. Marika worked at the RDA from the 1990s*). This is highly likely considering the amount of disturbance through the area and the low sparse scrub that now grows (Figure 4). There were no objections from Traditional Owners when they were asked whether clearing should be allowed throughout the Pond 2 Western Survey Area, to facilitate reprofiling of the Pond 2 walls and allow access for heavy machinery.

Similarly, the mangrove portions of the survey area consist of intertidal mud flats and Traditional Owners had no objections to clearing or reprofiling through this area. It was considered that these mangrove stands were also previously disturbed during construction of Pond 2. The likelihood of archaeology through this area is low.

However, one area demonstrating in-situ archaeology was a crescent-shaped sand spit on Macassar Creek in the south-east margins of the survey area (Figure 10). The centre of this site lies at E: - 12.1982175, 136.7154003. The sand spit is approximately 60 m east/west, 15 m north/south rising to ~3-5 m above the high tide mark. The spit is approximately 6-10 m below a flat pad constructed for a weather station (Figure 12). The central portion of the sand spit is relatively flat sloping on all sides. The central spit vegetation consisted of sparse coastal scrub thicket and leaf litter. Aerial photography from the 1940's demonstrates that this is a remnant of a much larger sand peninsula extending into Macassar Creek (Figure 11).

To facilitate Traditional Owner survey, a hole was cut in the fence delineating Pond 2 from the marine zone. Inspection demonstrated the presence of surface mud muscle shell that had been burnt and was inline with traditional Yolngu gathering practices associated with this species (*Polymesoda erosa*): *clustered, calcined, large in size, often snapped at hinge, close to procurement source* (Figure 14). There were numerous clusters of shell scattered across the site with some small lithics and Traditional Owners noted that the area had been used extensively. In areas where sand had eroded along the northern extent of the site low density in-situ shell was recorded in the strata to ~40 cm depth. It is possible a stratified deposit may continue deeper.

Across the southern margins of the site shell scatters were dispersed between thick flat iron fragments. Thicker than that usually found associated with 44 gallon drums etc. The iron fragments were recorded

across at least one third of the spit, possibly a large iron vessel or infrastructure. Macassan archaeology has been recorded within 250 m south-east of the site so it is possible that this is associated with Macassan heritage (Figure 17). Macassan heritage is limited in its distribution throughout northern Australia and could be significant to understanding pre-European trade and contact throughout Arnhem Land. Other potential sources of the iron may be associated with RDA or WWII refuse.

Conclusion

The majority of the areas surveyed along the western and southern margins of Pond 2 were highly disturbed, demonstrated no cultural heritage and were considered by Rirratjingu Elders to be of low cultural significance. Discussions with Traditional Owners suggested that further disturbance along these areas could proceed to close Pond 2 (*please note this would still require a CH&C Permit and ongoing discussions with Traditional Owners*).

The only area of sensitivity relates to the sand spit ~50 m south-east of the Pond 2 wall. The spit demonstrated a wide range of shell and some lithics that were observed within a stratified deposit. Considering the proximity to recorded Macassan sites (stone trepang boiler footings) directly across Macassar Creek and the presence of thick eroded/oxidised iron fragments, there is potential that the sand spit holds sub-surface Macassan archaeology. Considering the abundant archaeology and aerial photography demonstrating the legacy of this landform, it is also possible that the area holds a deep deposit of pre-European Indigenous occupation.

In Conclusion, the above mentioned sand spit is a culturally and scientifically sensitive area that Traditional Owners have requested remains undisturbed. If engineering plans for Pond 2 closure are unable to facilitate an exclusion zone then negotiations will need to take place with Traditional Owners and the Northern Territory Government to understand how the site should be managed with the closure of Pond 2.



Figure 4: Scoured areas west of Pond 2.



Figure 5: Heavily disturbed areas of exposed rubble west of Pond 2 wall.



Figure 6: Heavily disturbed areas of exposed rubble west of Pond 2 wall.



Figure 7: Intertidal mud south of Pond 2.



Figure 8: Exotic rubble on slopes of Pond 2.



Figure 9: Potential dredged material incorporated into the Pond 2 walls and toe.

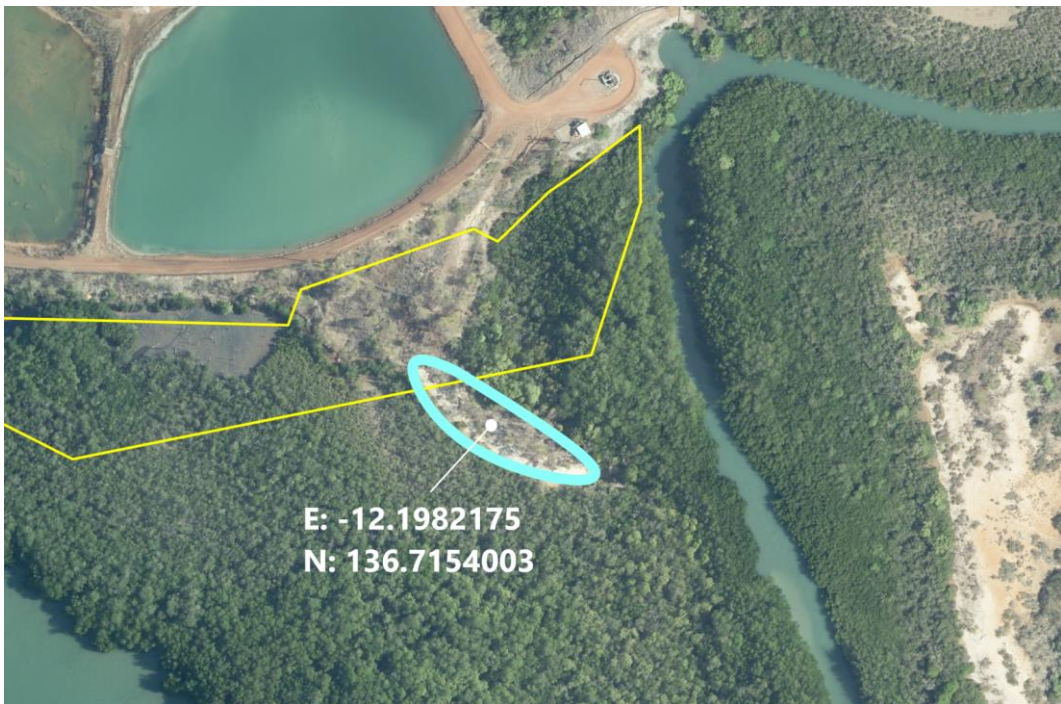


Figure 10: Stratified midden and artefact scatter.



Figure 11: WWII aerial photograph of the site demonstrating that the sand spit is remnant of a larger peninsula extending into Macassar Creek.



Figure 12: View north-west from sand spit to elevated pad for weather station.



Figure 13: View north-west across site. Note coastal scrub thicket throughout the centre of the site and large oyster shell.



Figure 14: Concentrated scattered shell across the surface of the site.



Figure 15: Mud muscle shell scatter across site surface.



Figure 16: Rirratjingu Traditional Owner noting iron fragments along the southern sand spit bank.

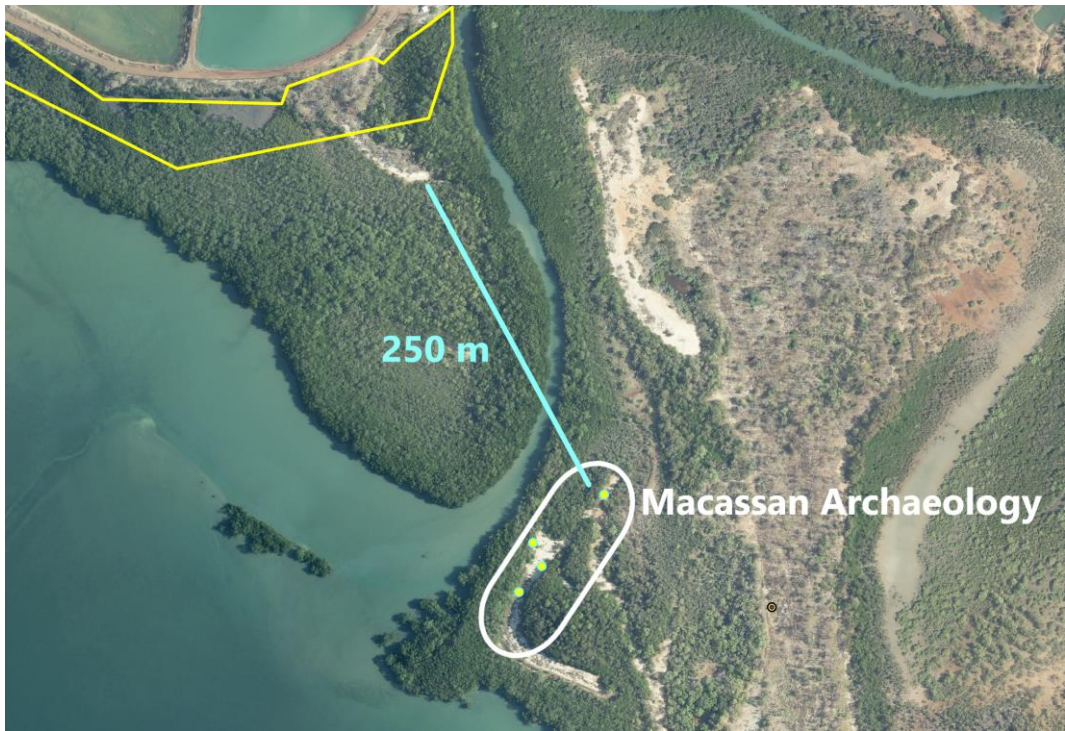


Figure 17: Recorded Macassan archaeology.

Appendix C

Alan Irving and Associates (2024) Assessment of Impact of Pond 2 Closure Works on Matters of

National Environmental Significance

Assessment of Impact of Pond 2 Closure Works on Matters of National Environmental Significance

8 February 2024

Prepared by:	Alan Irving, BForSc, MAgrSc, FAusIMM CP(Env) Principal Environmental Consultant Alan Irving & Associates	Date: 8 February 2024
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1. Introduction

A feasibility study for the closure of Pond 2 at Gove's Residue Disposal Area has commenced. Part of the proposed works includes potential disturbance of approximately 1.7ha to the west of Pond 2's current western embankment (the subject area).

Alan Irving & Associates has been engaged by RTA Gove to make an assessment of the likelihood that the following works may have a significant impact on a Matter of National Environmental Significance (MNES) under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act):

- clearing of approximately 1.7ha of vegetation between Pond 2's western embankment and Duck Pond Creek;
- flattening of the Western embankment to a suitable gradient for closure;
- construction of access tracks and laydown areas within this area to enable rehabilitation works on the labyrinth, adjacent to Pond 2;
- installation of a channel across the area to direct storm water from the surface of the rehabilitated labyrinth to Duck Pond Creek; and
- rehabilitation of the 1.7ha subject area at the end of the works.

The assessment considers potential direct and indirect impacts but does not cover any other works related to Pond 2 closure apart from the works noted above.

A cultural heritage survey of the subject area was carried out in November 2023 (Rio Tinto Gove 2023). A flora and fauna survey of the subject area was undertaken in January 2024 and the findings reported in *Habitat Quality Assessment of RDA Pond 2* (METServ 2024).

Duck Pond Creek flows into the northern part of Drimmie Arm, part of Melville Bay. In addition to subject area ecological surveys (METServ 2024), field surveys of the intertidal zone of Drimmie Arm and representative terrestrial habitats on the landward side were previously undertaken as part of studies for the closure of Pond 5, located 1km to the south-east of Pond 2.

The assessment for Pond 2 is based on information in the following environmental reports provided by RTA Gove:

- *Habitat Quality Assessment of RDA Pond 2* (METServ 2024);
- *Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment* (AECOM 2019a);
- *Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment* (AECOM 2019b);
- *Flora and Fauna Survey Report Pond 5 Pre-Feasibility Study* (RPS 2017); and
- *Rio Tinto Gove, the Pond 5 spillway runoff modelling during an entire typical wet season* (AIMS 2019).

2. Matters of National Environmental Significance

The EPBC Act defines the following MNES:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar convention)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

A Protected Matters Search was undertaken using the Commonwealth Department of Climate Change, Energy, the Environment and Water’s Protected Matters Search Tool (DCCEEW 2023). The search area covered the proposed 1.7ha disturbance area plus an additional 1km buffer.

The only MNES identified in the Protected Matters Search were threatened species and migratory species. The search findings are summarised in **Table 1** and presented in **Appendix A**. The species identified in such searches are those that are either (a) known to occur, (b) may occur, or (c) their habitat may occur in the search area.

Table 1. Protected Matters Search Results

Threated species* (known to occur or may occur)	Number
Birds	11
Mammals	11
Reptiles (include marine turtles)	7
Sharks	8
Flora	1
Total	38
Migratory species* (known to occur or may occur)	Number
Marine birds	8
Marine species	21
Terrestrial birds	4
Wetland birds	14
Total	47

*Some species are listed as both threatened and migratory

3. Subject Area Flora and Fauna Survey

The January 2024 field survey of the subject area by METServ found that much of the survey area had been previously cleared during the construction of Pond 2. The following vegetation communities were identified:

- Regrowth *Acacia leptocarpa*, *Acacia torulosa* and *Melaleuca acacioides*. The regrowth contained a high cover of weed and lacks mature, hollow trees and coarse, fallen, woody debris.
- *Melaleuca acacioides* tall open shrubland and *Acacia* spp. low woodland.
- A simple mangrove community classified as *Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest.

No Threatened Ecological Communities listed under the EPBC Act were identified.

The field survey recorded 81 species of vascular plant and 37 species of vertebrate fauna (METServ 2024). None of the species are protected under the EPBC Act.

METServe (2024) noted that five migratory species listed in the EPBC Act are likely to visit the subject area and three others could possibly visit. The authors concluded that, due to small visitor numbers, significant impacts on migratory species are unlikely to occur due to works within the survey area.

4. Other Intertidal and Terrestrial Surveys

A four-day field survey was conducted along the intertidal zone of Drimmie Arm in March 2019 (AECOM 2019a). Fourteen sites were surveyed. The survey identified (and described) intertidal habitats, invertebrates and avifauna. A separate two-day terrestrial vegetation survey was conducted in the proposed project area in March 2019 (AECOM 2019b). Eight sites were surveyed and vegetation types were mapped.

The avifauna survey observed 29 species in total. Only one species (Large Sand Plover, *Charadrius leschenaultia*) is listed as threatened (Vulnerable). This shorebird species is also listed as migratory and was observed at two of the 14 survey sites. One migratory species (Osprey, *Pandion haliaetus*) was identified at six of the 14 sites and one other migratory shorebird species (Common Sandpiper, *Actitis hypoleucos*) was observed at three sites.

AECOM (2019a) concluded that the diversity and abundance of migratory shorebirds observed during the 2019 survey (and previous surveys by others) does not suggest that Drimmie Arm, and the broader Gove Peninsula, contains sites that are of particular ecological significance to migratory shorebirds. Salt-water crocodiles (*Crocodylus porosus*), a listed migratory reptile, are present in the area (AECOM 2019a).

No threatened flora species or threatened ecological communities were identified during the 2019 terrestrial vegetation survey. This is consistent with the findings of an earlier field survey of vegetation adjacent to the Pond 5 embankment (RPS 2017).

Comprehensive wet season and dry season fauna surveys were carried out in 2017 at a site below the Pond 5 embankment, which comprised vegetation transitioning from *Eucalyptus tetradonta* woodland to mangroves (RPS 2017). The surveys included trapping (pitfall, funnel, Elliot, cage), spotlighting, bat echolocation and walk-through transects. No threatened fauna species were identified during the wet or dry season surveys.

5. Modelling of Storm Water Discharge

A numerical Delft3D-FLOW simulation of rainfall runoff discharge from the Pond 5 spillways, and all other catchments discharging into Drimmie Arm, was performed for a representative wet season (December to April inclusive) by AIMS (2019). The modelling estimated dissolved aluminium concentrations and suspended solids concentrations throughout Drimmie Arm over the wet season.

AIMS (2019) concluded that (a) the intensity of Pond 5 discharges is restricted to the discharge region of the spillways and concentrations are close background levels, and (b) concentrations elevated above background are short-lived due to mixing, advection and flushing in Drimmie Arm.

6. Assessment of Significance of Impact

Guidelines for assessing the significance of potential impacts on MNES are set out in *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Commonwealth of Australia 2013). The guidelines for assessing impacts on threatened species and migratory species are presented in **Appendix B**.

Duck Pond Creek is fringed with mangroves in its lower reaches. The area proposed to be cleared is adjacent the narrow Duck Pond Creek intertidal zone. It is unlikely there would be a significant adverse impact on any threatened species or migratory species utilising intertidal habitats.

The terrestrial habitats that would be disturbed by the works may have some suitable foraging habitat for some threatened species. However, given the area of disturbance is very restricted (1.7ha), it is unlikely there would be a significant adverse impact on any threatened species.

The proposed works are unlikely to lead to a:

- long-term decrease in the size of an important population of a species;
- reduction in the area of occupancy of an important population;
- fragmentation of an existing important population into two or more populations;
- adverse effects on habitat critical to the survival of a species;
- disruption of the breeding cycle of an important population;
- modification, destruction, removal, isolation or decrease in the availability or quality of habitat to the extent that the species is likely to decline;
- introduce invasive species or disease that may cause the species to decline; or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

Drimmie Arm is likely to provide suitable foraging habitat for some (marine) threatened species and some (marine) migratory species. However, modelling of key water quality parameters indicates that any deterioration in the water quality of receiving waters, due to storm water discharge into Duck Pond Creek, would be short-term and restricted in extent. It is unlikely there would be a significant adverse impact on any marine threatened species or marine migratory species utilising Drimmie Arm.

7. Conclusion

An assessment of the likelihood that the described proposed works may have a significant impact on a MNES has been made based on the following information:

- *Habitat Quality Assessment of RDA Pond 2* (METServ 2024);
- *Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment* (AECOM 2019a);
- *Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment* (AECOM 2019b);
- *Flora and Fauna Survey Report Pond 5 Pre-Feasibility Study* (RPS 2017); and
- *Rio Tinto Gove, the Pond 5 spillway runoff modelling during an entire typical wet season* (AIMS 2019).
- Protected Matters Search (DCCEEW 2023); and
- *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Commonwealth of Australia 2013).

The assessment concluded that it is unlikely the proposed works would have a significant impact on a MNES.

8. References

AECOM (2019a). *Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment*. AECOM Australia Pty Ltd. Report to Alcan Gove Pty Ltd. 18 June 2019.

AECOM (2019b). *Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment*. AECOM Australia Pty Ltd. Report to Alcan Gove Pty Ltd. 1 August 2019.

AIMS (2019). *Rio Tinto Gove, the Pond 5 spillway runoff modelling during an entire typical wet season*. Australian Institute of Marine Science. Report to Rio Tinto. 5 August 2019.

Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1*

DCCEEW (2023). Protected Matters Search Tool. Department of Climate Change, Energy, the Environment and Water. <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool> Accessed 3 October 2023.

METServ (2024). *Habitat Quality Assessment of RDA Pond 2*. Version 02.

Rio Tinto Gove (2023). Cultural Heritage Survey of Pond 2 Closure Area. Internal Memo 13 December 2023.

RPS (2017). *Flora and Fauna Survey Report Pond 5 Pre-Feasibility Study*. RPS Australia Pty Ltd. Report to Alcan Gove Pty Ltd. V5, 15 September 2017.

APPENDIX A

Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 03-Oct-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	38
Listed Migratory Species:	47

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	80
Whales and Other Cetaceans:	10
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species [\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area	In feature area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area	In feature area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area	In feature area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area	In feature area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area	In feature area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In feature area

PLANT

Erythroxylum sp. Cholmondely Creek (J.R.Clarkson 9367) (Northern Territory Population) [91740]	Vulnerable	Species or species habitat may occur within area	In feature area
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REPTILE

Acanthopphis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area

SHARK

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area	In feature area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area	In feature area
Glyphis glyphis Spear-tooth Shark [82453]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Breeding known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area	In feature area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Migratory Marine Species			
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area	In feature area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area	In feature area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area	In feature area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands

[\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [71140]	NT	In feature area

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status

Scientific Name	Threatened Category	Presence Text	Buffer Status
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Bird

[Acrocephalus orientalis](#)

Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area	In feature area
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[Actitis hypoleucos](#)

Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
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[Anous stolidus](#)

Common Noddy [825]		Breeding known to occur within area	In feature area
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[Anseranas semipalmata](#)

Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
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[Apus pacificus](#)

Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
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[Bubulcus ibis as Ardea ibis](#)

Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
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[Calidris acuminata](#)

Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
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[Calidris canutus](#)

Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area
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[Calidris ferruginea](#)

Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
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Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In feature area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Fish			
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area	In feature area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area	In feature area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area	In feature area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area	In feature area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area	In feature area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area	In feature area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area	In feature area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area	In feature area
Haliichthys taeniophorus Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area	In feature area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area	In feature area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area	In feature area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area	In feature area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area	In feature area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area	In feature area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area	In feature area
Mammal			
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Reptile			
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area	In feature area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area	In feature area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area	In feature area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area	In feature area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area
Chitulia inornata as Hydrophis inornatus Plain Seasnake [87379]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area	In feature area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area	In feature area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area	In feature area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area	In feature area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area	In feature area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area	In feature area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hydrophis macdowelli as Hydrophis mcdowelli Small-headed Seasnake [75601]		Species or species habitat may occur within area	In feature area
Lapemis curtus as Lapemis hardwickii Spine-bellied Seasnake [83554]		Species or species habitat may occur within area	In feature area
Leioselasma pacifica as Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [87378]		Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area	In feature area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

Whales and Other Cetaceans [[Resource Information](#)]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Sousa sahalensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence	Buffer Status
Aug - Sep			
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur	In feature area
Dec - Jan			
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur	In feature area
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur	In feature area

May - Jul

Scientific Name	Behaviour	Presence	Buffer Status
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur	In feature area

Nov - May

Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur	In feature area
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Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Protected Area Name	Reserve Type	State	Buffer Status
Dhimurru	Indigenous Protected Area	NT	In feature area
Dhimurru	Indigenous Protected Area	NT	In feature area

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed	In feature area
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed	In feature area

Not controlled action

Gove Alumina Refinery Expansion	2003/1068	Not Controlled Action	Completed	In feature area
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Not controlled action (particular manner)

temporary boat disposal	2005/2281	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
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Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Marine Turtles			
Eretmochelys imbricata Hawksbill Turtle [1766]	Interesting	Likely to occur	In feature area
Natator depressus Flatback Turtle [59257]	Interesting	Likely to occur	In feature area

Seabirds

Scientific Name	Behaviour	Presence	Buffer Status
Anous stolidus Common Noddy [825]	Breeding	Known to occur	In feature area
Onychoprion anaethetus Bridled Tern [82845]	Breeding	Known to occur	In buffer area only
Sterna dougallii Roseate Tern [817]	Breeding (high numbers)	Known to occur	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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APPENDIX B

Extract from *Matters of National Environmental Significance - Significant Impact Guidelines 1.1*

Significant impact criteria - Critically endangered and endangered species

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population
- reduce the area of occupancy of the species
- fragment an existing population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of a population
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- introduce disease that may cause the species to decline, or
- interfere with the recovery of the species.

Significant impact criteria - Vulnerable species

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
- reduce the area of occupancy of an important population
- fragment an existing important population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of an important population
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- introduce disease that may cause the species to decline, or

- interfere substantially with the recovery of the species.

Significant impact criteria - Listed migratory species

The criteria below are relevant to migratory species that are not threatened. An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Appendix D

Alan Irving and Associates (2024) Pre-referral Screening of Pond West Closure

Pre-referral Screening of Pond 2 Closure Works

8 February 2024

Prepared by:	Alan Irving, BForSc, MAgrSc, FAusIMM CP(Env) Principal Environmental Consultant Alan Irving & Associates	Date: 8 February 2024
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1. Introduction

A feasibility study for the closure of Pond 2 at RTA Gove's Residue Disposal Area has commenced. Part of the proposed works includes potential disturbance of approximately 1.7ha to the west of Pond 2's current western embankment (the subject area) The proposed works are located outside the Residue Disposal Area Lease (refer to **Figure**).

Alan Irving & Associates has been engaged by RTA Gove to make an assessment of whether the proposed works may have a significant environmental impact when assessed in accordance with the Northern Territory Environmental Protection Authority's (NT EPA) "Pre-referral screening tool" (NT EPA 2022). Proposals that have the potential to have a significant impact on the environment require referral to the NT EPA in accordance with the *Environment Protection Act 2019* (EP Act).

The proposed works include:

- clearing of vegetation within a 1.7ha subject area footprint between Pond 2's western embankment and Duck Pond Creek;
- flattening of the Western embankment to a suitable gradient for closure;
- construction of access tracks and laydown areas within this area to enable rehabilitation works on the labyrinth, adjacent to Pond 2;
- installation of a channel across the area to direct storm water from the surface of the rehabilitated labyrinth to Duck Pond Creek; and
- rehabilitation of the subject area at the end of the works.

The assessment considers potential direct, indirect and cumulative impacts but does not cover any other works related to Pond 2 closure apart from the works noted above.

A cultural heritage survey of the subject area was carried out in November 2023 (Rio Tinto Gove 2023). A flora and fauna survey of the subject area was undertaken in January 2024 and the findings reported in *Habitat Quality Assessment of RDA Pond 2* (METServ 2024).

Duck Pond Creek flows into the northern part of Drimmie Arm, part of Melville Bay. In addition to subject area ecological surveys (METServ 2024), field surveys of the intertidal zone of Drimmie Arm and representative terrestrial habitats on the landward side were previously undertaken as part of studies for the closure of Pond 5, located 1km to the south-east of Pond 2.

The assessment for Pond 2 is based on information in the following reports provided by RTA Gove:

- *Cultural Heritage Survey of Pond 2 Closure Area* (Rio Tinto Gove 2023);
- *Habitat Quality Assessment of RDA Pond 2* (METServ 2024);
- *Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment* (AECOM 2019a);
- *Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment* (AECOM 2019b);
- *Flora and Fauna Survey Report Pond 5 Pre-Feasibility Study* (RPS 2017); and
- *Rio Tinto Gove, the Pond 5 spillway runoff modelling during an entire typical wet season* (AIMS 2019).

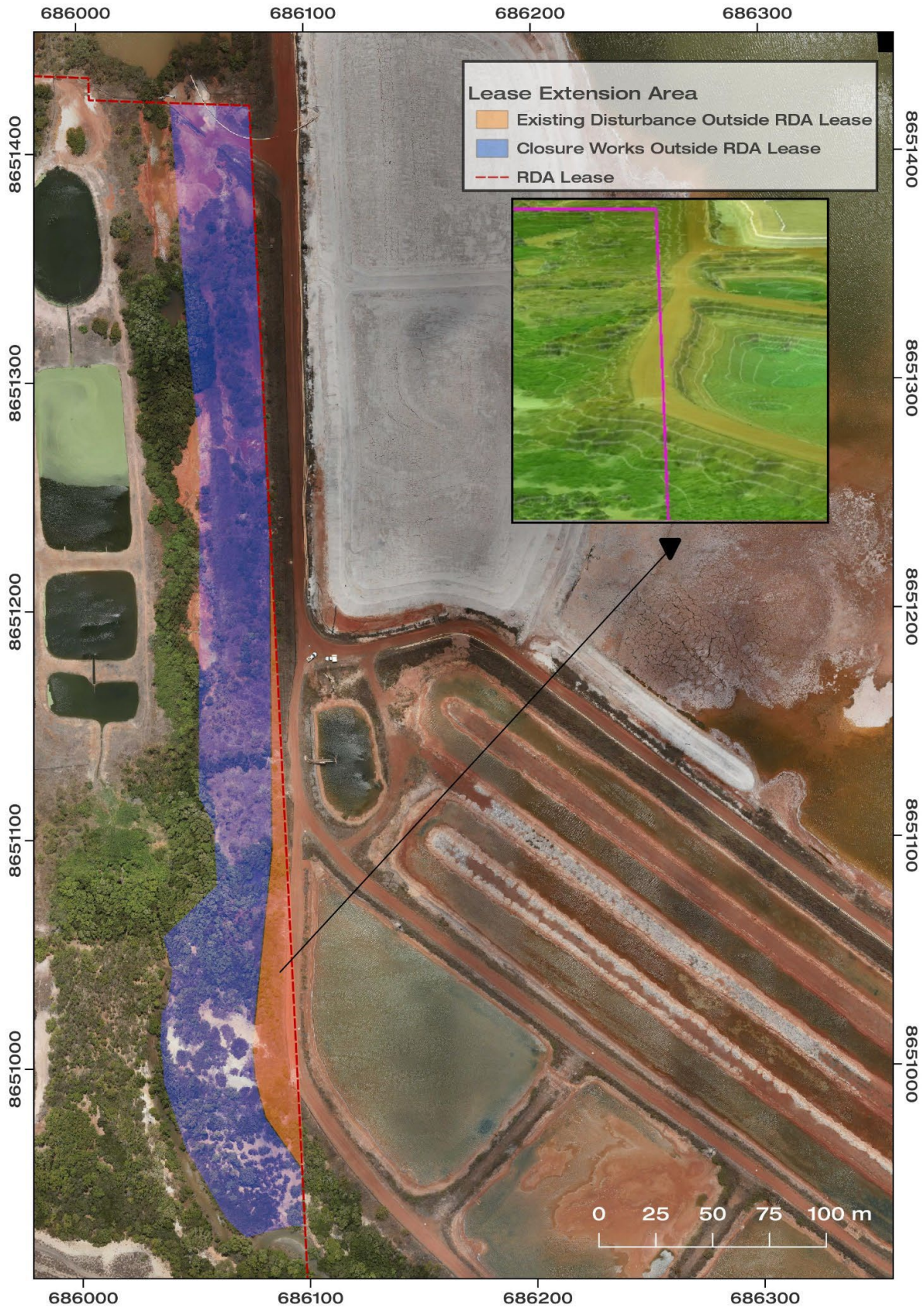


Figure: Location of proposed disturbance

2. Database Searches

A search of the Northern Territory *Natural Resource Maps* database (DEPWS 2023) was undertaken. The search area covered the proposed 1.7ha subject area plus an additional 1km buffer. There were no records of flora or fauna species listed as threatened under the *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act).

On-line maps from the National Vegetation Information System (NVIS) show the proposed subject areas as lacking remnant vegetation (DCCEEW 2023a).

A Protected Matters Search was undertaken using the Protected Matters Search Tool (DCCEEW 2023b) to identify Matters of National Environmental Significance (MNES) under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The search area covered the proposed 1.7ha subject area plus an additional 1km buffer.

The only MNES identified in the Protected Matters Search were threatened species and migratory species. The numbers of species identified in the Protected Matters Search are summarised in **Table 1** along with corresponding number listed under the TPWC Act. The species identified in such searches are those that are either (a) known to occur, (b) may occur, or (c) their habitat may occur in the search area. The Protected Matters Search report is presented in a separate report *Assessment of Impact of Pond 2 Closure Works on Matters of National Significance* (Alan Irving & Associates 2024).

Table 1. Protected Matters Search Results

EPBC Act Threatened species* (known to occur or may occur)	EPBC Act (Number)	TPWC Act Listed (Number)
Birds	11	10
Mammals	11	6
Reptiles (include marine turtles)	7	5
Sharks	8	5
Flora	1	1
Total	38	27
Migratory species* (known to occur or may occur)	EPBC Act (Number)	
Marine birds	8	
Marine species	21	
Terrestrial birds	4	
Wetland birds	14	
Total	47	

*Some species are listed as both threatened and migratory

3. Terrestrial Surveys

The January 2024 field survey of the subject area by METServ found that much of the survey area had been previously cleared during the construction of Pond 2. The following vegetation communities were identified:

- Regrowth *Acacia leptocarpa*, *Acacia torulosa* and *Melaleuca acacioides*. The regrowth contained a high cover of weed and lacks mature, hollow trees and coarse, fallen, woody debris.
- *Melaleuca acacioides* tall open shrubland and *Acacia* spp. low woodland.
- A simple mangrove community classified as *Avicennia marina* var. *eucalyptifolia* and *Lumnitzera racemosa* var. *racemosa* low closed forest.

No Threatened Ecological Communities listed under the EPBC Act were identified.

Mangroves are spatially restricted habitat types that are classified as a “significant” vegetation type and as a “wetland” under the Northern Territory *Land Clearing Guidelines* (DEPWS 2021). METServ (2024) noted that, given the small size of the mangrove community, its low species richness and lack of threatened species, it qualifies as being of “low value”. The *Land Clearing Guidelines* (DEPWS 2021) recommend that a buffer with a width of 50m should be retained around low-value mangrove communities and low-value wetlands

The field survey recorded 81 species of vascular plant and 37 species of vertebrate fauna (METServ 2024). All the species are listed as “least concern” under the *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act). None of the species are protected under the EPBC Act.

METServe (2024) noted that five migratory species listed in the EPBC Act are likely to visit the subject area and three others could possibly visit. The authors concluded that, due to small visitor numbers, significant impacts on migratory species are unlikely to occur due to works within the survey area.

The findings from the January 2024 survey are consistent with previous terrestrial surveys. A two-day terrestrial vegetation survey was conducted in the vicinity of the proposed Pond 5 project area in March 2019 (AECOM 2019b). Eight sites were surveyed and vegetation types were mapped. No threatened flora species or threatened ecological communities were identified. This is consistent with the findings of an earlier field survey of vegetation adjacent to the Pond 5 embankment (RPS 2017).

4. Other Intertidal Surveys

Comprehensive wet season and dry season fauna surveys were carried out in 2017 at a site below the Pond 5 embankment, which comprised vegetation transitioning from *Eucalyptus tetradonta* woodland to mangroves (RPS 2017). The surveys included trapping (pitfall, funnel, Elliot, cage), spotlighting, bat echolocation and walk-through transects. No threatened fauna species were identified during the wet or dry season surveys.

A four-day field survey was conducted along the intertidal zone of Drimmie Arm in March 2019 (AECOM 2019a). Fourteen sites were surveyed. The survey identified (and described) intertidal habitats, invertebrates and avifauna.

The avifauna survey observed 29 species in total. Only one species (Large Sand Plover, *Charadrius leschenaultia*) is listed as threatened (Vulnerable under TPWC Act and EPBC Act). This shorebird species is also listed as migratory (EPBC Act) and was observed at two of the 14 survey sites. One EPBC Act migratory species (Osprey, *Pandion haliaetus*) was identified at six of the 14 sites and one other migratory shorebird species (Common Sandpiper, *Actitis hypoleucos*) was observed at three sites.

AECOM (2019a) concluded that the diversity and abundance of migratory shorebirds observed during the 2019 survey (and previous surveys by others) does not suggest that Drimmie Arm, and the broader Gove Peninsula, contains sites that are of particular ecological significance to migratory shorebirds. Salt-water crocodiles (*Crocodylus porosus*), a listed EPBC Act migratory reptile, are present in the area (AECOM 2019a).

5. Modelling of Storm Water Discharge

A numerical Delft3D-FLOW simulation of rainfall runoff discharge from the Pond 5 spillways, and all other catchments discharging into Drimmie Arm, was performed for a representative wet season (December to April inclusive) by AIMS (2019). The modelling estimated dissolved aluminium concentrations and suspended solids concentrations throughout Drimmie Arm over the wet season.

AIMS (2019) concluded that (a) the intensity of Pond 5 discharges is restricted to the discharge region of the spillways and concentrations are close to background levels, and (b) concentrations elevated above background are short-lived due to mixing, advection and flushing in Drimmie Arm.

6. Cultural Heritage

A cultural heritage survey of the subject area was conducted by Traditional Owners and RTA Gove's Cultural Heritage Specialist in November 2023 (RTA Gove 2023). The subject area was heavily disturbed and the Traditional Owners did not consider the area culturally significant.

7. Approach to Assessment of Significance of Impact

Under Section 48 of the EP Act, a proponent must refer to the Northern Territory Environmental Protection Authority (NT EPA) for assessment a proposed action that has the potential to have a significant impact on the environment.

Section 11 of the EP Act defines the meaning of significant impact as:

A significant impact of an action is an impact of major consequence having regard to: (a) the context and intensity of the impact; and (b) the sensitivity, value and quality of the environment impacted on and the duration, magnitude and geographic extent of the impact.

When determining whether the proposed activity may have an impact of major consequence or not, this assessment has given consideration to the NT EPA's Pre-referral Screening Tool (NT EPA 2022) and the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Commonwealth of Australia 2013). A separate assessment by Alan Irving & Associates (2024) of potential impacts on MNES determined the proposed activity would not have a significant impact on any MNES.

8. Pre-referral Screening

The Pre-referral Screening Tool (NT EPA 2022) was used to evaluate the potential for a significant impact on each of the 14 environmental factors listed in the Screening Tool. Responses to Screening Tool questions are in the form of "Yes", "No", "Uncertain" or "Not Applicable", accompanied by a

short elaboration. The large majority of Screening Tool responses are “No” (ie the potential for significant impact is unlikely). The Screening Tool responses are presented in the **Appendix** and summarized in **Table 2**.

Table 2. Pre-referral Screening Tool Summary

Environmental Factor	Screening question answer - summary
Landforms	No - potential for significant impact unlikely
Terrestrial environmental quality	No - potential for significant impact unlikely
Terrestrial ecosystems	Yes – low-value “significant” vegetation (and 50m buffer) present in subject area (mangroves). Yes – subject area within Dhimurra Indigenous Protected Area. (Potential for significant impact on terrestrial species is unlikely.)
Hydrological processes	No – potential for significant impact unlikely
Inland water environmental quality	No – potential for significant impact unlikely
Aquatic ecosystems	No – potential for significant impact unlikely
Coastal processes	No – potential for significant impact unlikely
Marine environmental quality	No – potential for significant impact unlikely
Marine ecosystems	No – potential for significant impact unlikely
Air quality	No – potential for significant impact unlikely
Atmospheric processes	No – potential for significant impact unlikely
Community and economy	No – potential for significant impact unlikely
Culture and heritage	Yes - the subject area is located on land with Aboriginal rights and interests under the Commonwealth <i>Aboriginal Land Rights (Northern Territory) Act 1976</i> . (Potential for significant impact on cultural heritage unlikely.)
Human health	No - potential for significant impact unlikely

There are three Pre-referral Screening Tool “yes” answers which arise because the subject area (a) partially overlaps a mangrove community, (b) located within the Dhimurra Indigenous Protected Area and (c) is located on land with Aboriginal rights and interests. In accordance with the *guideline Referring a Proposal to the NT EPA* (NT EPA 2022) a referral under the EP Act would be required. However, it is recommended that the proposed activities be discussed with the NT EPA before any formal referral is made.

9. References

AECOM (2019a). *Gove Pond 5 Closure Feasibility Study Intertidal Habitat Assessment*. AECOM Australia Pty Ltd. Report to Alcan Gove Pty Ltd. 18 June 2019.

AECOM (2019b). *Gove Pond 5 Feasibility Study Terrestrial Fauna and Flora Assessment*. AECOM Australia Pty Ltd. Report to Alcan Gove Pty Ltd. 1 August 2019.

AIMS (2019). *Rio Tinto Gove, the Pond 5 spillway runoff modelling during an entire typical wet season*. Australian Institute of Marine Science. Report to Rio Tinto. 5 August 2019.

Alan Irving & Associates (2024). *Assessment of Impact of Pond 2 Closure Works on Matters of National Environmental Significance*. Report to RTA Gove. 8 February 2024.

Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1*

DCCEEW (2023a). National Vegetation Information System (NVIS). Commonwealth Department of Climate Change, Energy, the Environment and Water. <https://www.dcceew.gov.au/environment/land/native-vegetation/national-vegetation-information-system/data-products> Accessed 21 September 2023.

DCCEEW (2023b). Protected Matters Search Tool. Commonwealth Department of Climate Change, Energy, the Environment and Water. <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool> Accessed 3 October 2023.

DEPWS (2021). *Land Clearing Guidelines*. Version 1.3. Northern Territory Department of Environment, Parks and Water Security.

DEPWS (2023). *Natural Resource Maps*. Northern Territory Department of Environment, Parks and Water Security. <https://nrmaps.nt.gov.au/biodiversity.html> Accessed 21 September 2023.

METServ (2024). *Habitat Quality Assessment of RDA Pond 2*. Version 02.

Rio Tinto Gove (2023). *Cultural Heritage Survey of Pond 2 Closure Area*. Internal Memo 13 December 2023.

NT EPA (2022). *Referring a Proposal to the NT EPA*. Rev 2.0. Northern Territory Environmental Protection Authority.

RPS (2017). *Flora and Fauna Survey Report Pond 5 Pre-Feasibility Study*. RPS Australia Pty Ltd. Report to Alcan Gove Pty Ltd. V5, 15 September 2017.

Appendix: Pre-referral screening tool

Part 1 – General screening questions

Question 1 – inherent hazardous nature of proposal

Is the industry type or activity proposed inherently hazardous with the potential to give rise to multiple or major impact sources and environmental stressors with the potential to impact on the environment? If so, does the nature of the industry preclude impact sources and stressors being substantively reduced?

Question 2 – site selection

Are any environmental values present, or likely to be present within the site/area that has the potential to be impacted by the proposal (either directly, indirectly, or cumulatively)? If so, is it considered impractical to change the locations or design of the action to avoid the environmental value(s)?

Question 3 – construction and operation

Are any environmental values or sensitivities within the area of influence and the region in which the proposal is located likely to be impacted by methods of construction and operation, timing, or inputs (water, raw materials, machinery, chemicals, staff) and outputs (product, emissions, discharges, wastes) of the proposal?

Question 4 – residual or ongoing impacts

Are any environmental values or sensitivities likely to be impacted when the proposal finishes its functional life and closes? If so, does the action have the potential to cause ongoing environmental impacts, or residual impacts?

Question 5 – cumulative impacts

At any stage of the life of the proposal, on its own or cumulatively with other proposals and actions, does the proposal have the potential to impact an environmental value?

Part 2 – Answer checklist

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
			Q2	Q3	Q4	Q5	
		<p>Is the industry type or activity proposed inherently hazardous with the potential to give rise to multiple or major impact sources and environmental stressors with the potential to impact on the environment?</p> <p>If so, does the nature of the industry preclude impact sources and stressors being substantively reduced?</p>	No X Yes				
LAND	1) Landforms <u>Objective:</u> Conserve the variety and integrity of distinctive physical landforms.	<ul style="list-style-type: none"> distinctive features in the landscape, either geological or anthropogenic subterranean karstic terrain and faults craters, gorges, ranges, caves, massifs, escarpments, plateaus monuments tourism related to landforms 	Yes No Uncertain Not Applicable	X	X	X	X
	<p>If you answered No to any screening questions for Landforms, provide justification here: The proposed 1.7ha site is not a distinctive physical landform.</p>						
	2) Terrestrial environmental quality <u>Objective:</u> Protect the quality and integrity of land and soils so that environmental values are supported and maintained.	<ul style="list-style-type: none"> high quality soils, including chemical, physical, biological and aesthetic qualities that support life the biological processes that depend on soil quality 	Yes No Uncertain Not Applicable	X	X	X	X
<p>If you answered No to any screening questions for Terrestrial environmental quality, provide justification here: High quality soils are not present at the proposed site.</p>							

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
			Q2	Q3	Q4	Q5	
	3) Terrestrial ecosystems <u>Objective:</u> Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	<ul style="list-style-type: none"> • 'sensitive or significant' vegetation or buffers* (as defined in the NT Land Clearing Guidelines) • listed threatened species and their habitat (NT and Commonwealth) • listed migratory species and their habitat (Commonwealth) • listed threatened ecological communities (Commonwealth) • locally endemic or restricted species and their habitat • species that are data deficient with unknown protection status • protected area or reserve, including Indigenous Protected Area* • biosecurity; or high quality biological and functional diversity, integrity and services 	Yes	X*			
			No		X	X	X
				Uncertain			
			Not Applicable				
<p>If you answered No to any screening questions for Terrestrial ecosystems, provide justification here: *Mangroves are defined as both "significant" vegetation and "wetlands" under the <i>Land Clearing Guidelines</i> (DEPWS 2021) and are present within the subject area. Impacts outside the subject area are unlikely (No to Q3, Q3 and Q4). *The subject area is within the boundary of the Dhimurra Indigenous Protected Area (impacts outside the subject area are unlikely (No to Q3, Q3 and Q4).</p>							
WATER	1) Hydrological processes <u>Objective:</u> Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.	<ul style="list-style-type: none"> • the supply and quantity of water in surface water features including rivers, lakes, wetlands, swamps, creeks, billabongs, intermittent streams, floodplains, mangroves and drainage lines • the supply and quantity of water in groundwater features including aquifers, aquitards, water tables and the ecosystems they support (stygo fauna, vegetation and groundwater dependent ecosystems) • declared beneficial uses • present and future uses, and users of water • current or potential water supplies, including regional scale aquifers • culturally important water features or other features affected by water level 	Yes				
			No	X	X	X	X
				Uncertain			
			Not Applicable				
<p>If you answered No to any screening questions for Hydrological processes, provide justification here: The scale of the proposed activity is such that the quantity and timing of surface water runoff into Duck Pond Creek is unlikely to lead to a significant impact on environmental values.</p>							
	2) Inland water environmental quality	<ul style="list-style-type: none"> • the quality of water in surface water features including rivers, lakes, wetlands, swamps, creeks, billabongs, intermittent streams, floodplains, mangroves and drainage lines 	Yes				
			No	X	X	X	X

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
			Q2	Q3	Q4	Q5	
SEA	<p><u>Objective:</u> Protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.</p>	<ul style="list-style-type: none"> the quality of water in groundwater features including aquifers and water tables declared beneficial uses present and future uses and users of water current or potential water supplies, including regional scale aquifers potability / drinkability culturally important water features 	Uncertain				
	<p>If you answered No to any screening questions for Inland water environmental quality, provide justification here: Erosion and sediment control measures would be implemented on the subject area during construction to protect Duck Pond Creek water quality. A significant impact on Duck Pond Creek water quality is very unlikely.</p>						
	<p>3) Aquatic ecosystems</p> <p><u>Objective:</u> Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.</p>	<ul style="list-style-type: none"> threatened species the health of the biota in inland waterways the habitats that support the lifecycle of aquatic biota groundwater dependent ecosystems Ramsar wetlands high quality biological and functional diversity, integrity and services 	Yes				
			No	X	X	X	X
<p>If you answered No to any screening questions for Aquatic ecosystems, provide justification here: Erosion and sediment control measures would be implemented on the site (1.7ha) during construction to protect Duck Pond Creek aquatic ecology. A significant impact on Duck Pond Creek aquatic ecology is very unlikely</p>							
	<p>1) Coastal processes</p> <p><u>Objective:</u> Protect the geophysical and hydrological processes that shape coastal morphology so that the environmental values of the coast are maintained.</p>	<ul style="list-style-type: none"> processes that support marine ecosystems such as coral reefs and mangroves processes that support coastal morphology such as beaches, rock bars, and sandbars tidal creeks, deltas and river mouths storm surge protection unique coastal landforms 	Yes				
			No	X	X	X	X
			Uncertain				
			Not Applicable				
<p>If you answered No to any screening questions for Coastal processes, provide justification here: The proposed activity does not involve works that alter processes that affect coastal morphology or coastal mangroves.</p>							
	<p>2) Marine environmental quality</p>	<ul style="list-style-type: none"> quality of the water, sediment and biota physical parameters that support fishing and aquaculture 	Yes				

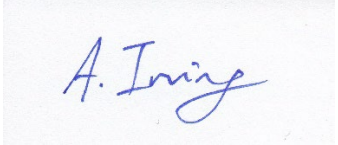
Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
			Q2	Q3	Q4	Q5	
	NT Government's goal of achieving net zero greenhouse gas emissions by 2050.	<ul style="list-style-type: none"> land use projects of 500 000 tCO_{2-e} scope 1 emissions from single or cumulative land clearing actions 	Uncertain				
If you answered No to any screening questions for Atmospheric processes, provide justification here: Emissions from the proposed activity are below the threshold.							
PEOPLE	1) Community and economy <u>Objective:</u> Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.	<ul style="list-style-type: none"> communities, towns and suburbs where people live community aspirations for liveable environment and healthy lifestyles, <ul style="list-style-type: none"> affordable access to food, water, electricity, transport and communication networks. good amenity – air quality, noise, aesthetics access to social infrastructure and services including transport and logistics access to natural resources including bush food recreational use of the natural or built environment (e.g. fishing, cycling, sports, picnics) species of social, cultural, livelihood and or economic importance (terrestrial, aquatic and marine biota) participation in jobs, businesses and education existing industries such as agriculture, pastoralism, tourism, fisheries vulnerable sectors of the community 	Yes				
			No	X	X	X	X
				Uncertain			
If you answered No to any screening questions for Community and economy, provide justification here: The nature and scale of the proposed activity is such that it would not impinge on local residents, local amenity, or the local economy.							
	2) Culture and heritage <u>Objective:</u> Protect culture and heritage.	<ul style="list-style-type: none"> Aboriginal cultural values sacred sites the Territory's natural and built heritage declared heritage places and objects protected under the Heritage Act 2011 (NT) such as: <ul style="list-style-type: none"> any Aboriginal or Macassan archaeological place or object (coastal mounds and middens, rock art, stone arrangements, quarries, artefacts, graves, burial sites and ancestral remains) 	Yes	X*			
			No		X	X	X
			Uncertain				
			Not Applicable				

Theme	Environmental factor and objective	Indicative environmental values and sensitivities relevant to each environmental factor	Proponent's answer to screening questions 1-5				
				Q2	Q3	Q4	Q5
		<ul style="list-style-type: none"> ○ underwater cultural heritage (isolated objects, shipwrecks, plane wrecks, underwater cables and evidence of Aboriginal occupation prior to sea level rise) ○ built heritage (colonial buildings and other historic buildings) ○ defence structures (defensive positions and airfields) ○ natural features (meteorite impact sites, palaeontological sites, springs, trees) ○ world heritage ● underwater cultural heritage protected under the Underwater Cultural Heritage Act 2018 (Cth) ● Aboriginal rights and interests*, including right of access 					
	<p>*The subject area is located on land with Aboriginal rights and interests under the Commonwealth <i>Aboriginal Land Rights (Northern Territory) Act 1976</i>. The subject area is not considered culturally significant by Traditional Owners.</p>						
	<p>3) Human health</p> <p><u>Objective:</u> Protect the health of the Northern Territory population.</p>	<ul style="list-style-type: none"> ● drinking water ● air quality ● bush tucker ● radiological limits ● biting insects 	<p>Yes</p> <p>No</p> <p>Uncertain</p> <p>Not Applicable</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>If you answered No to any screening questions for Human health, provide justification here: The proposed activity would not give rise to any emission or contaminants that would adversely affect human health.</p>							

Record keeping:

Details	
Proponent name	RTA Gove Pty Ltd
Propose action name	Pond 2 Closure Project
Description of proposed action	<ul style="list-style-type: none"> Clearing of approximately 1.7ha of subject area vegetation between Pond 2's western embankment and Duck Pond Creek. Flattening of the Western embankment to a suitable gradient for closure; Construction of access tracks and laydown areas within this area to enable rehabilitation works on the labyrinth, adjacent to Pond 2; Installation of a channel across the area to direct storm water from the surface of the rehabilitated labyrinth to Duck Pond Creek; and Rehabilitation of the subject area at the end of the works.

Pre-referral screening has been conducted by: name, qualifications and date of works by suitably qualified and experienced person engaged by the proponent.

Environmental factor	Name	Qualification / Experience	Signature	Date
All	Alan Irving Principal Environmental Consultant Alan Irving & Associates	B.For.Sc. M.Ag.Sc. FAusIMM CP(Env) 40 years environmental management and impact assessment work in the resources sector.		8 February 2024

Appendix E

Ngarrariyal Aboriginal Corporation (2024) Letter of Support for Proposed Works and Tenure



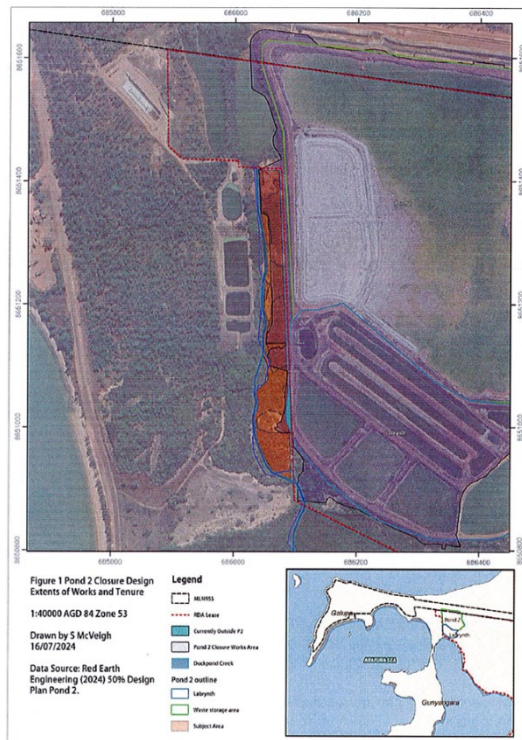
Rio Gove Operations
Nick Preece
Manager, Communities and Social Performance
Via: nick.preece@riotinto.com

Monday 16th September 2024

Dear Nick,

GUNYANARA TOWNSHIP LEASE – RDA additional land request

We are pleased to confirm your tenure request for additional land along Pond 2 to carry necessary work to effectively close the Residue Disposal Area (RDA) as shown below, as been approved by Ngarrariyal.



We understand that the work required for this project includes:

- Clearing of a work area
- Bulk earthworks, construction of access roads, erosion and sediments control
- Construction of embarkment batters
- Construction of part of a spillway designed to convey overland from the capped face of Pond 2 to the receiving environment
- Revegetation of the final Pond 2 landform
- Ongoing monitoring and maintenance including surface water quality, vegetation maintenance and erosion control

We acknowledge that a Rio Tinto has requested a 5 year term for a plot of 1.9 ha in total. Accordingly, our team has started to work on a sublease agreement to formalise your tenure and will be contacting within the next couple of weeks.

Please do not hesitate to contact us if you require additional information regarding our sublease process.

Yours sincerely

Mathilde Payet-Vidalenc
General Manager