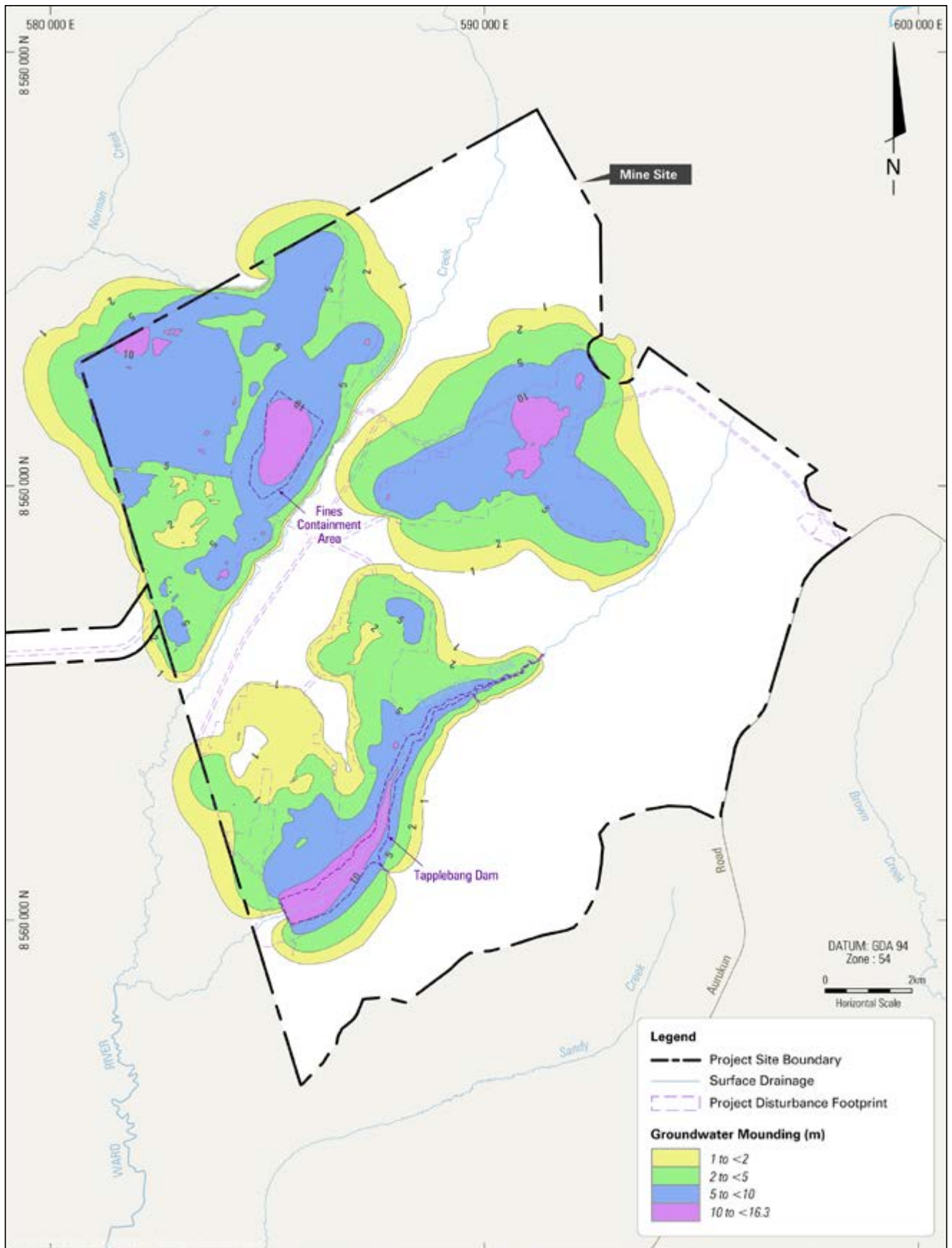


AURUKUN BAUXITE PROJECT

Maximum Predicted Extent of Drawdown During Mining Operations

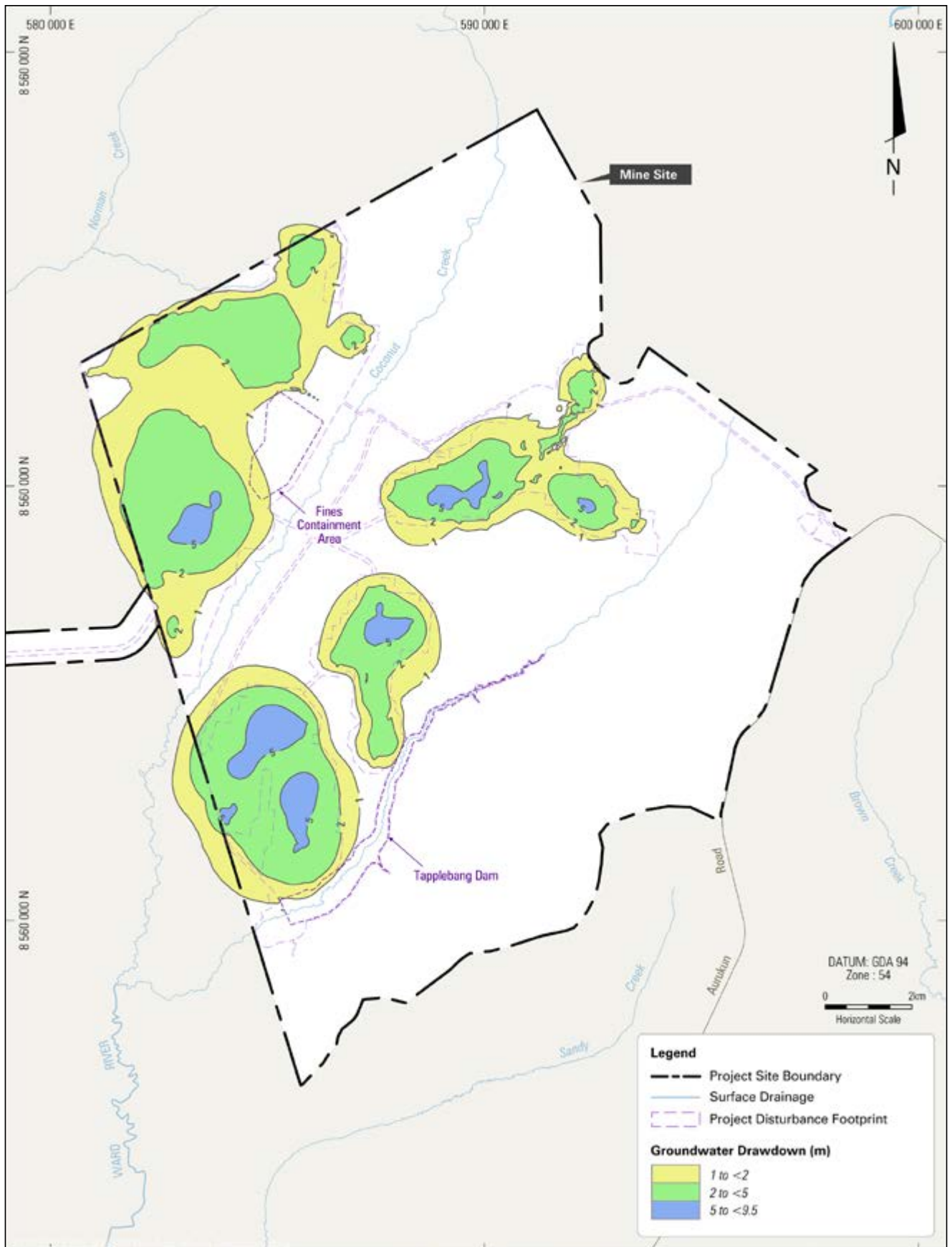
**FIGURE 11-29**



AURUKUN BAUXITE PROJECT

Maximum Predicted Extent of Mounding During Mining Operations

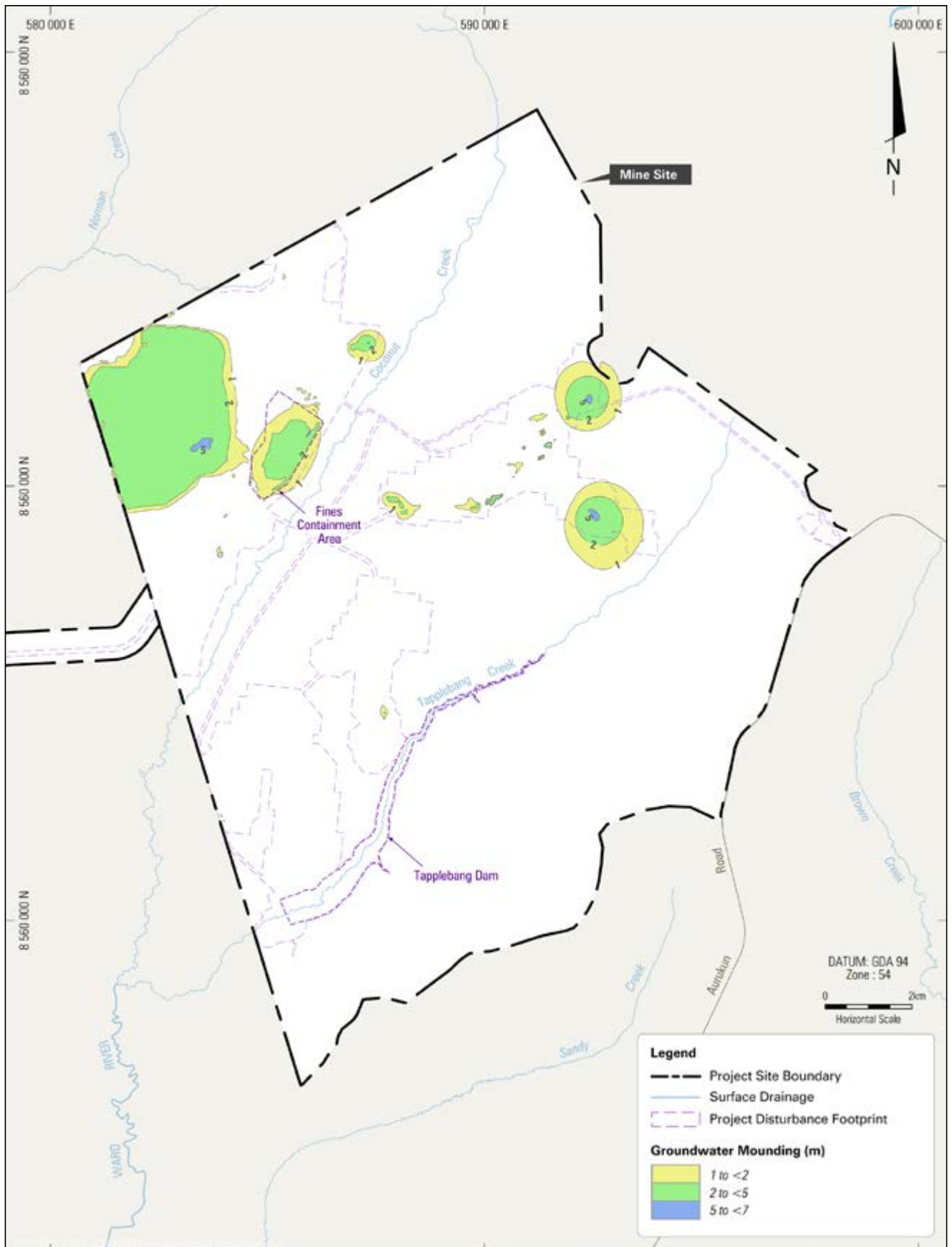
**FIGURE 11-30**



AURUKUN BAUXITE PROJECT

Predicted Extent of Post Mining Drawdown at Equilibrium

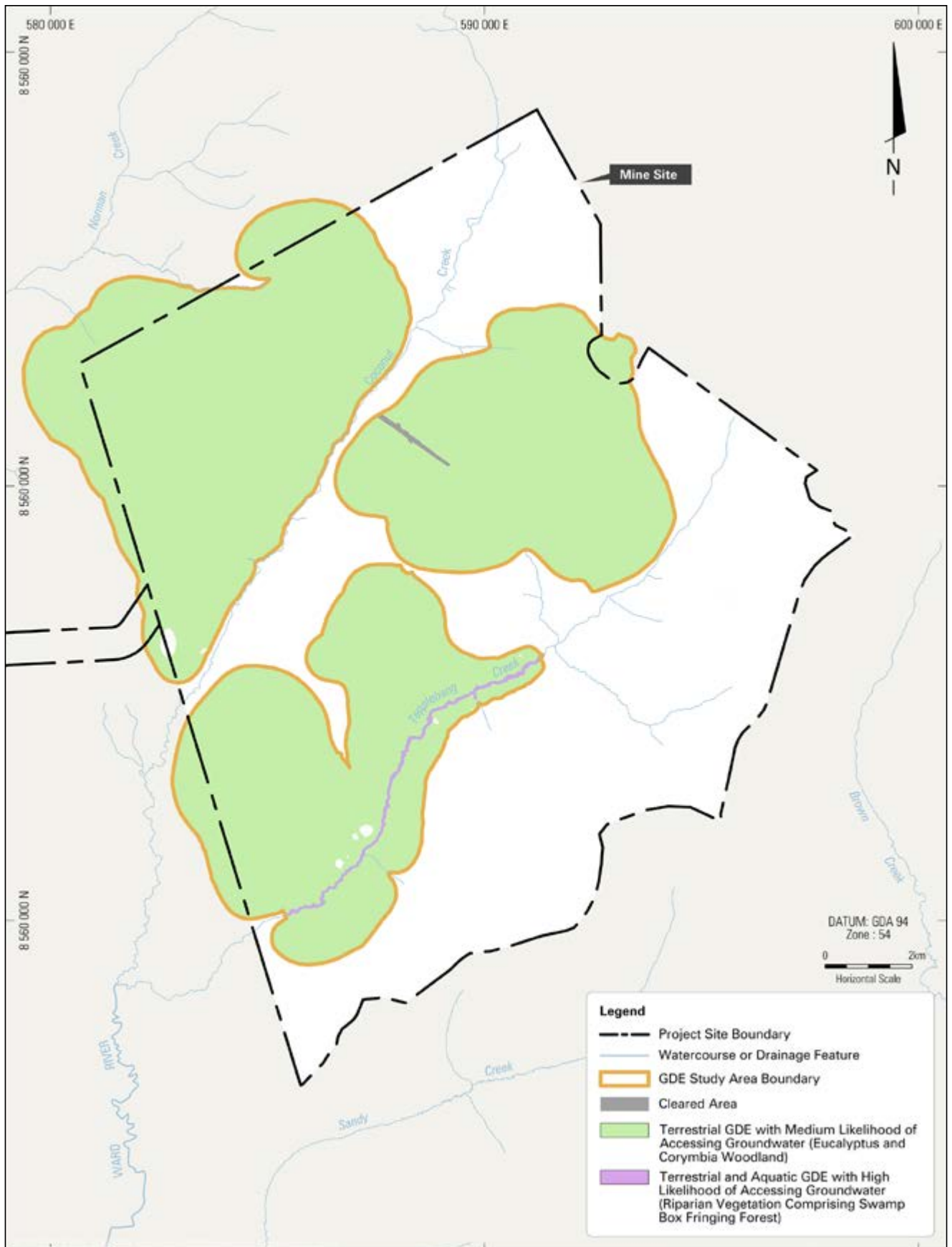
**FIGURE 11-31**



AURUKUN BAUXITE PROJECT

Predicted Extent of Post Mining Mounding at Equilibrium

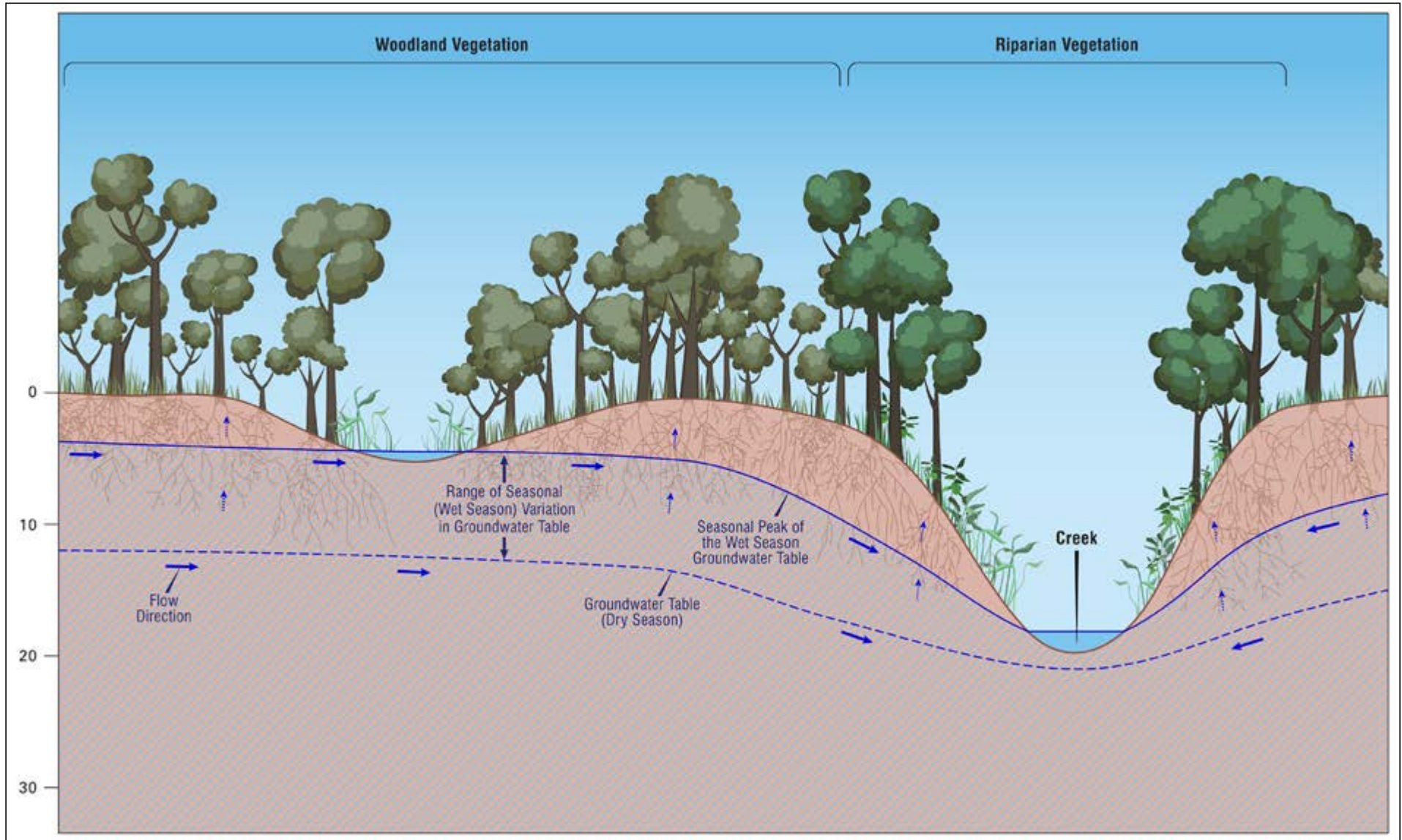
**FIGURE 11-32**



AURUKUN BAUXITE PROJECT

Potential Groundwater Dependent Ecosystems

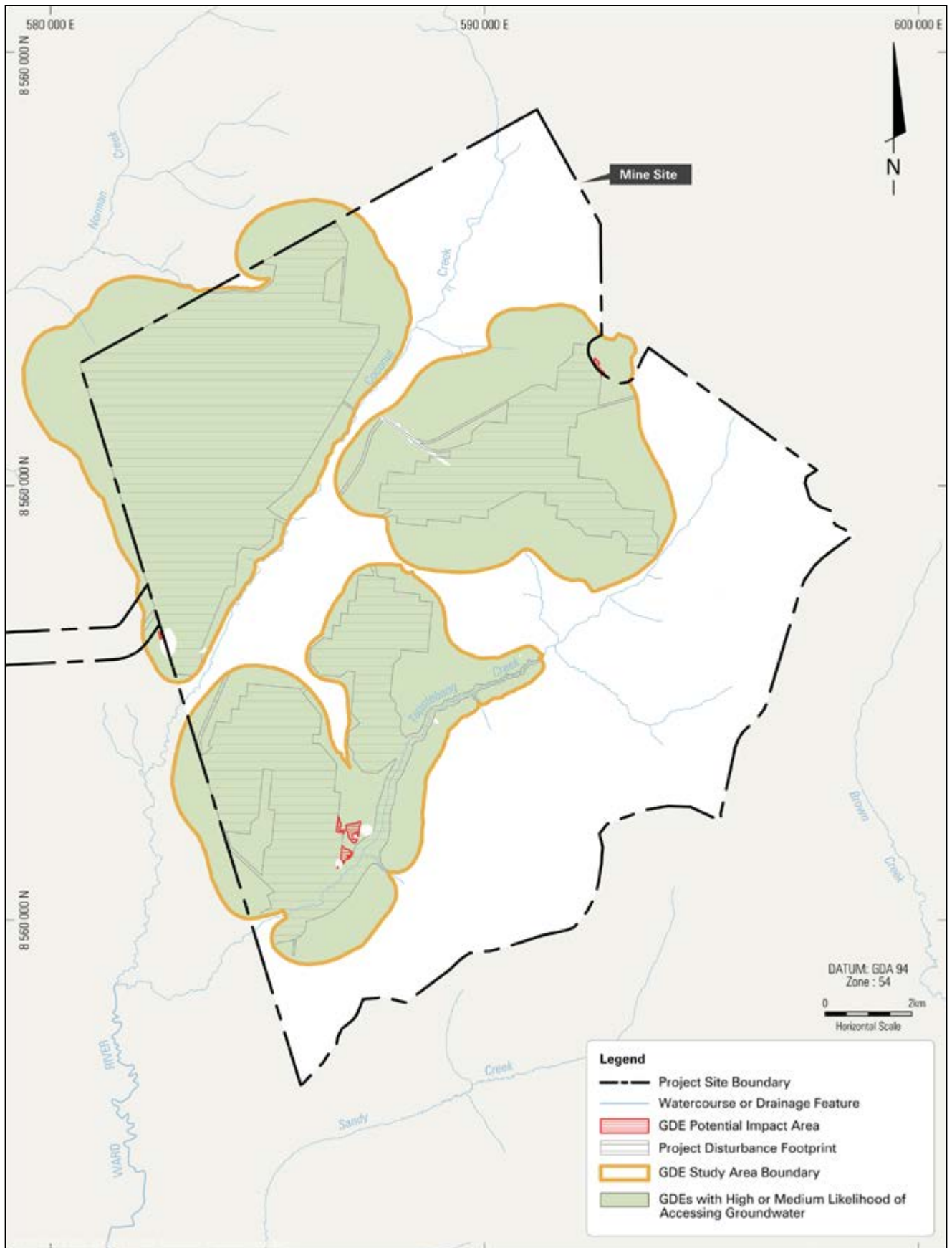
**FIGURE 11-33**



AURUKUN BAUXITE PROJECT

Conceptual Ecohydrological Regime

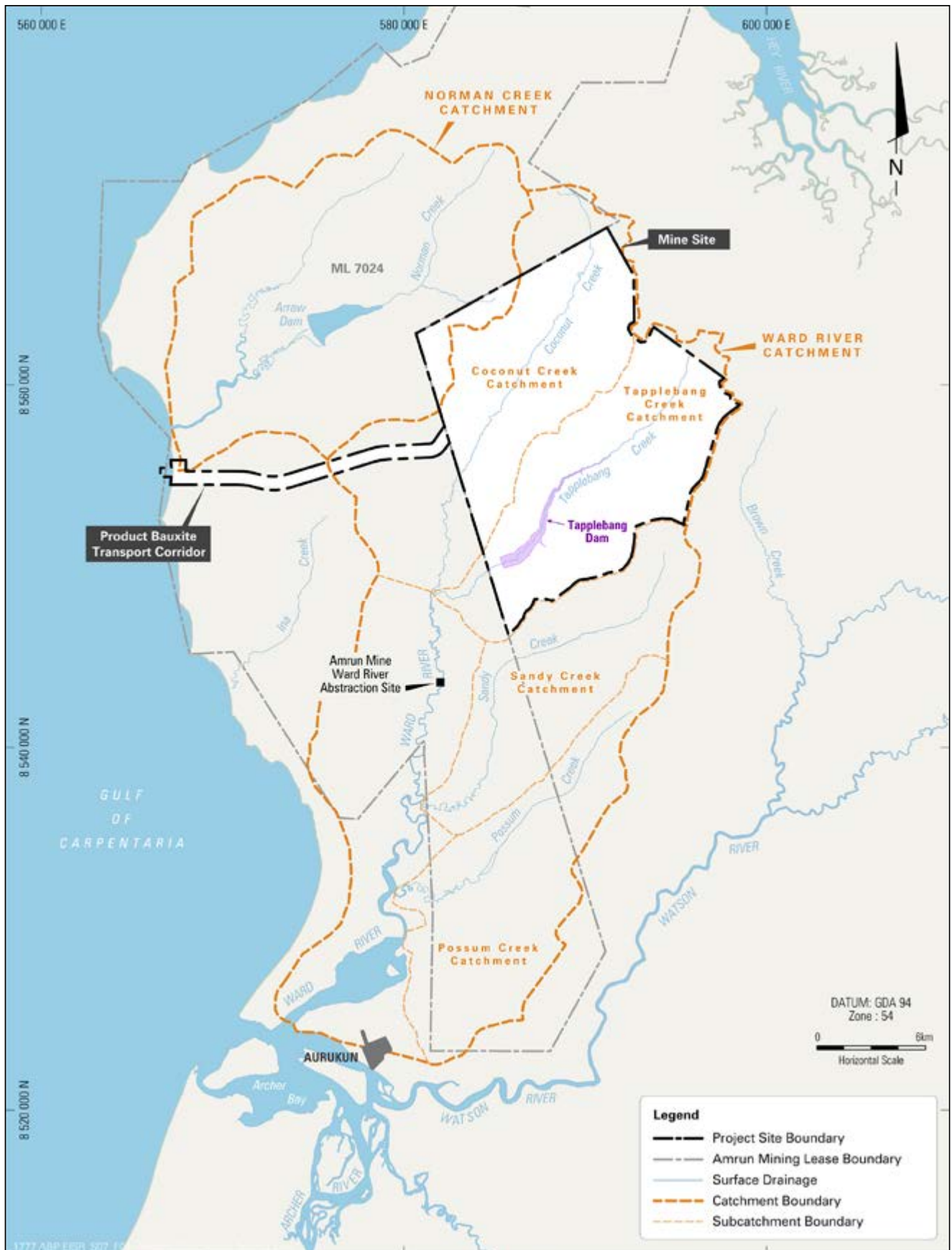
**FIGURE 11-34**



AURUKUN BAUXITE PROJECT

GDE Potential Impact Areas

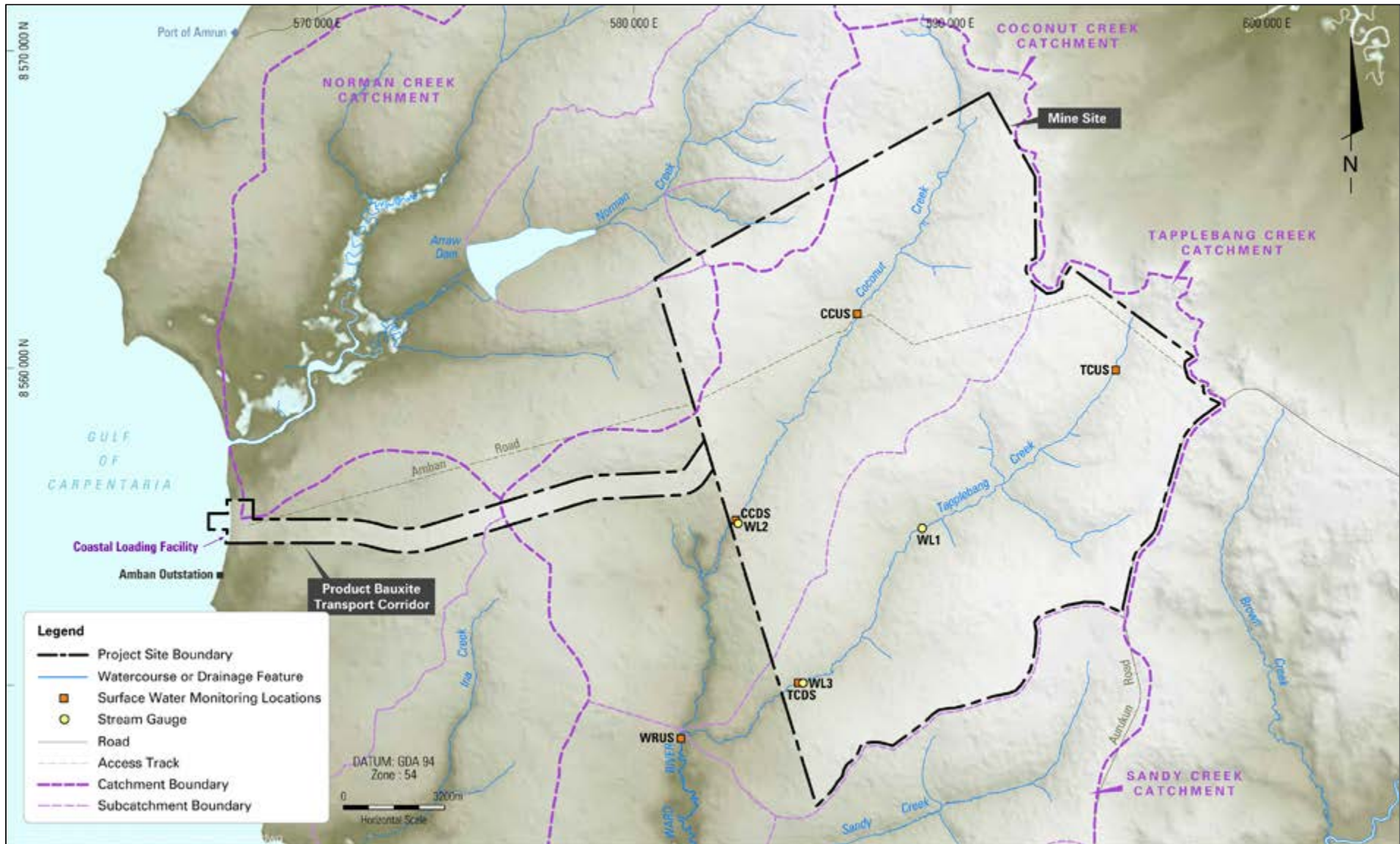
**FIGURE 11-35**



AURUKUN BAUXITE PROJECT

Regional Catchment Setting

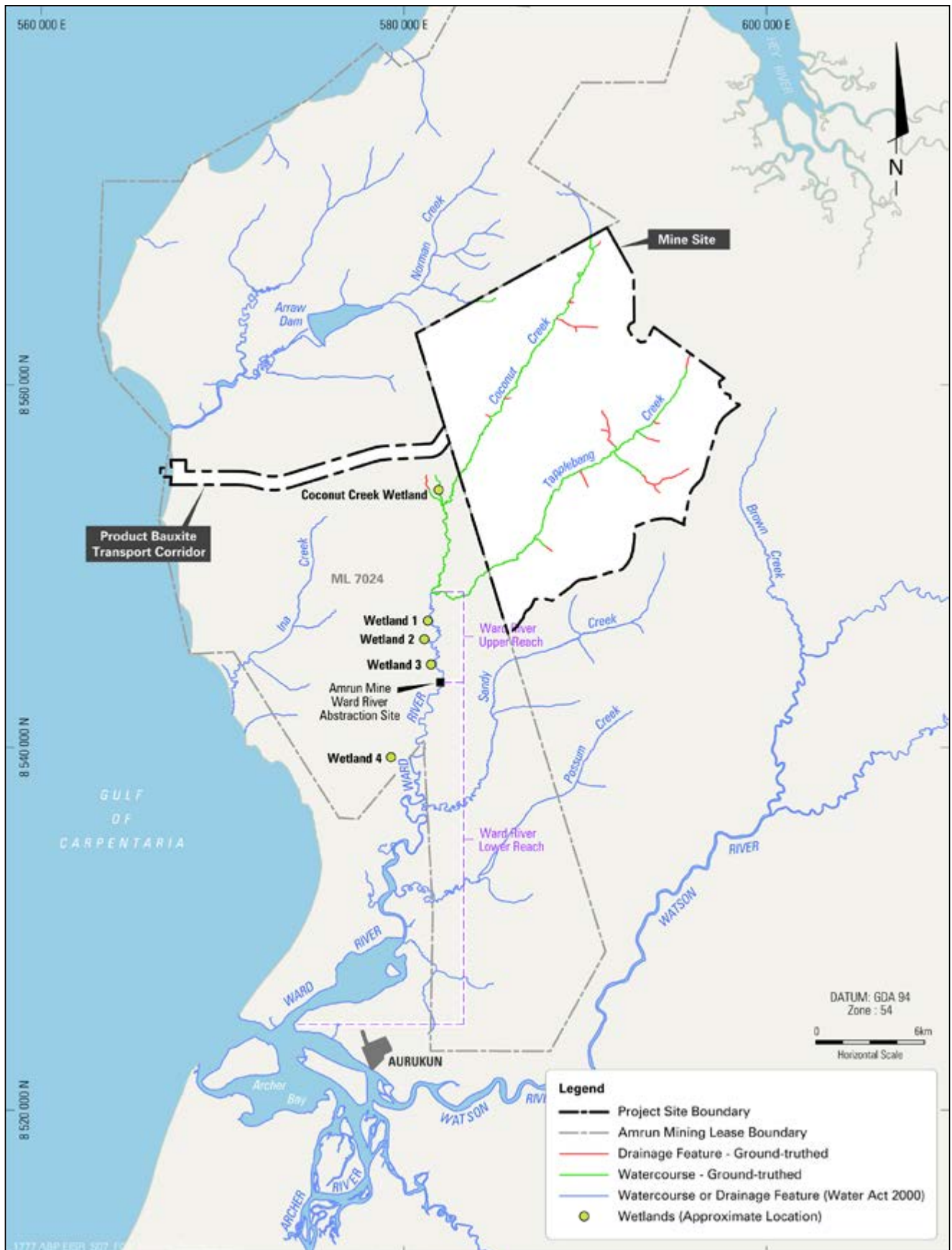
**FIGURE 11-36**



AURUKUN BAUXITE PROJECT

Local Catchment Setting

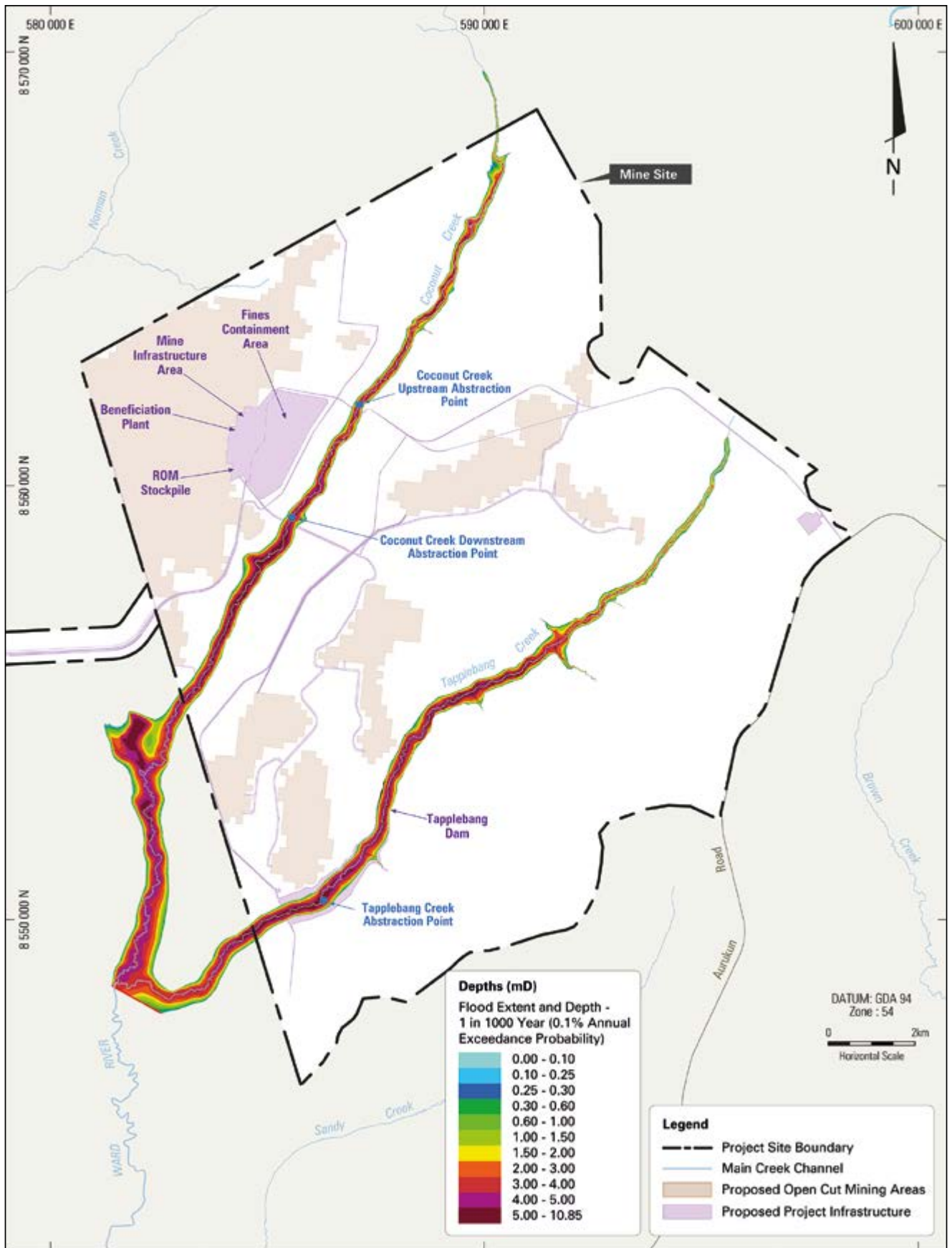
**FIGURE 11-37**



AURUKUN BAUXITE PROJECT

Existing Drainage

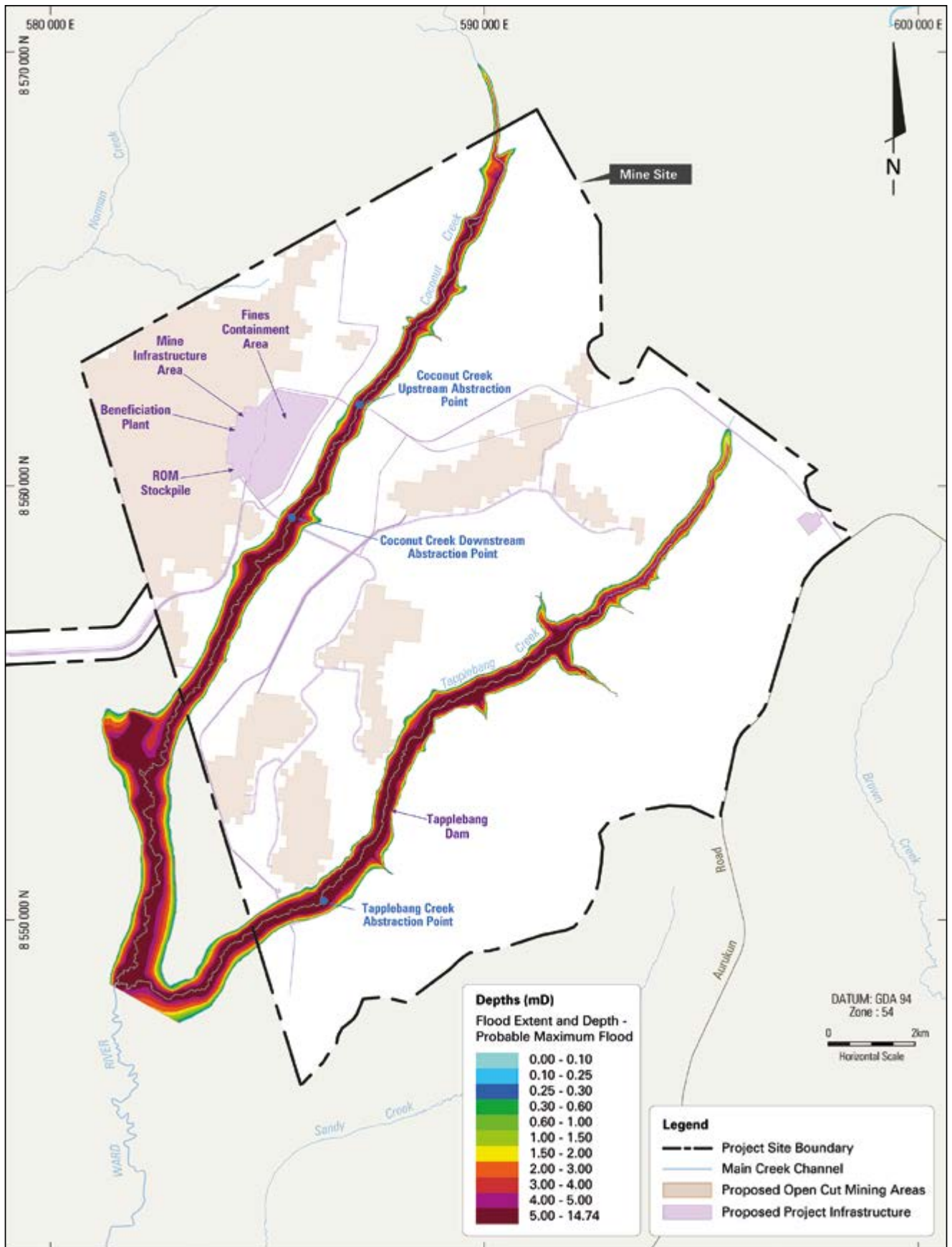
**FIGURE 11-38**



AURUKUN BAUXITE PROJECT

Project Layout Flood Immunity

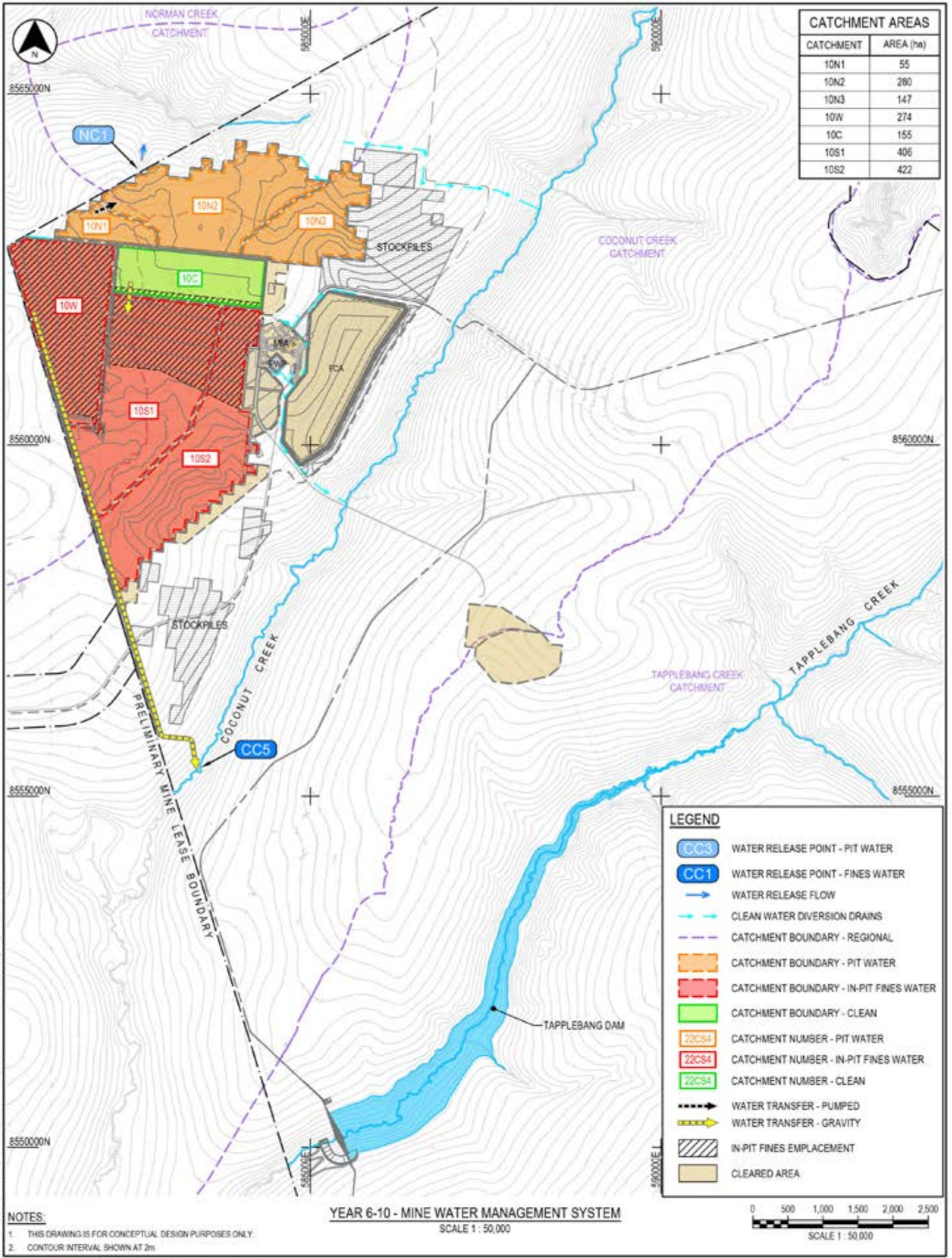
**FIGURE 11-39**



AURUKUN BAUXITE PROJECT

Project Layout and the Probable Maximum Flood

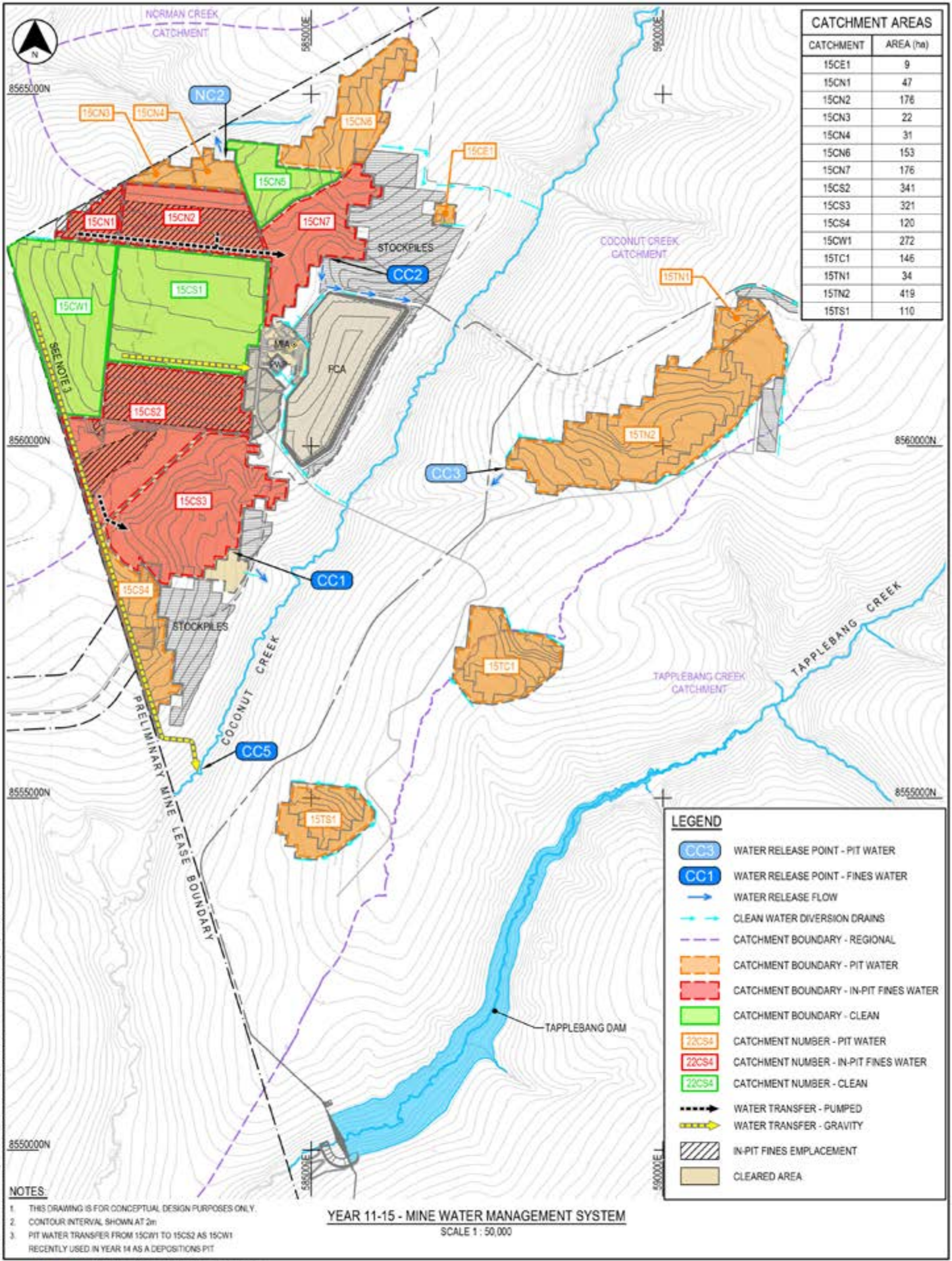
**FIGURE 11-40**



J:\GBR Aurukun Bauxite Project\05 CAD\_GIS\01 Drawings\CON-FIC-FS-0009-RED-0072.dwg May 15, 2023 9:58 AM


**Red Earth Engineering Pty Ltd**  
 ABN: 17 136 007 746  
 Phone: +61 7 3173 1714  
 admin@reearthengineering.com.au  
 108 Bowen Street, Spring Hill, QLD 4000

**Aurukun Bauxite Project**  
 Mine Water Management System  
 Project Year 6-10  
**FIGURE 11-41**



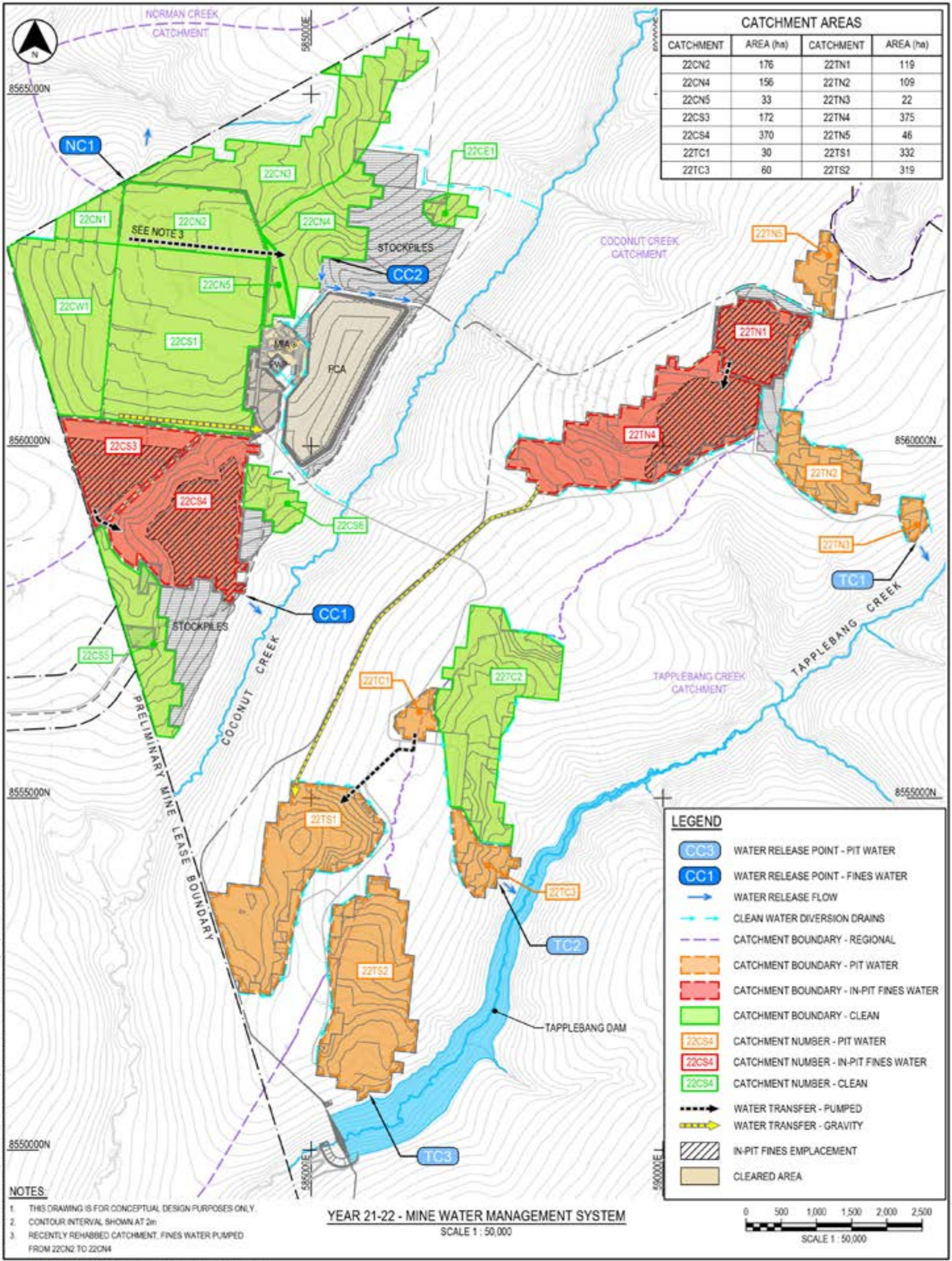
J:\GBR Aurukun Bauxite Project\GIS CAD\_GIS\01 Drawings\CCM-FIS-FS-0000-RED-0073.dwg May 15, 2023 10:01 AM

- NOTES**
1. THIS DRAWING IS FOR CONCEPTUAL DESIGN PURPOSES ONLY.
  2. CONTOUR INTERVAL SHOWN AT 2m
  3. PIT WATER TRANSFER FROM 15CW1 TO 15CS2 AS 15CW1 RECENTLY USED IN YEAR 14 AS A DEPOSITIONS PIT

**YEAR 11-15 - MINE WATER MANAGEMENT SYSTEM**  
SCALE 1 : 50,000

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 108 Bowen Street, Spring Hill, QLD 4000

**Aurukun Bauxite Project**  
 Mine Water Management System  
 Project Year 11-15  
**FIGURE 11-42**



J:\G888-Aurukun Bauxite Project\05 CAD\_GIS\01 Drawings\CON-FIC-FE-0000-RED-0074.dwg May 15, 2023 10:25 AM

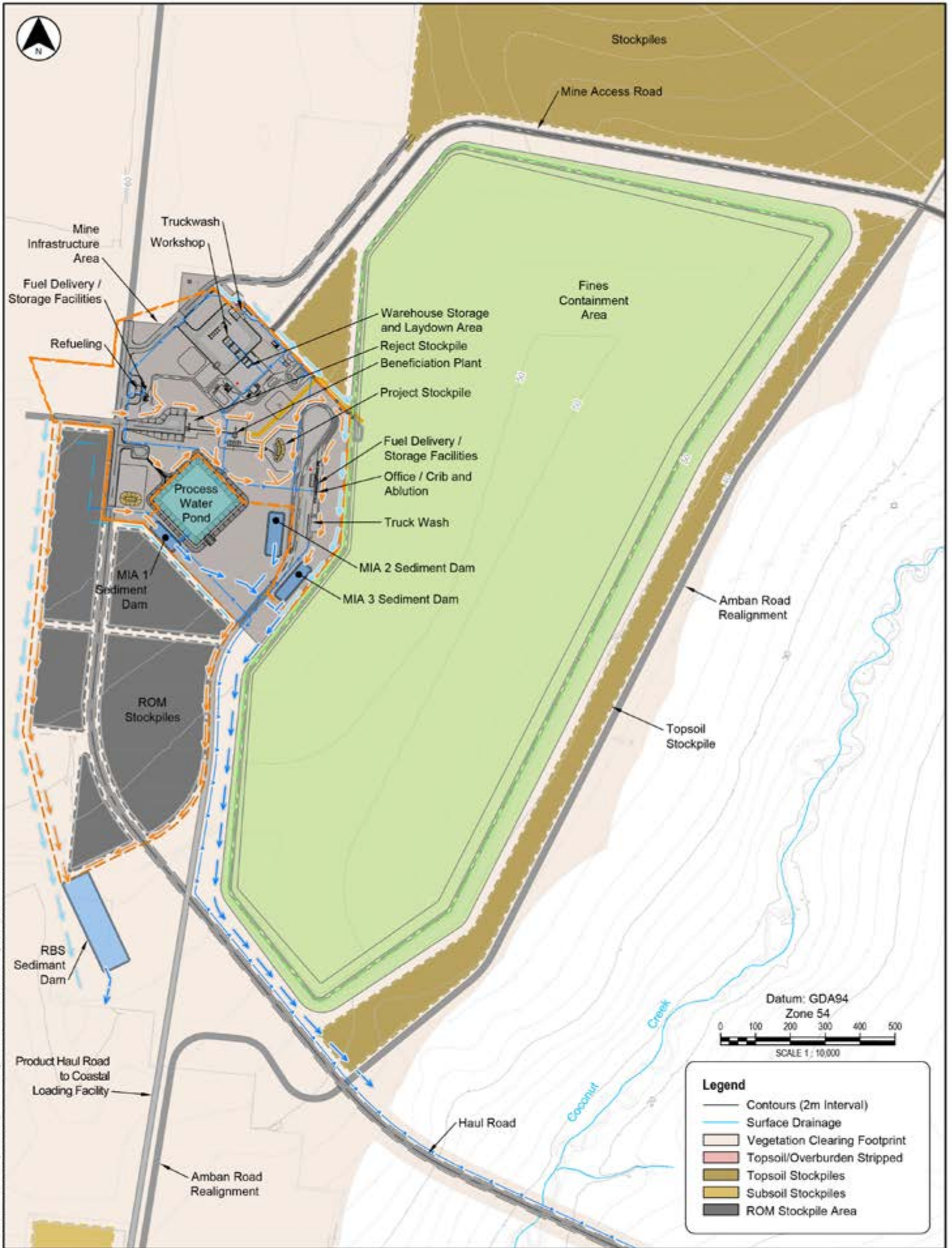
- NOTES**
1. THIS DRAWING IS FOR CONCEPTUAL DESIGN PURPOSES ONLY.
  2. CONTOUR INTERVAL SHOWN AT 2m
  3. RECENTLY REHABBED CATCHMENT, FINES WATER PUMPED FROM 22CN2 TO 22CN4

**YEAR 21-22 - MINE WATER MANAGEMENT SYSTEM**  
SCALE 1 : 50,000



**Red Earth Engineering Pty Ltd**  
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 admin@redearthengineering.com.au  
 108 Bowen Street, Spring Hill, QLD 4000

**Aurukun Bauxite Project**  
 Mine Water Management System  
 Project Year 21-22  
**FIGURE 11-43**



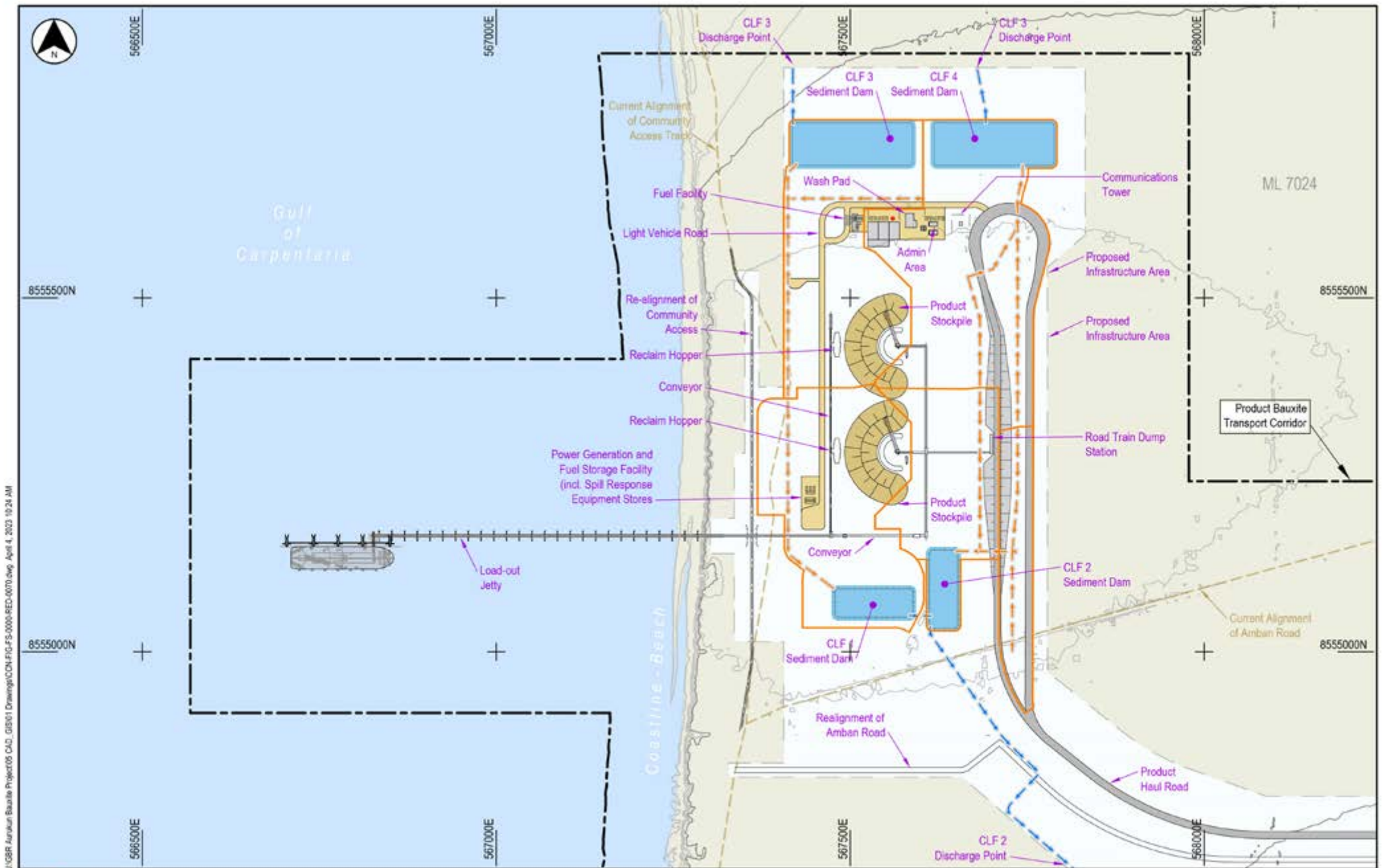
J:\GBR Aurukun Bauxite Project\05 CAD\_GIS\01 Drawings\CCN\FG-FS-0000-RED-0000.dwg, April 20, 2023 12:55 PM



Red Earth Engineering Pty Ltd  
 ABN: 17 136 007 746  
 Phone: +61 7 3173 1714  
 admin@redearthengineering.com.au  
 108 Bowen Street, Spring Hill, QLD 4000

Aurukun Bauxite Project  
 Fines Containment Area and Mine Infrastructure Area  
 Drainage Plan

**FIGURE 11-44**



J:\GBR Aurukun Bauxite Project\05 CAD\_GIS\01 Drawings\CON\FIG-0000-RED-0070.dwg, April 4, 2023 10:24 AM



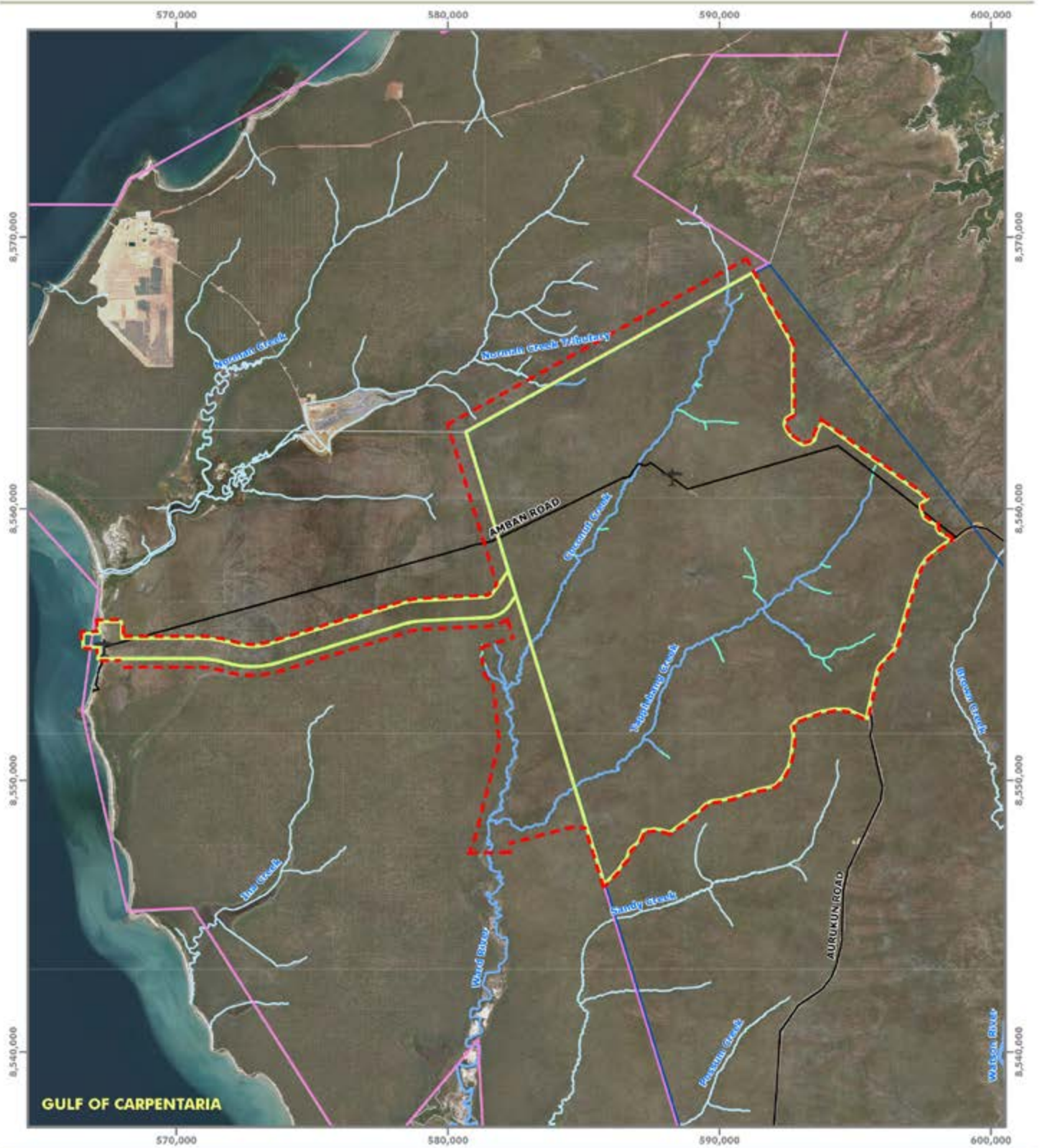
Red Earth Engineering Pty Ltd  
 ABN: 17 136 007 746  
 Phone: +61 7 3173 1714  
 admin@reearthengineering.com.au  
 108 Bowen Street, Spring Hill, QLD 4000



Aurukun Bauxite Project

Coastal Loading Facility  
 Drainage Plan

**FIGURE 11-45**



**Legend**

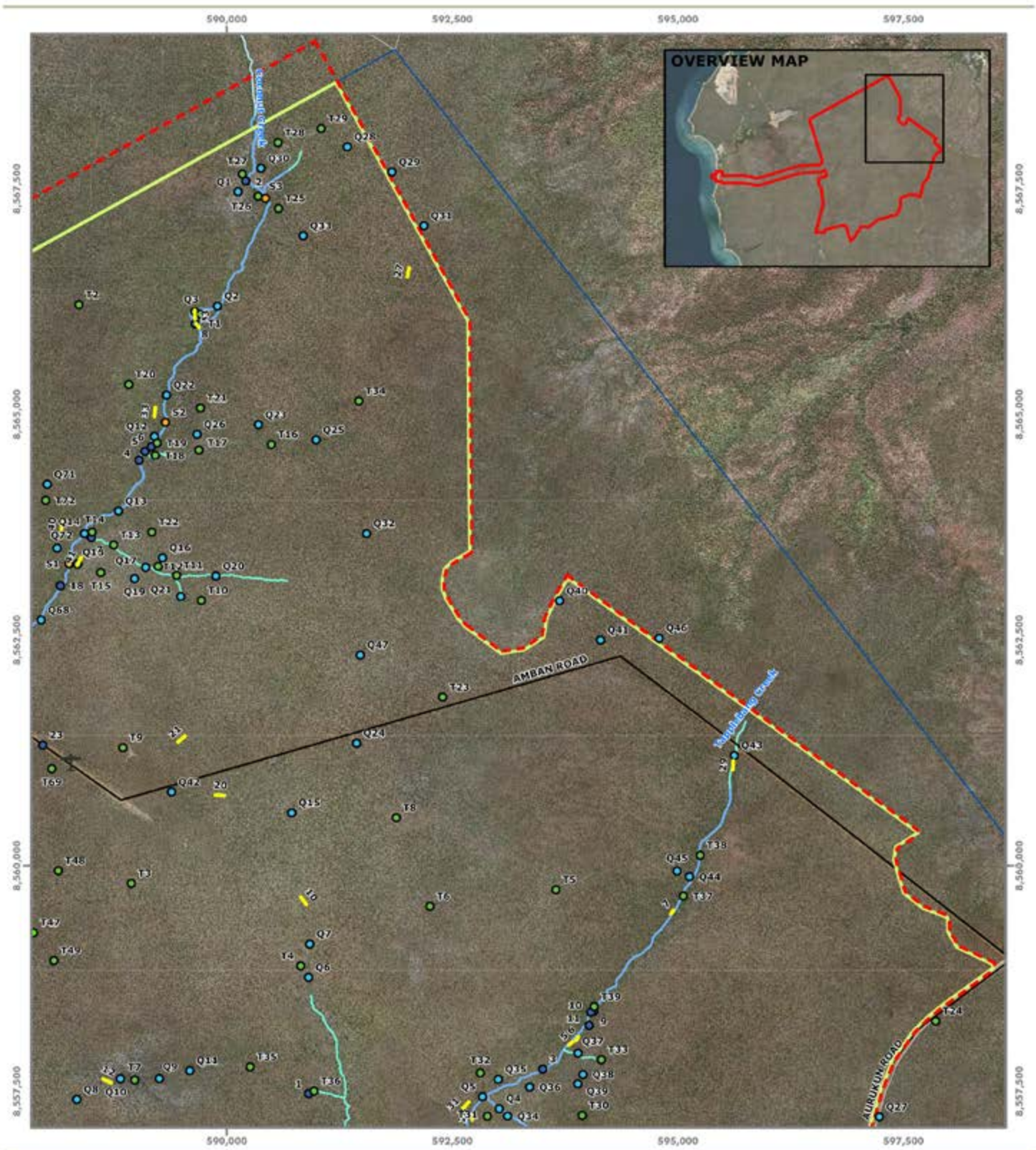
-  Ecology study area
-  Project site
-  Mineral development licence 2001
-  Mining lease 7024
-  Abandoned air strip
-  Road
-  Watercourse - ground-truthed
-  Drainage feature - ground-truthed
-  Watercourse or drainage feature (Water Act 2000)
-  Cadastral boundary

**FIGURE 11-46 : Ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 03 B  
Date: 30 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023





- Legend**
- Ecology study area
  - Project site
  - Mineral development licence 2001
  - Abandoned air strip
  - Road
  - Watercourse - ground-truthed
  - Drainage feature - ground-truthed
  - Watercourse or drainage feature (Water Act 2000)
  - Cadastral boundary

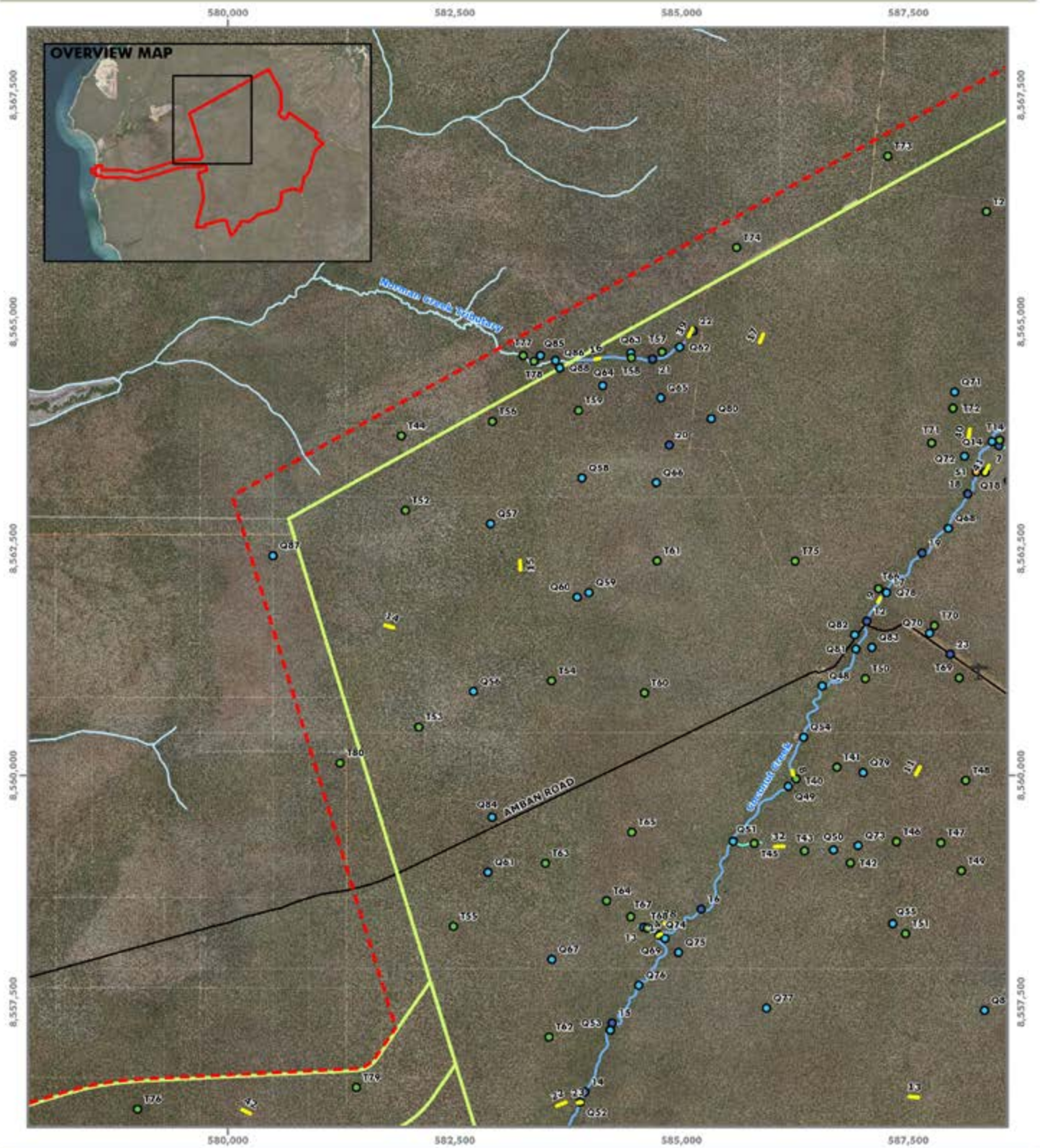
- Vegetation assessment sites**
- Secondary site
  - Tertiary site
  - Quaternary site
  - Quaternary site (Photo point)
  - Habitat quality plots

**FIGURE 11-47a : Flora survey sites**

Terrestrial Ecology Assessment  
Auruken Bauxite Project

Map Number: 22036 TEA, 04A, A  
Date: 23 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023



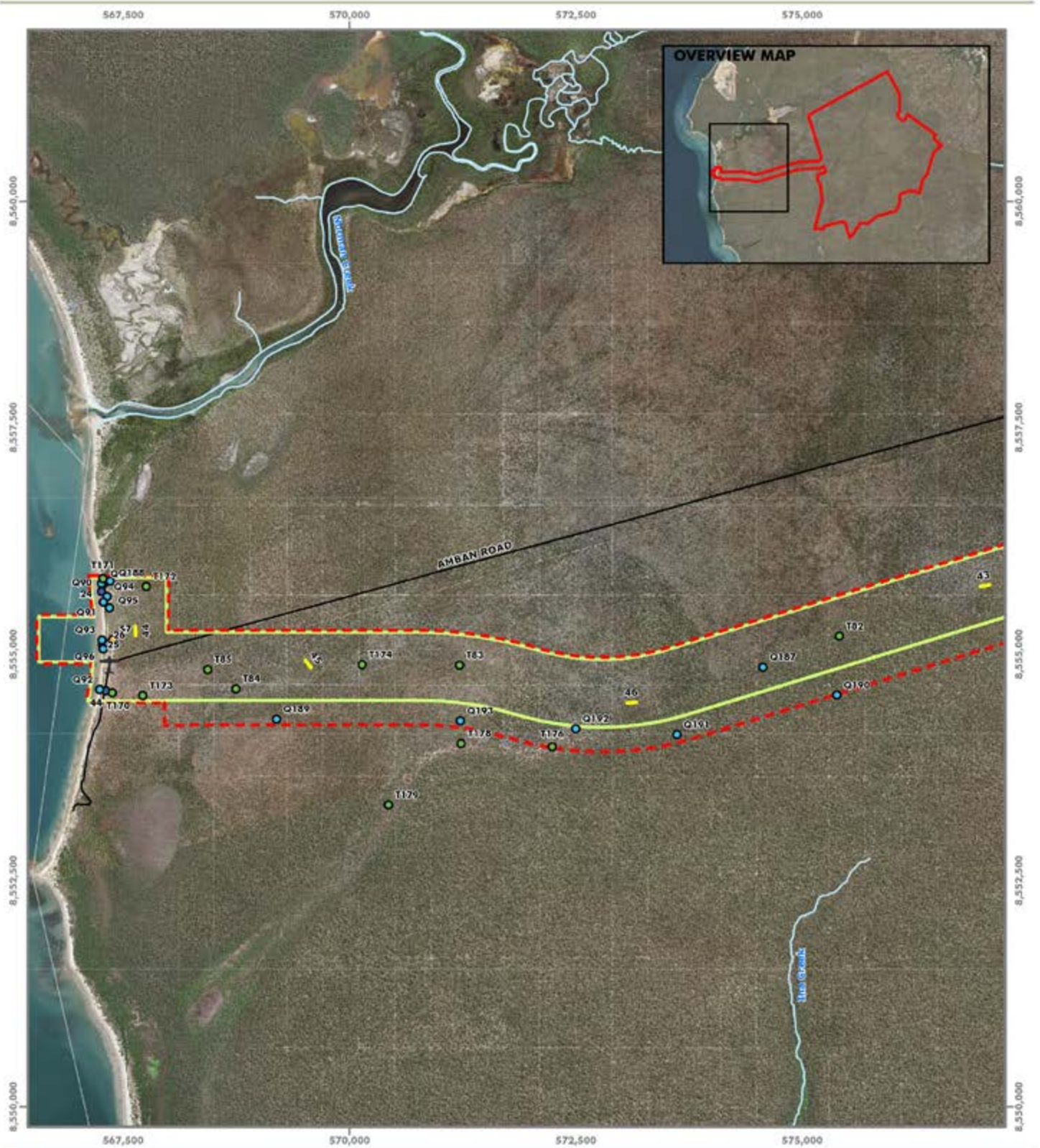


**FIGURE 11-47b : Flora survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 048 A  
Date: 23 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





**Legend**

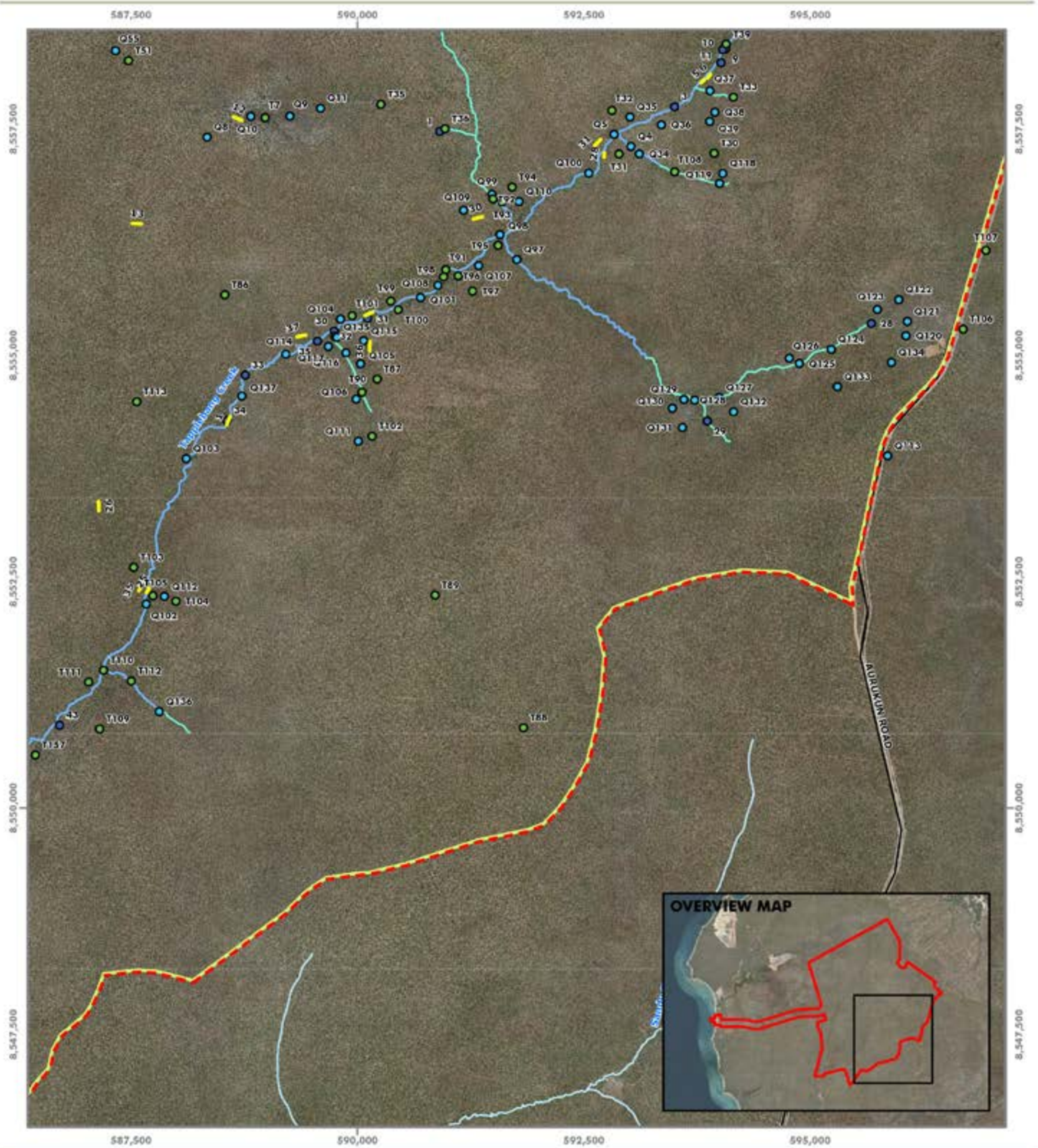
- Ecology study area
  - Project site
  - Abandoned air strip
  - Watercourse or drainage feature (Water Act 2000)
  - Cadastral boundary
- Vegetation assessment sites**
- Secondary site
  - Tertiary site
  - Quaternary site
  - Quaternary site (Photo point)
  - Habitat quality plots

**FIGURE 11-47c : Flora survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA, 04C, A  
Date: 23 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCOB - [q]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Mineral development licence 2001
- Road
- Watercourse - ground-truthed
- Drainage feature - ground-truthed
- Watercourse or drainage feature (Water Act 2000)
- Cadastral boundary

**Vegetation assessment sites**

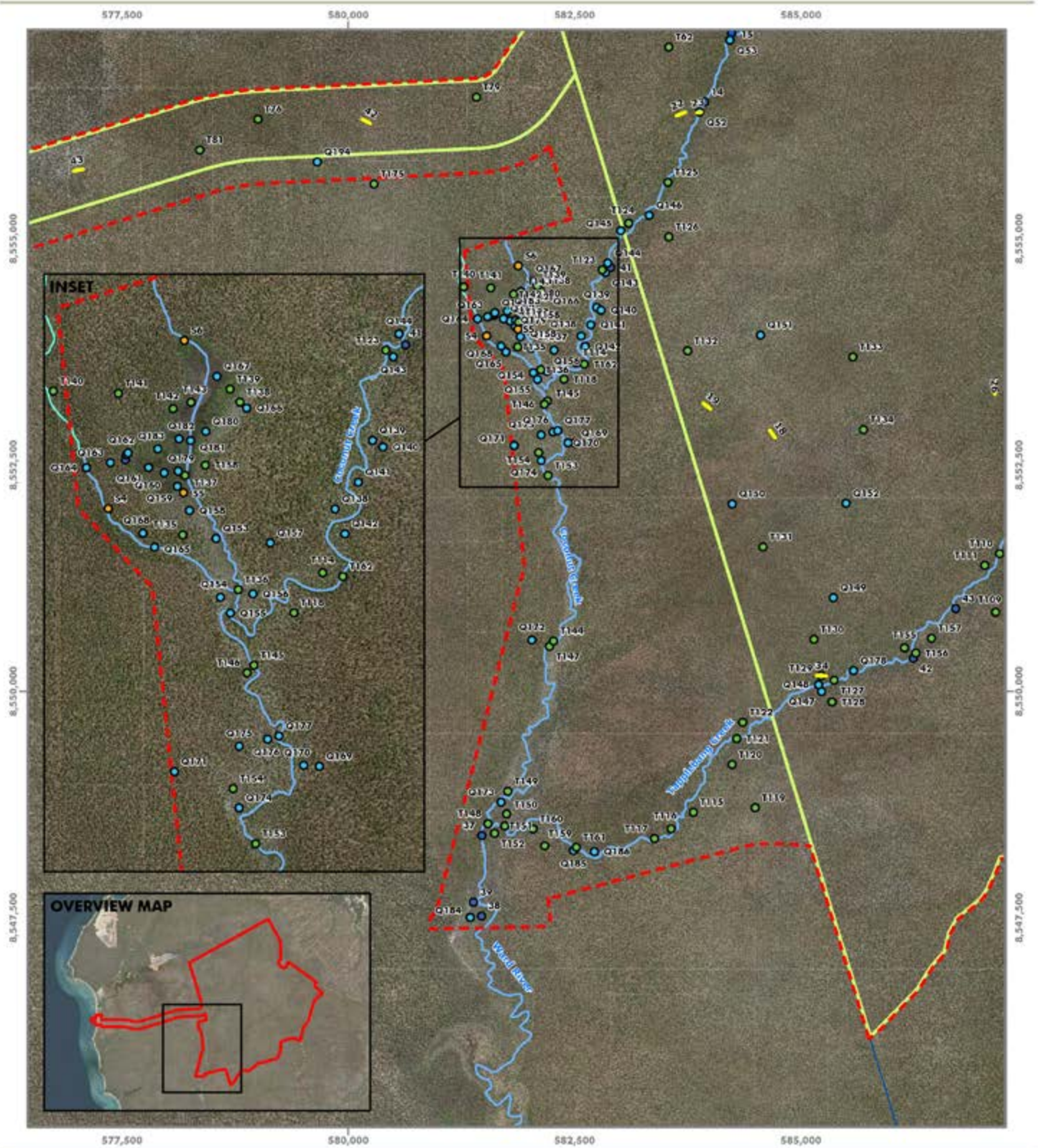
- Secondary site
- Tertiary site
- Quaternary site
- Quaternary site (Photo point)
- Habitat quality plots

**FIGURE 11-47d : Flora survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA\_04D\_A  
Date: 23 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Mineral development licence 2001
- Watercourse - ground-truthed
- Drainage feature - ground-truthed
- Watercourse or drainage feature (Water Act 2000)
- Cadastral boundary

**Vegetation assessment sites**

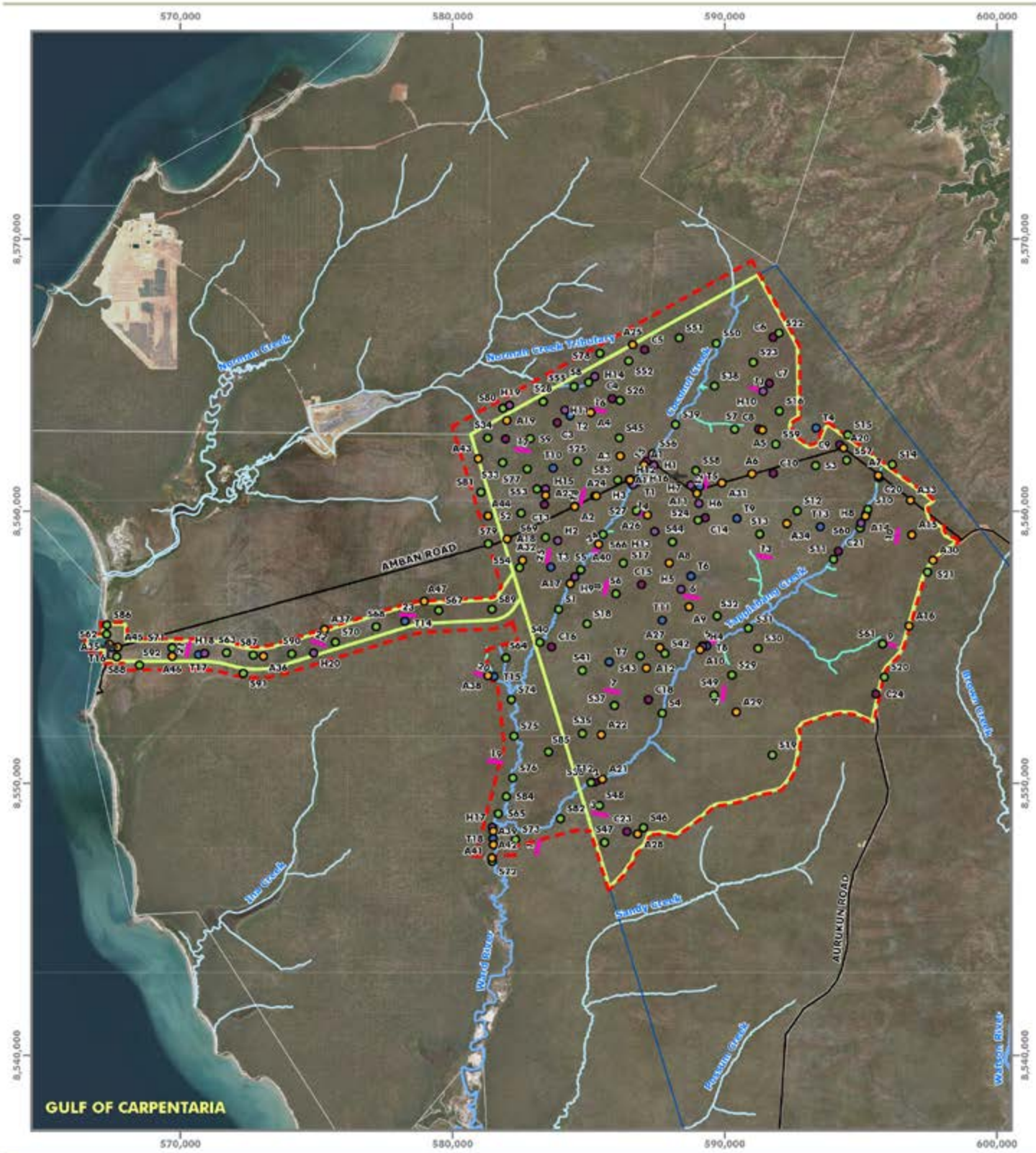
- Secondary site
- Tertiary site
- Quaternary site
- Quaternary site (Photo point)
- Habitat quality plots

**FIGURE 11-47e : Flora survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 04E\_A  
Date: 23 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Mineral development licence 2001
- Abandoned air strip
- Road
- Watercourse - ground-truthed
- Drainage feature - ground-truthed
- Watercourse or drainage feature (Water Act 2000)
- Cadastral boundary

**Fauna survey sites**

(EcoSM 2018, 2019, 2021 & 2022)

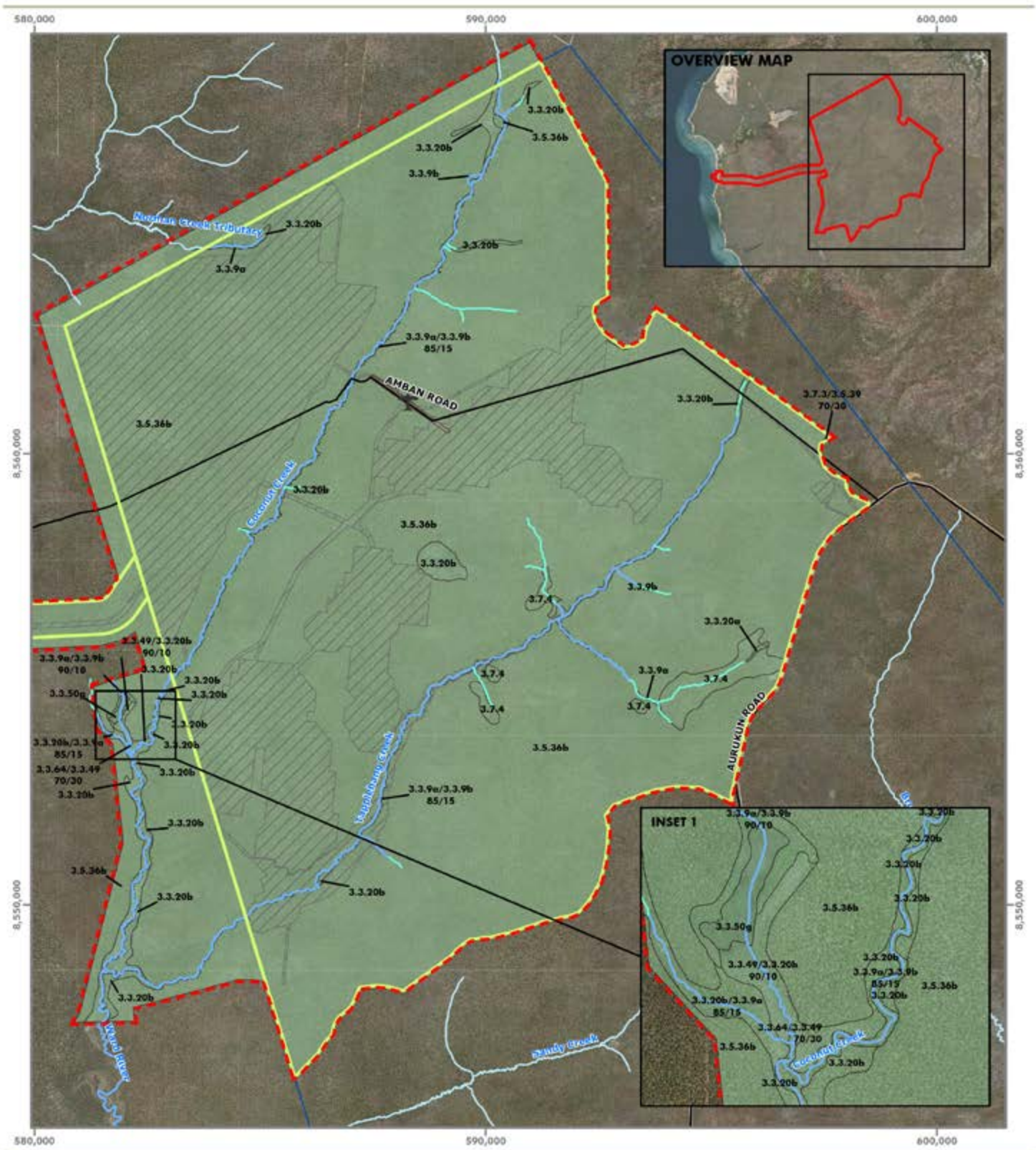
- Anabat site
- Harp trap site
- Supplementary survey site
- Camera trap site
- Systematic trap site
- Tree hollow transects

**FIGURE 11-48 : Systematic fauna survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA\_05A\_D  
Date: 23 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





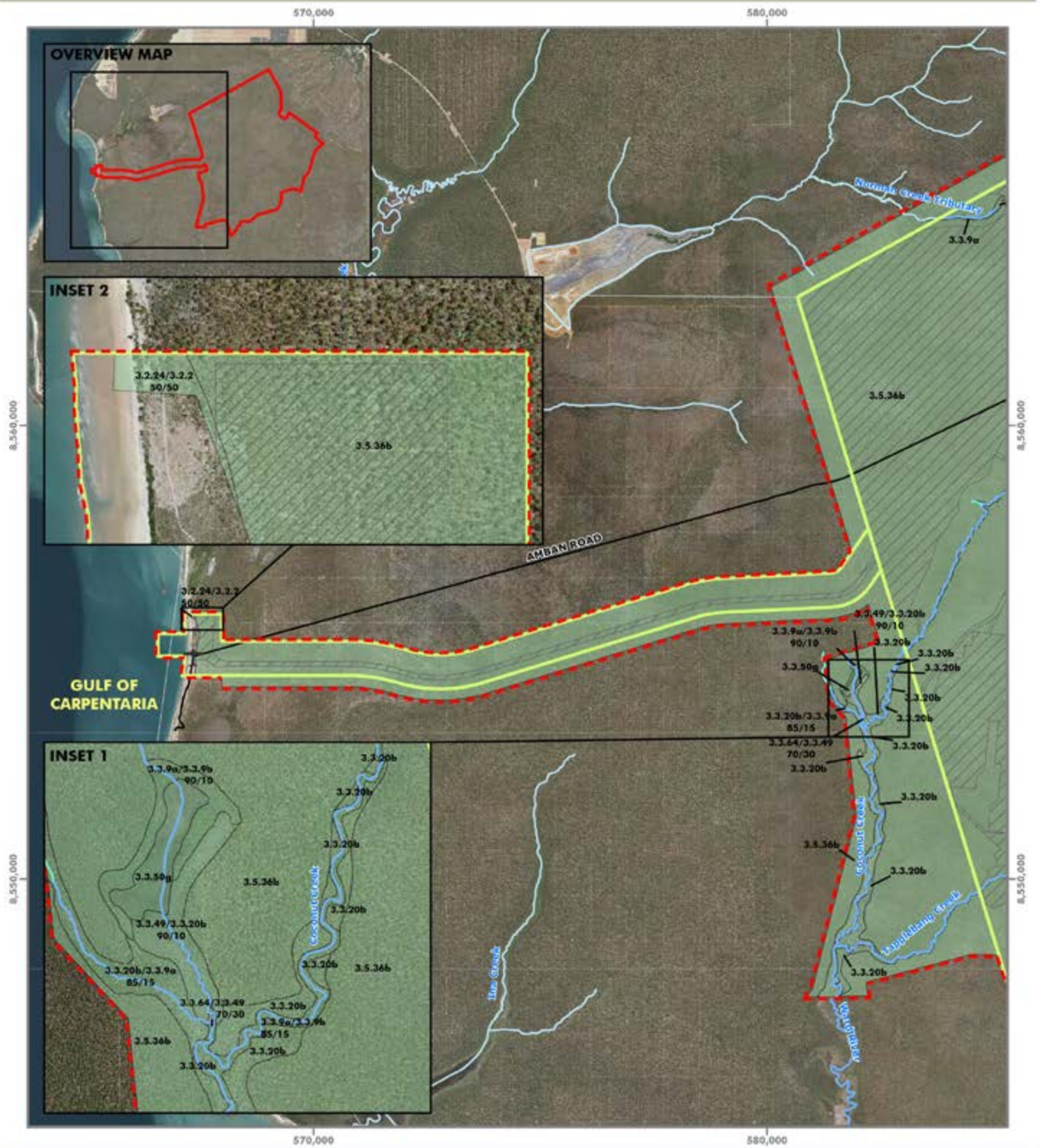
- Legend**
- Ecology study area
  - Project site
  - Disturbance footprint
  - Mineral development licence 2001
  - Abandoned air strip
  - Road
  - Watercourse - ground-truthed
  - Drainage feature - ground-truthed
  - Watercourse or drainage feature (Water Act 2000)
  - Cadastral boundary
- Queensland Herbarium certified regional ecosystem mapping - 2022**  
**(Vegetation Management Act status)**
- Least concern

**FIGURE 11-49a : Queensland Herbarium certified regional ecosystem mapping for the ecology study area**

Terrestrial Ecology Assessment  
 Aurukun Bauxite Project

Map Number: 22036 TEA 12A E  
 Date: 04 May 2023  
 Map Projection: GDA 1994 MGA Zone 54  
 Imagery: November 2018  
 Data: Roads, DCDB - [c]DNRM 2023





**FIGURE 11-49b : Queensland Herbarium certified regional ecosystem mapping for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

**Legend**

- Ecology study area
- Project site
- Mineral development licence 2001
- Abandoned air strip
- Road
- Watercourse - ground-truthed
- Drainage feature - ground-truthed
- Watercourse or drainage feature (Water Act 2000)
- Cadastral boundary
- Disturbance footprint

**Queensland Herbarium certified regional ecosystem mapping - 2022**

**(Vegetation Management Act status)**

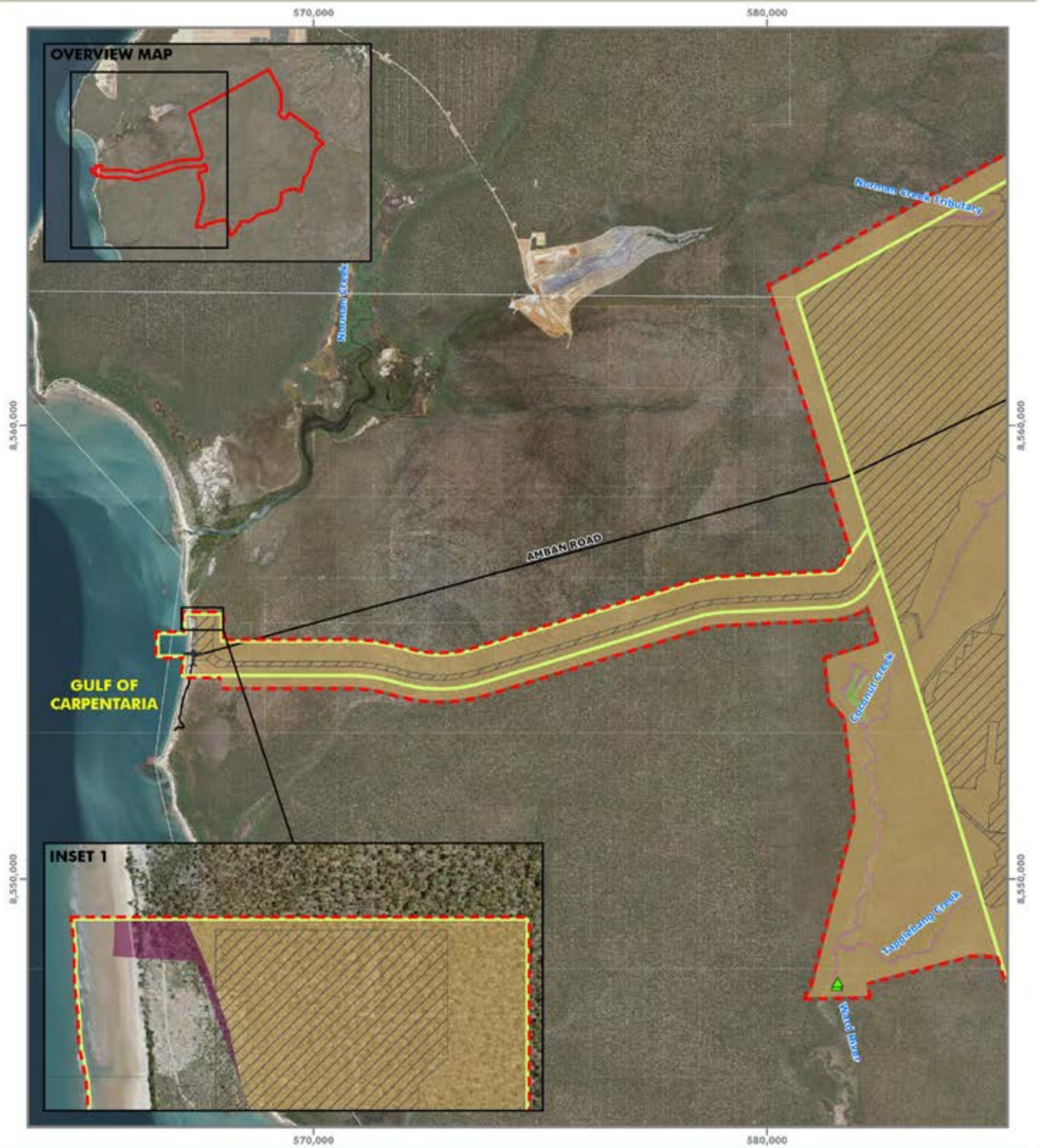
- Least concern

Map Number: 22036 TEA\_128\_E  
Date: 04 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCCB - [q]DNRM 2023



**ECO SOLUTIONS & MANAGEMENT**





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- Abandoned air strip
- Road
- Cadastral boundary

**Broad Habitat Mapping**

- Eucalyptus and Corymbia woodland to tall woodland
- Swamp Box fringing forest
- Paperbark woodlands and sedgelands
- Mixed foredune complex

**Threatened species records (Ecotone 2022)**

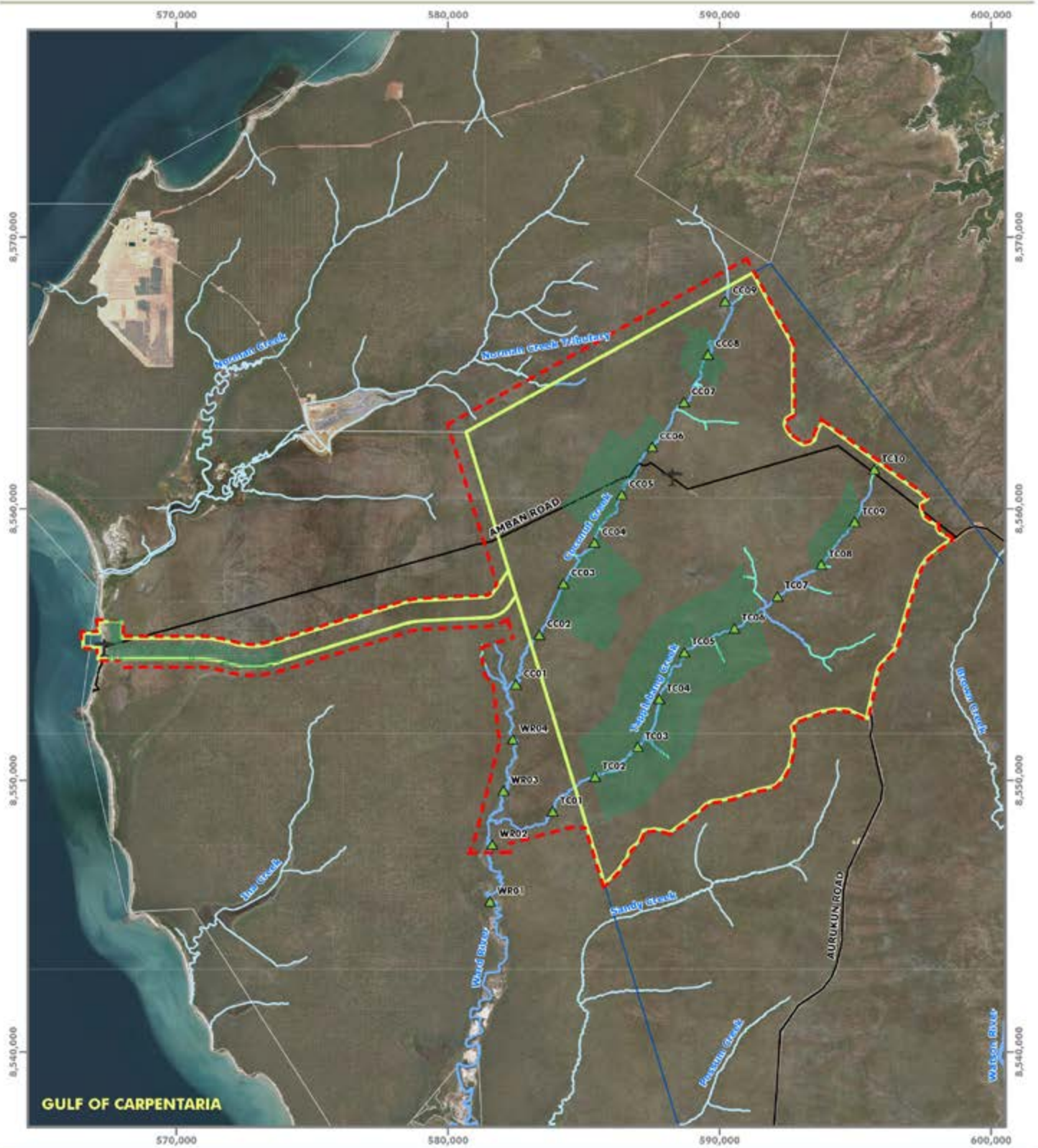
- ▲ Palm Cockatoo (*Probosciger aterrimus macgillivrayi*) - Vulnerable (EPBC Act), Endangered (NC Act)

**FIGURE 11-50b : Broad habitat mapping and threatened species records for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA\_148\_F  
Date: 09 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





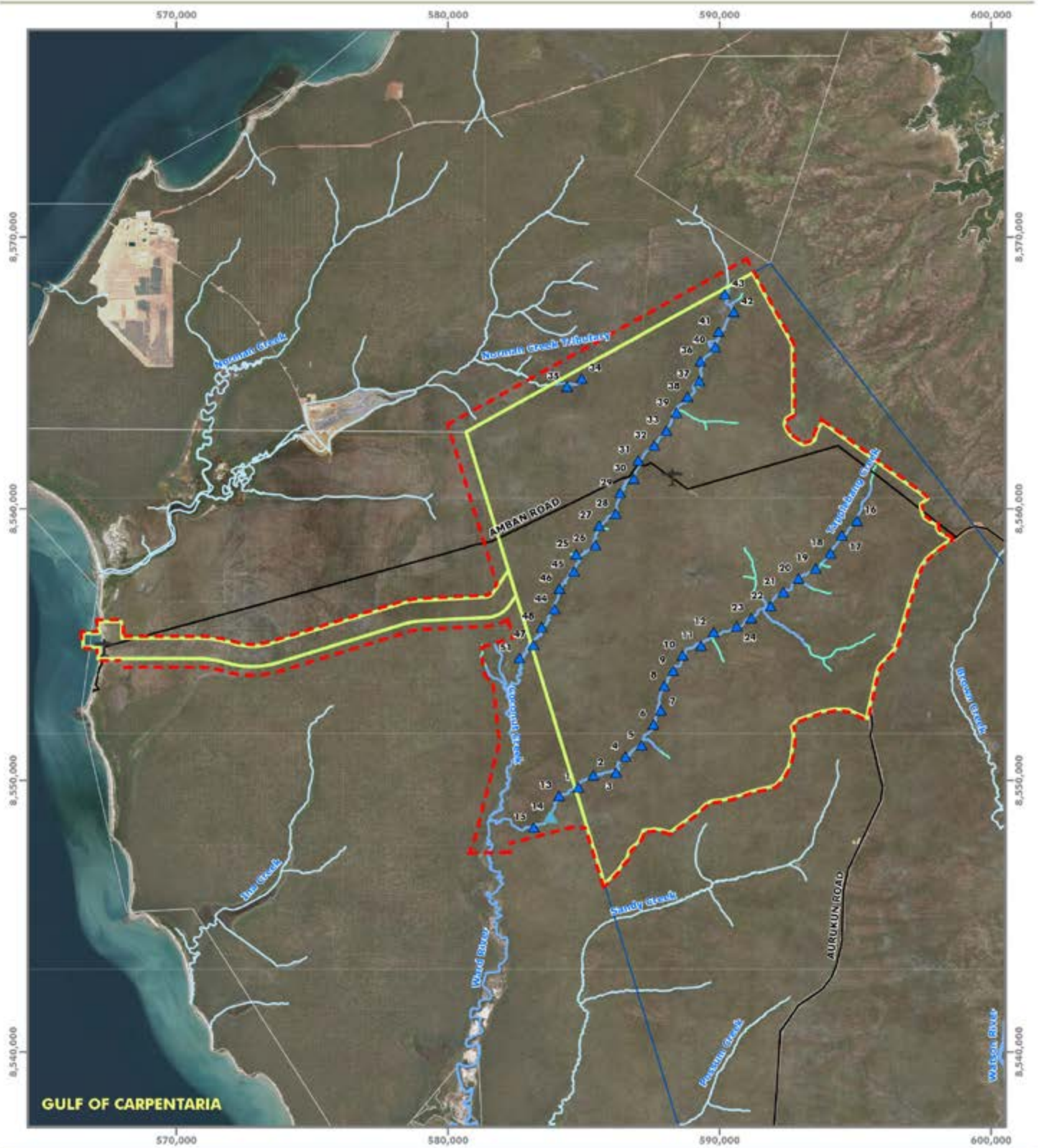
- Legend**
- Ecology study area
  - Project site
  - Mineral development licence 2001
  - Abandoned air strip
  - Road
  - Watercourse - ground-truthed
  - Drainage feature - ground-truthed
  - Watercourse or drainage feature (Water Act 2000)
  - Cadastral boundary
- Survey sites**
- ▲ Feed plots (Ecotone 2023)
  - Breeding habitat traverse (Ecotone 2023)

**FIGURE 11-51 : Targeted Palm Cockatoo survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 058 B  
Date: 27 April 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCD8 - [q]DNRM 2023





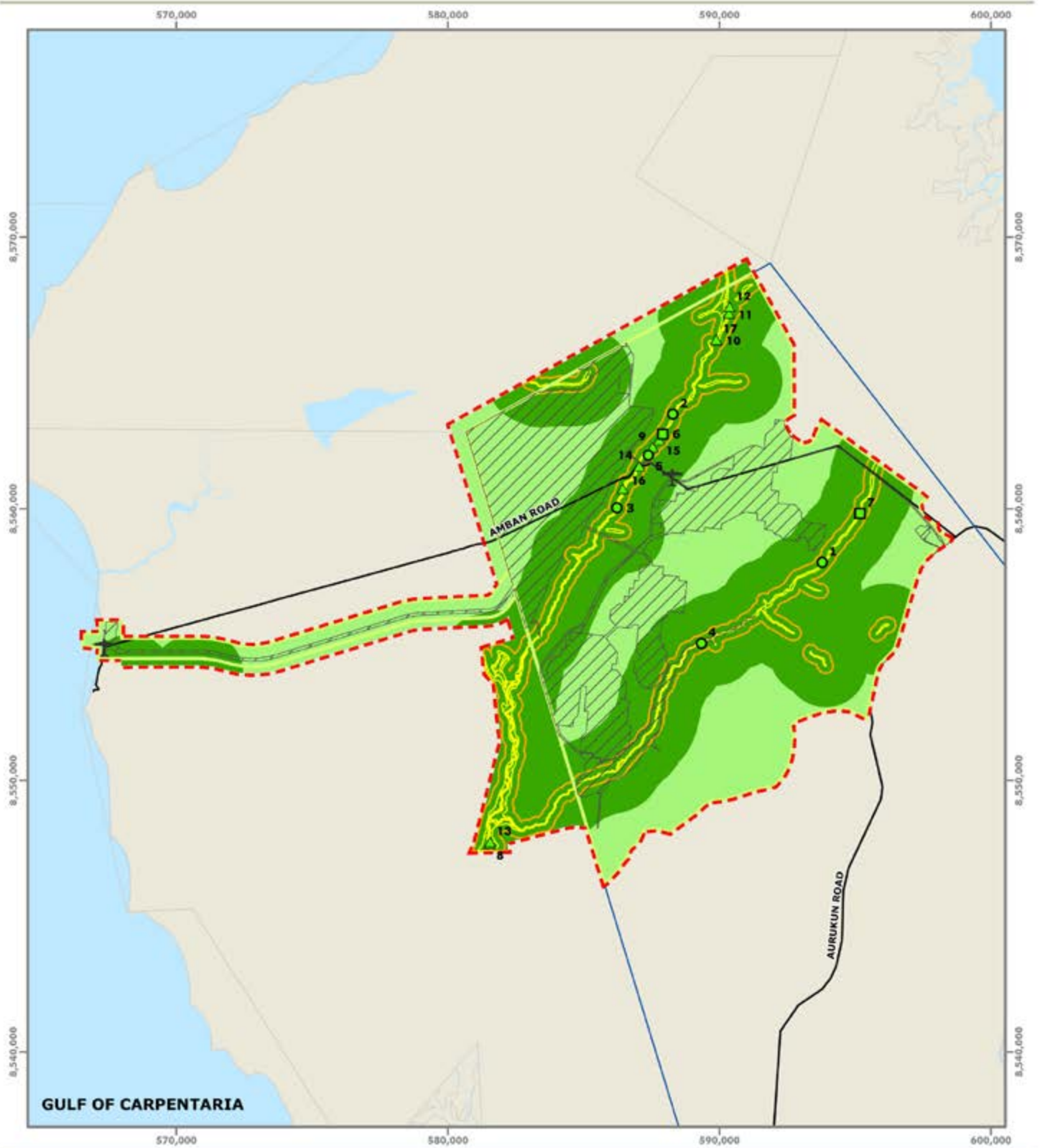
- Legend**
- Ecology study area
  - Project site
  - Mineral development licence 2001
  - Abandoned air strip
  - Road
  - Watercourse - ground-truthed
  - Drainage feature - ground-truthed
  - Watercourse or drainage feature (Water Act 2000)
  - Cadastral boundary
- Survey sites (EcoSM/Ecotone 2022)**
- ▲ Masked Owl AudioMoth sites

**FIGURE 11-52 : Targeted Masked Owl survey sites**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA\_05C\_E  
Date: 09 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- Abandoned air strip
- Road
- Cadastral boundary

**Palm Cockatoo (*Probosciger aterrimus macgillivrayi*) - Vulnerable (EPBC Act), Endangered (NC Act)**

**Recorded locations (Source & year of record)**

- EcoSM 2018
- EcoSM 2019
- ▲ Ecotone 2022

**Habitat mapping**

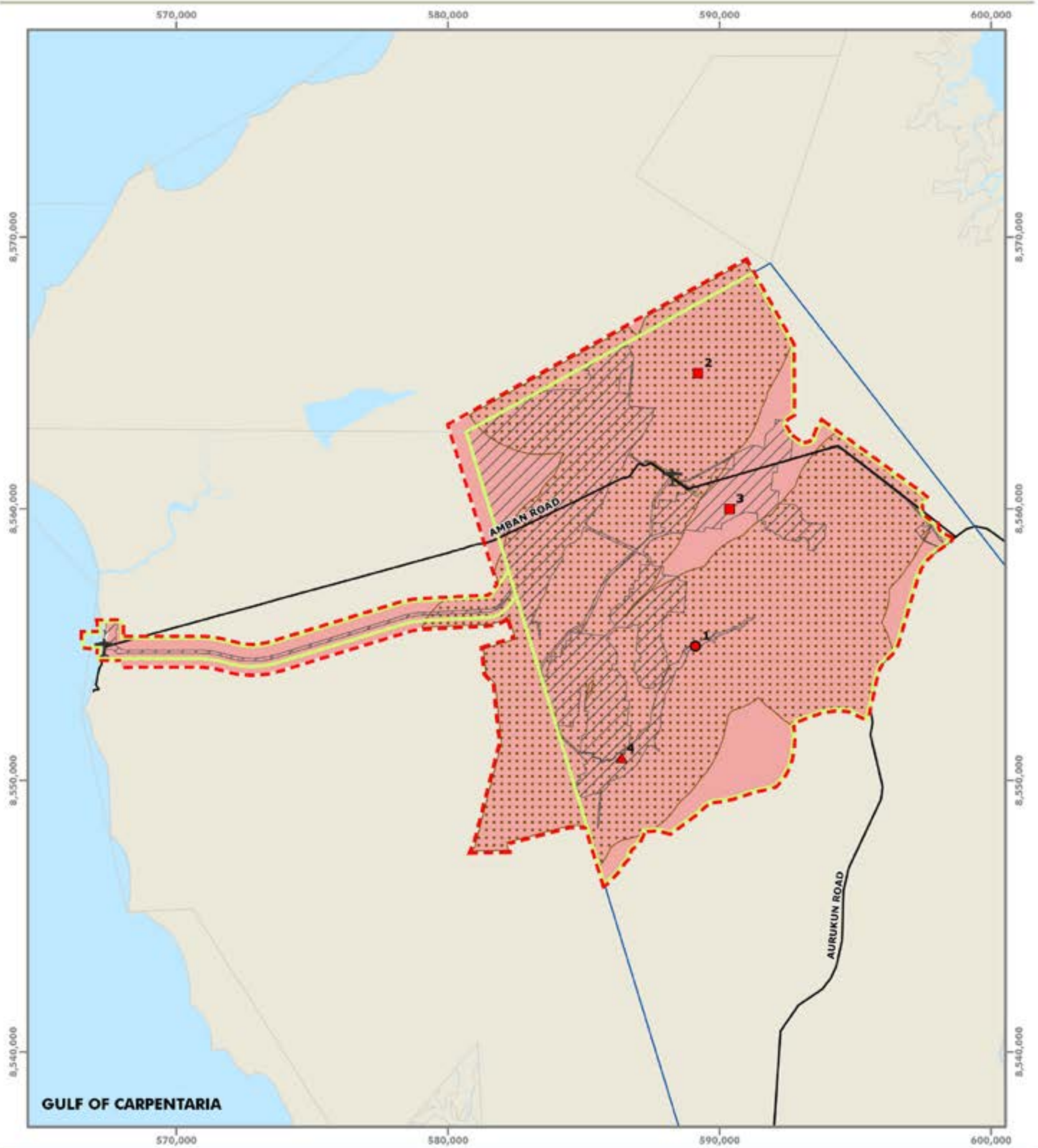
- Potential breeding and foraging habitat (Breeding Zones 1 - 6 and feeding zones 1 - 3)
- Highest potential breeding habitat (Breeding zone 1)
- Primary habitat for foraging/feeding and daytime refuge (Riparian vegetation)
- Limited Use foraging and feeding habitat

**FIGURE 11-53 : Palm Cockatoo habitat for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA, 15A, L  
Date: 07 June 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- ✈ Abandoned air strip
- Road
- Cadastral boundary

**Red Goshawk (*Erythrotriorchis radiatus*) –  
Endangered (EPBC Act), Endangered (NC Act)**  
Recorded locations (Source & year of record)

- EcoSM 2018
- EcoSM 2019
- ▲ Ecotone 2022

**Habitat mapping**

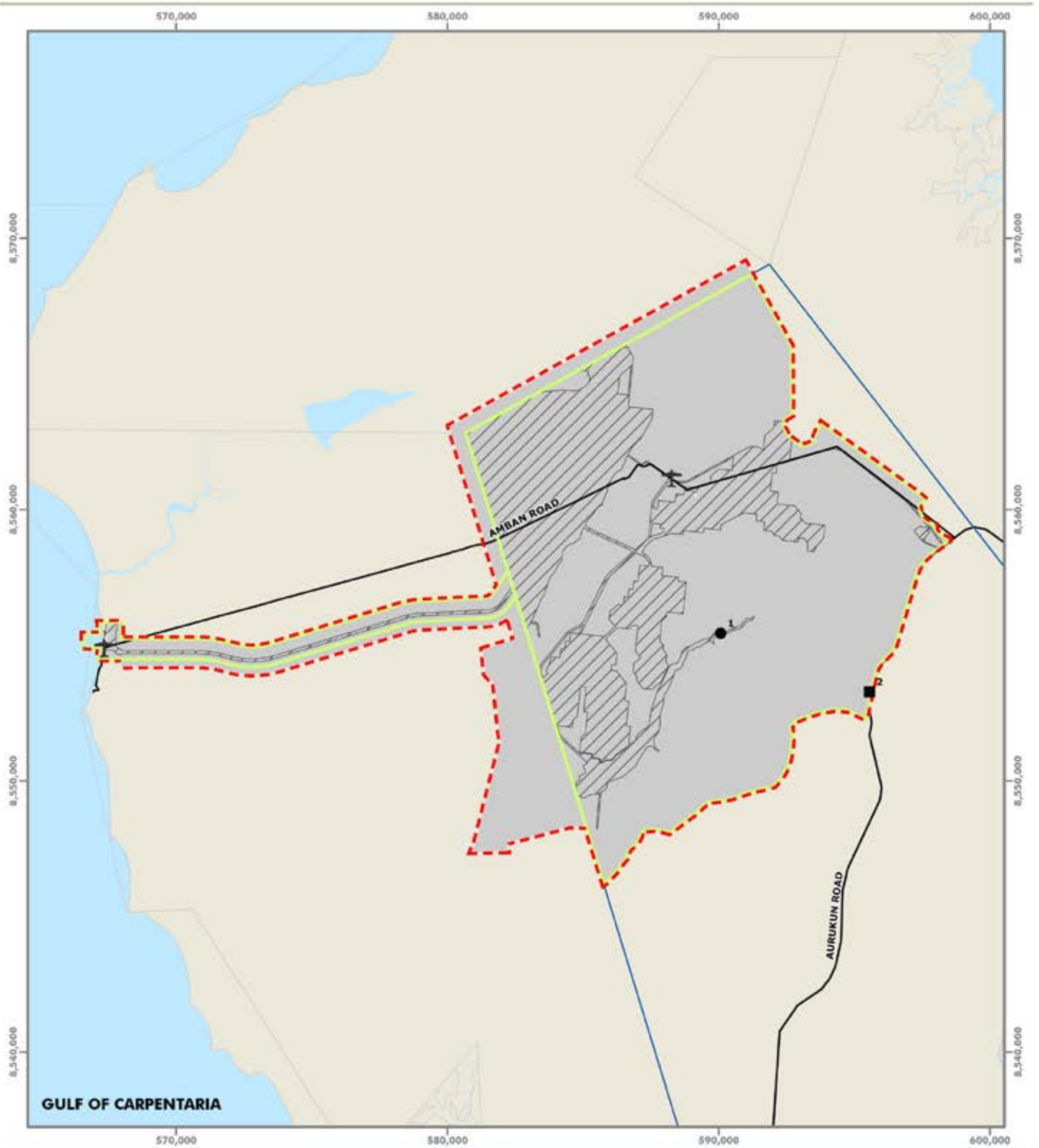
- Foraging/hunting and dispersal
- Breeding/nesting habitat

**FIGURE 11-54 : Red Goshawk habitat mapping and records for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA, 16A, I  
Date: 01 June 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- Abandoned air strip
- Road
- Cadastral boundary

**Black-footed Tree-rat (*Mesembriomys gouldii rattoides*) – Vulnerable (EPBC Act), Least concern (NC Act)**

**Recorded locations (Source & year of record)**

- EcoSM 2018
- EcoSM 2019

**Habitat mapping**

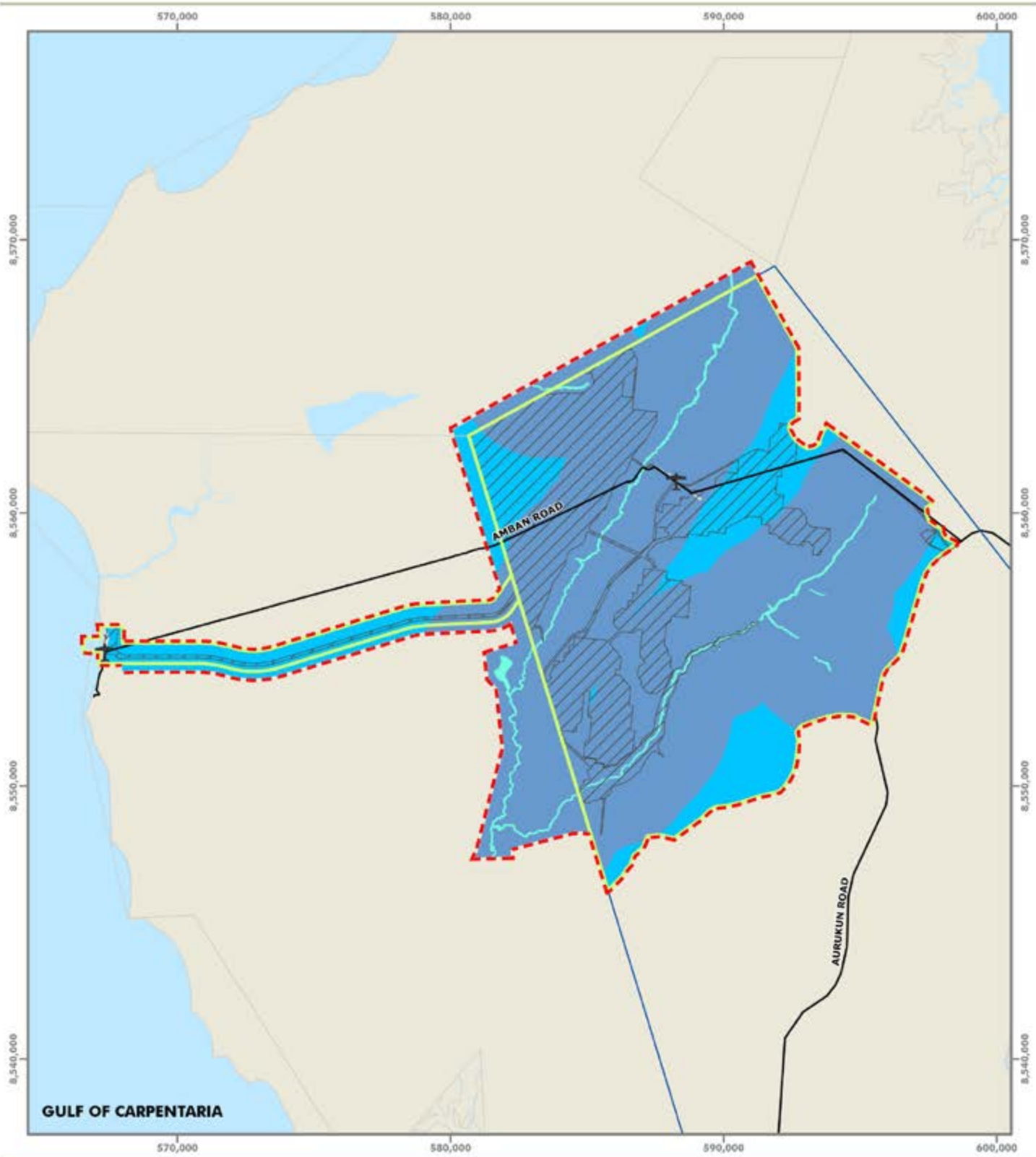
- Foraging, breeding and dispersal habitat

**FIGURE 11-55 : Black-footed Tree-rat habitat mapping and records for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 17 E  
Date: 31 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023





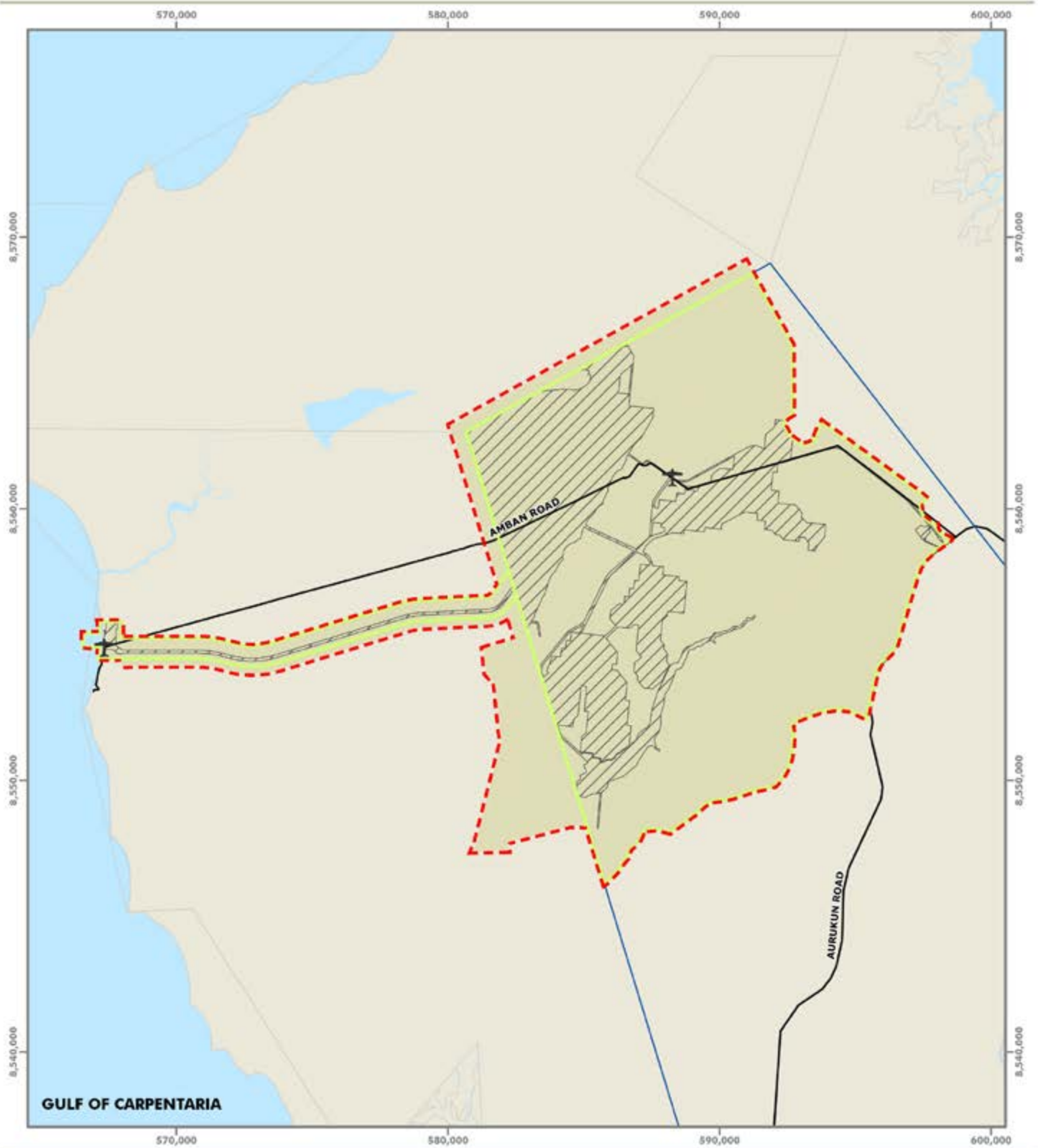
- Legend**
- Ecology study area
  - Project site
  - Disturbance footprint
  - Mineral development licence 2001
  - Abandoned air strip
  - Road
  - Cadastral boundary
- Masked Owl (*Tyto novaehollandiae kimberli*) - Vulnerable (EPBC Act and NC Act)**
- Preferred roosting and breeding/nesting habitat
  - Breeding/nesting, and foraging/hunting and dispersal habitat
  - Additional breeding/nesting, and foraging/hunting and dispersal habitat

**FIGURE 11-56 : Masked Owl habitat mapping for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 18A F  
Date: 23 June 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- Abandoned air strip
- Road
- Cadastral boundary

**White-throated Needletail (*Hirundapus caudacutus*) – Vulnerable/  
Migratory (EPBC Act), Special least concern (migratory) (NC Act)**

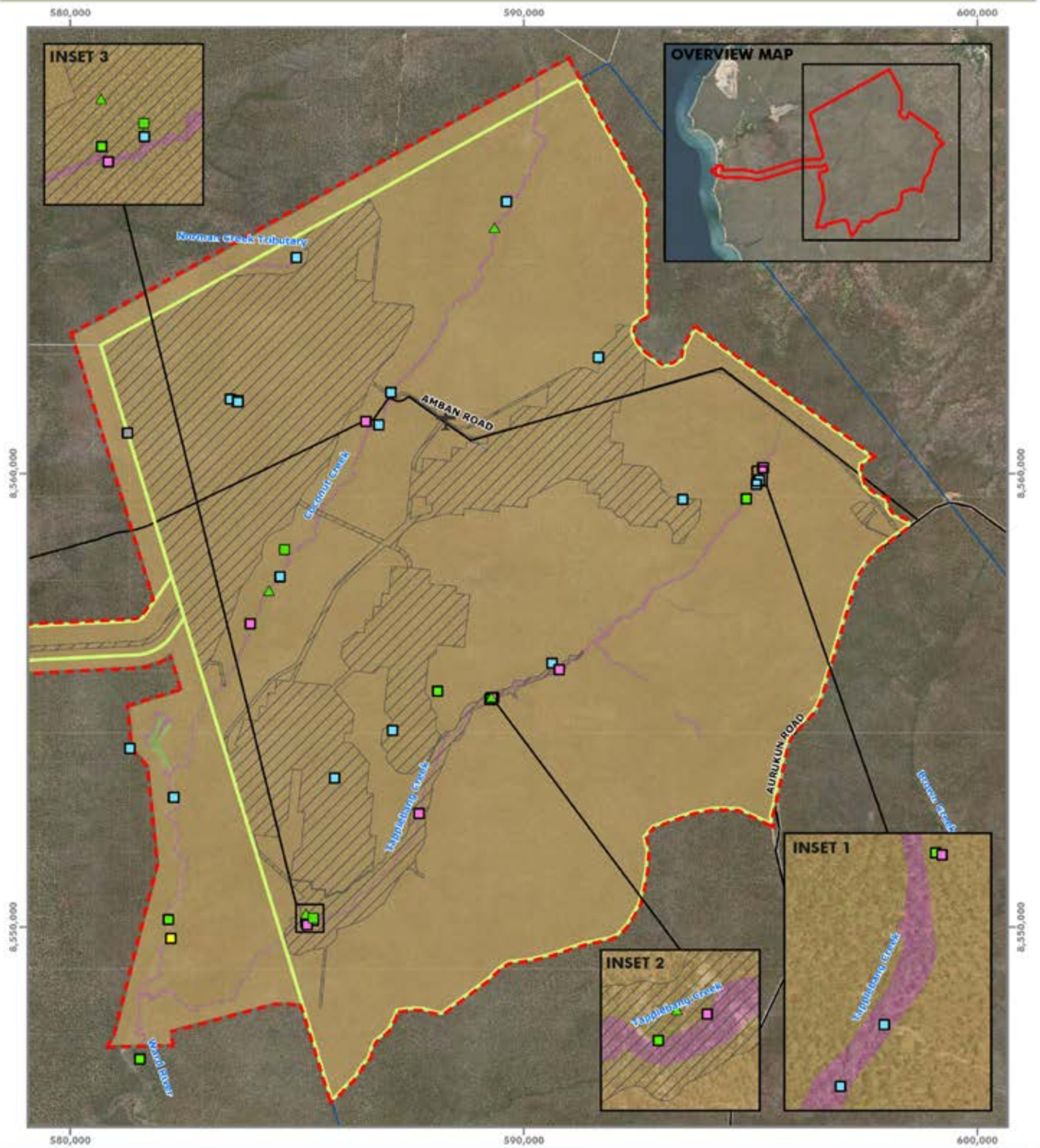
Feeding/foraging habitat

**FIGURE 11-57 : White-throated Needletail overfly habitat mapping for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA\_19\_D  
Date: 31 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023





**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- ✈ Abandoned air strip
- Road
- Cadastral boundary

**Broad Habitat Mapping**

- Eucalyptus and Corymbia woodland to tall woodland
- Swamp Box fringing forest
- Paperbark woodlands and sedgeland

**Near threatened, migratory and special least concern species records (source and date of record)**

**EcoSM (2018, 2019, 2021 & 2022)**

- Rufous Owl (Cape York Subspecies) (*Ninox rufa meesi*) – Not listed (EPBC Act), Near threatened (NC Act)
- Oriental Cuckoo (*Cuculus optatus*) – Migratory (EPBC Act and NC Act)
- Satin Flycatcher (*Myiagra cyanoleuca*) – Migratory (EPBC Act and NC Act)
- Spectacled Monarch (*Monarcha trivirgatus*) – Migratory (EPBC Act and NC Act)
- Short-beaked Echidna (*Tachyglossus aculeatus*) – Not listed (EPBC Act), Special least concern (NC Act)

**Ecotone (2022)**

- ▲ Rufous Owl (Cape York Subspecies)

**FIGURE 11-58a : Near threatened, migratory and special least concern species records for the ecology study area**

Terrestrial Ecology Assessment  
Aurukun Bauxite Project

Map Number: 22036 TEA 20A G  
Date: 12 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [c]DNRM 2023



**ECO SOLUTIONS & MANAGEMENT**



**Legend**

- Ecology study area
- Project site
- Disturbance footprint
- Mineral development licence 2001
- Abandoned air strip
- Road
- Cadastral boundary

**Broad Habitat Mapping**

- Eucalyptus and Corymbia woodland to tall woodland
- Swamp Box fringing forest
- Paperbark woodlands and sedgelands
- Mixed foredune complex

**Near threatened, migratory and special least concern species records (source and date of record)**

**EcoSM (2018, 2019, 2021 & 2022)**

- Rufous Owl (Cape York Subspecies) (*Ninox rufa meesi*) – Not listed (EPBC Act), Near threatened (NC Act)
- Oriental Cuckoo (*Cuculus optatus*) – Migratory (EPBC Act and NC Act)
- Satin Flycatcher (*Myiagra cyanoleuca*) – Migratory (EPBC Act and NC Act)
- Eastern Osprey (*Pandion haliaetus*) – Migratory (EPBC Act and NC Act)
- Spectacled Monarch (*Monarcha trivirgatus*) – Migratory (EPBC Act and NC Act)
- Short-beaked Echidna (*Tachyglossus aculeatus*) – Not listed (EPBC Act), Special least concern (NC Act)

**Ecotone (2022)**

- ▲ Rufous Owl (Cape York Subspecies)

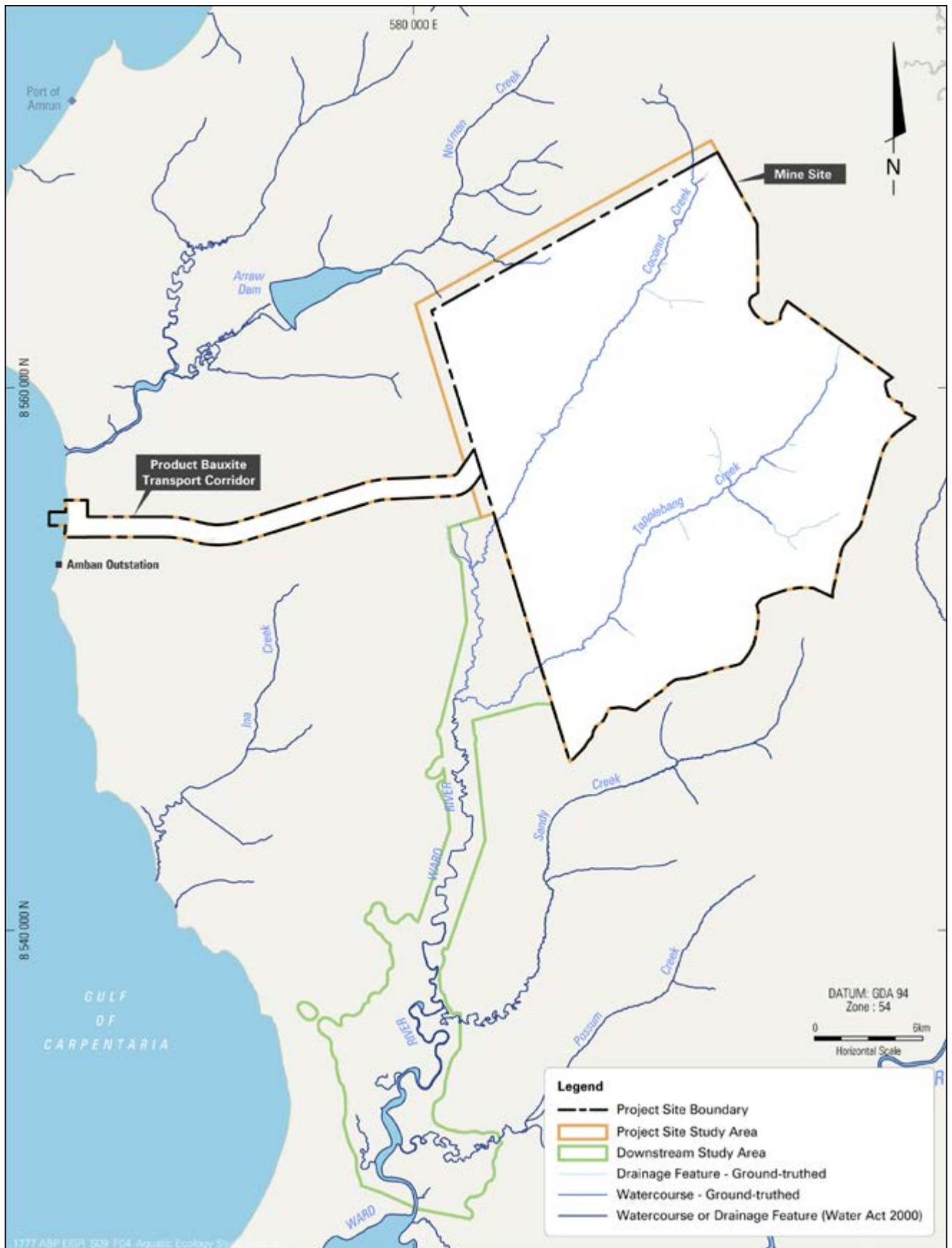
**FIGURE 11-58b : Near threatened, migratory and special least concern species records for the ecology study area**

Terrestrial Ecology Assessment  
Auruken Bauxite Project

Map Number: 22036 TEA, 208 G  
Date: 12 May 2023  
Map Projection: GDA 1994 MGA Zone 54  
Imagery: November 2018  
Data: Roads, DCDB - [q]DNRM 2023



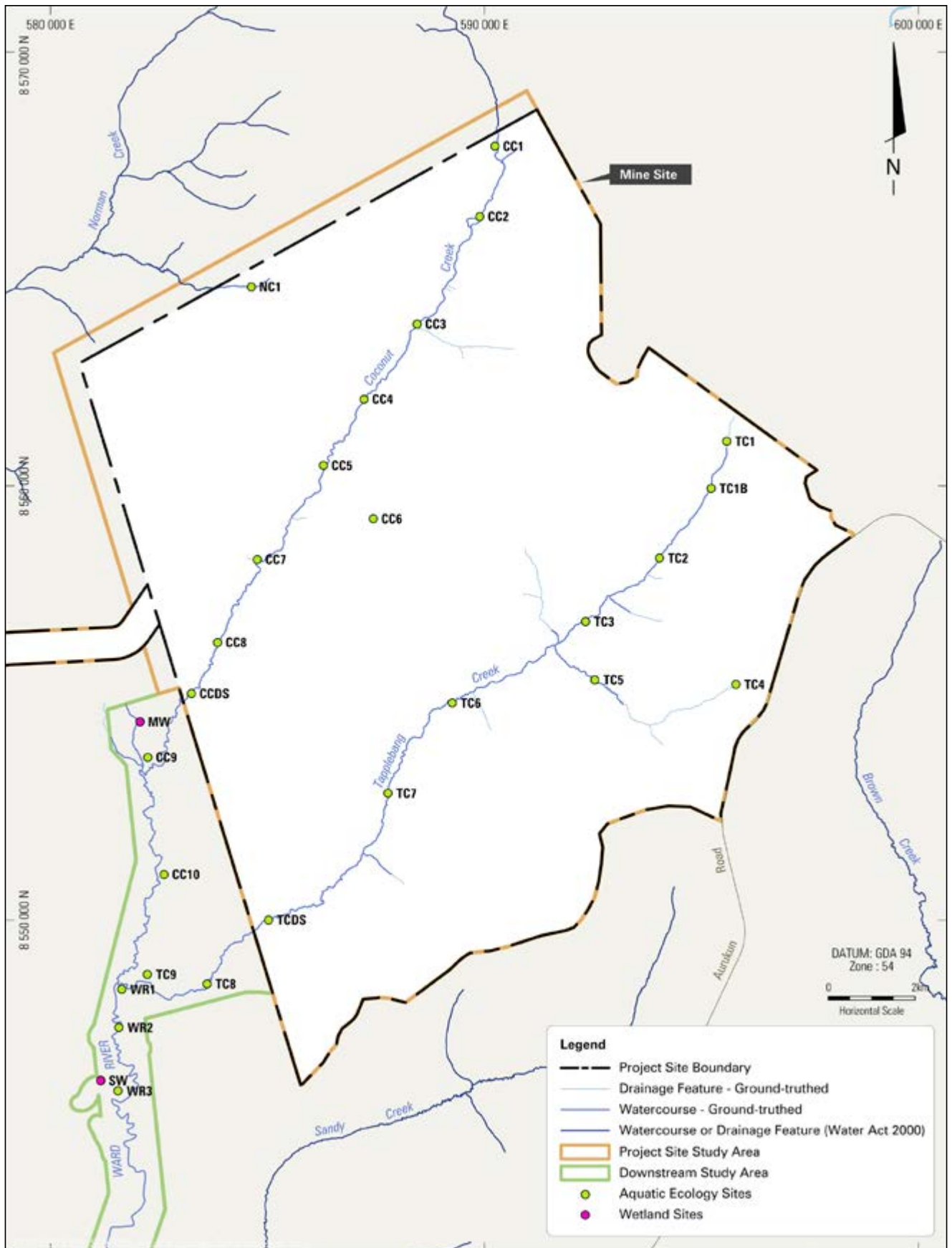
**ECO SOLUTIONS & MANAGEMENT**



AURUKUN BAUXITE PROJECT

Aquatic Ecology Study Area

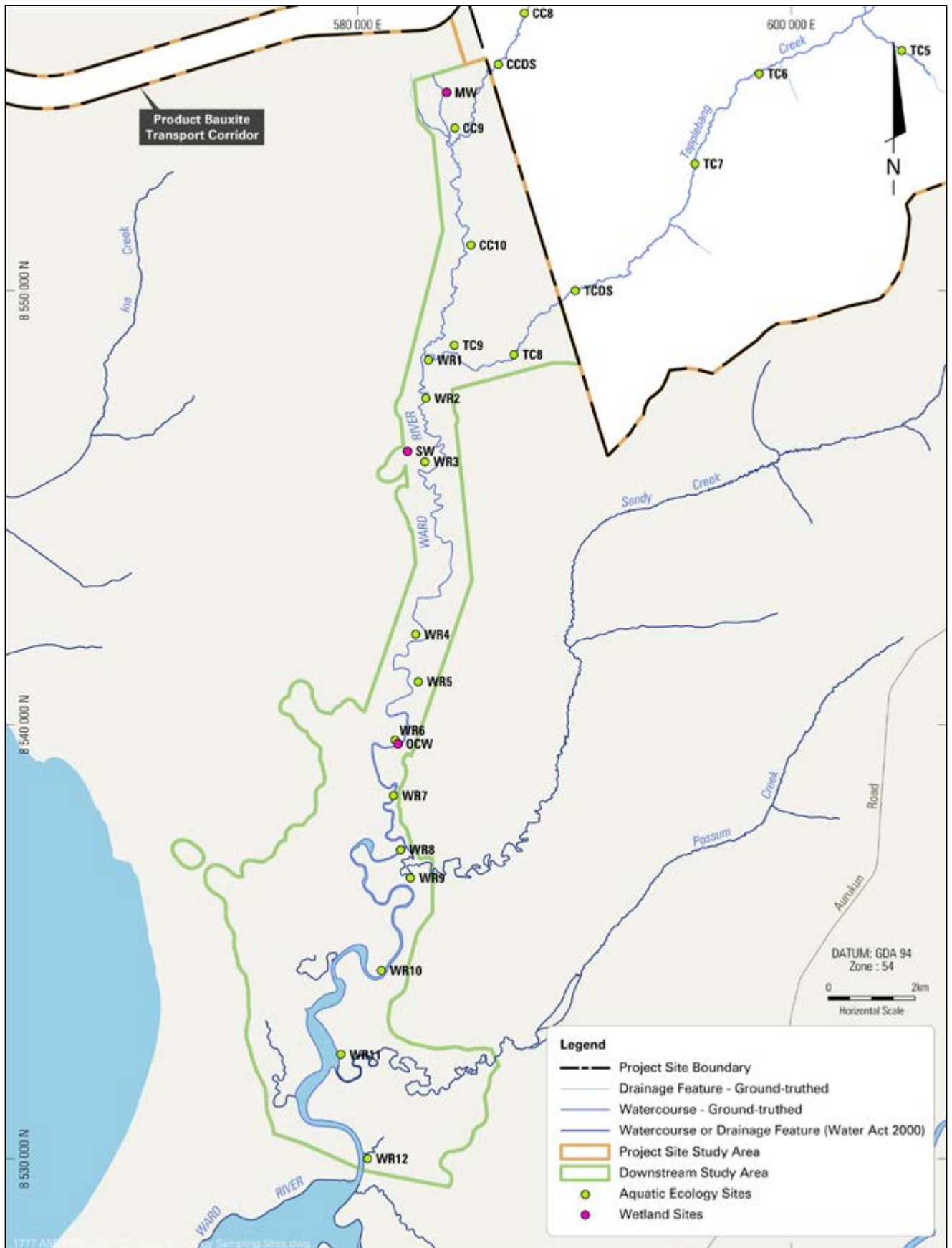
**FIGURE 11-59**



AURUKUN BAUXITE PROJECT

Aquatic Ecology Sampling Sites

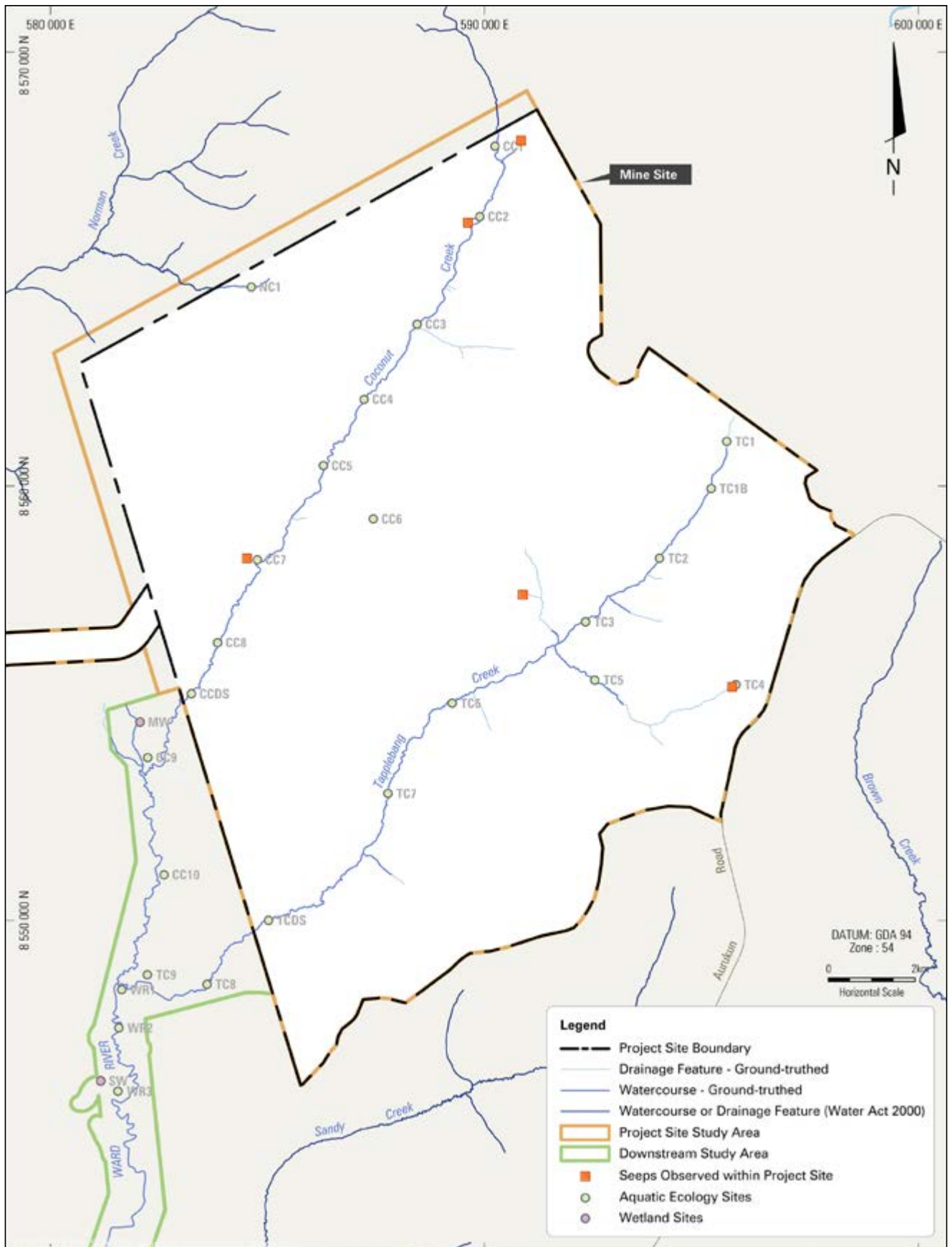
**FIGURE 11-60A**



AURUKUN BAUXITE PROJECT

Aquatic Ecology Sampling Sites

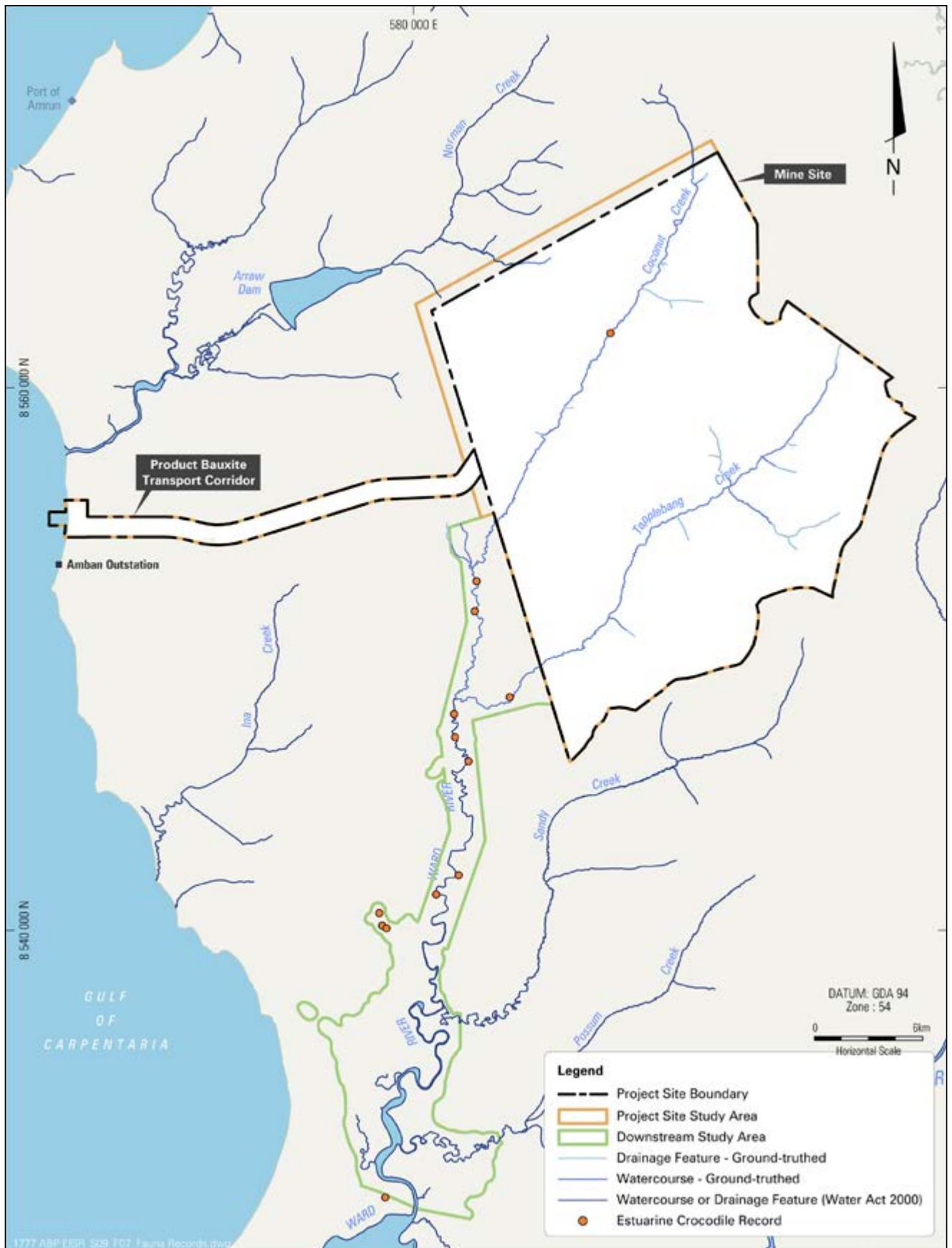
**FIGURE 11-60B**



AURUKUN BAUXITE PROJECT

Seasonal Groundwater Seeps

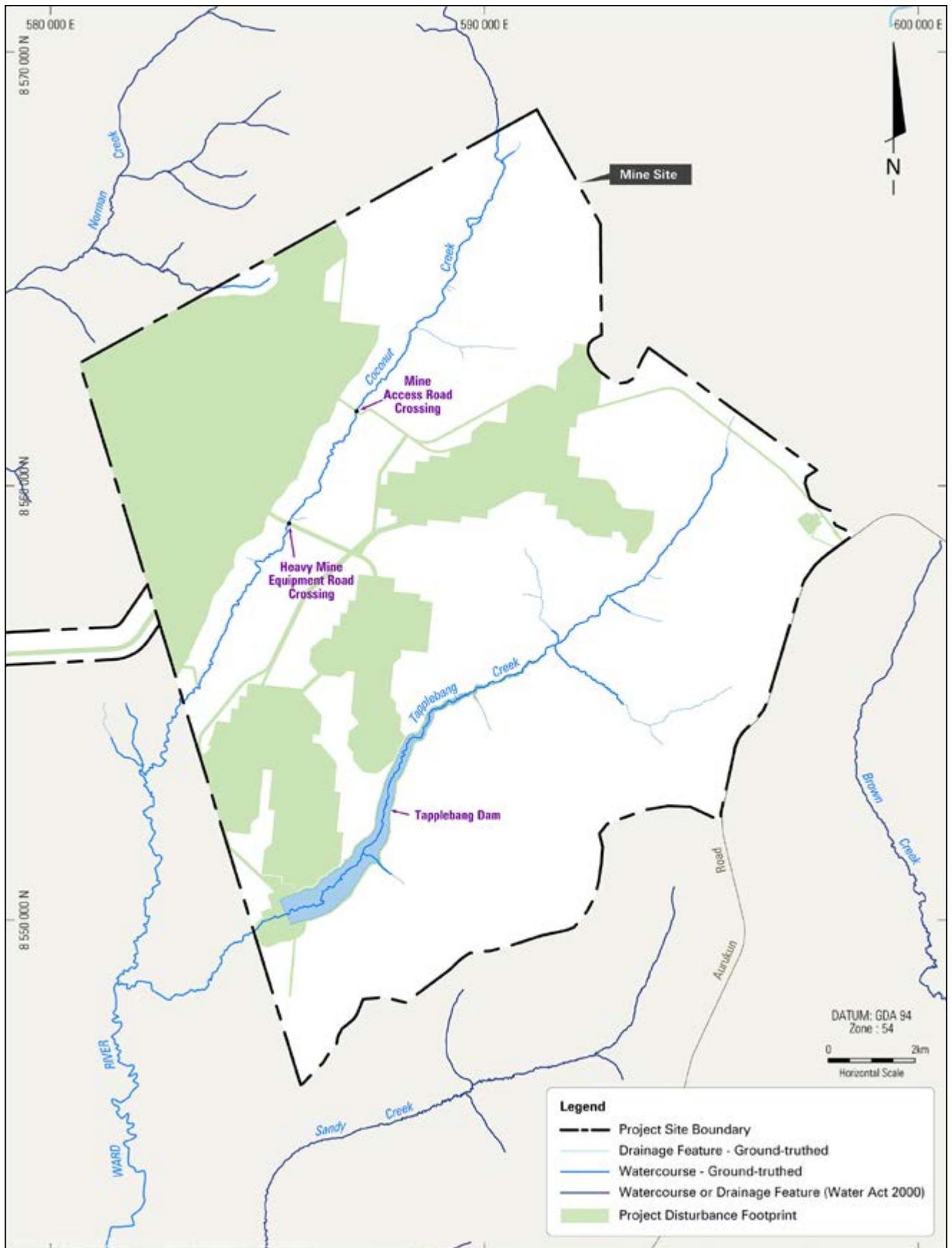
**FIGURE 11-61**



AURUKUN BAUXITE PROJECT

Fauna Records in the Aquatic Ecology Study Area

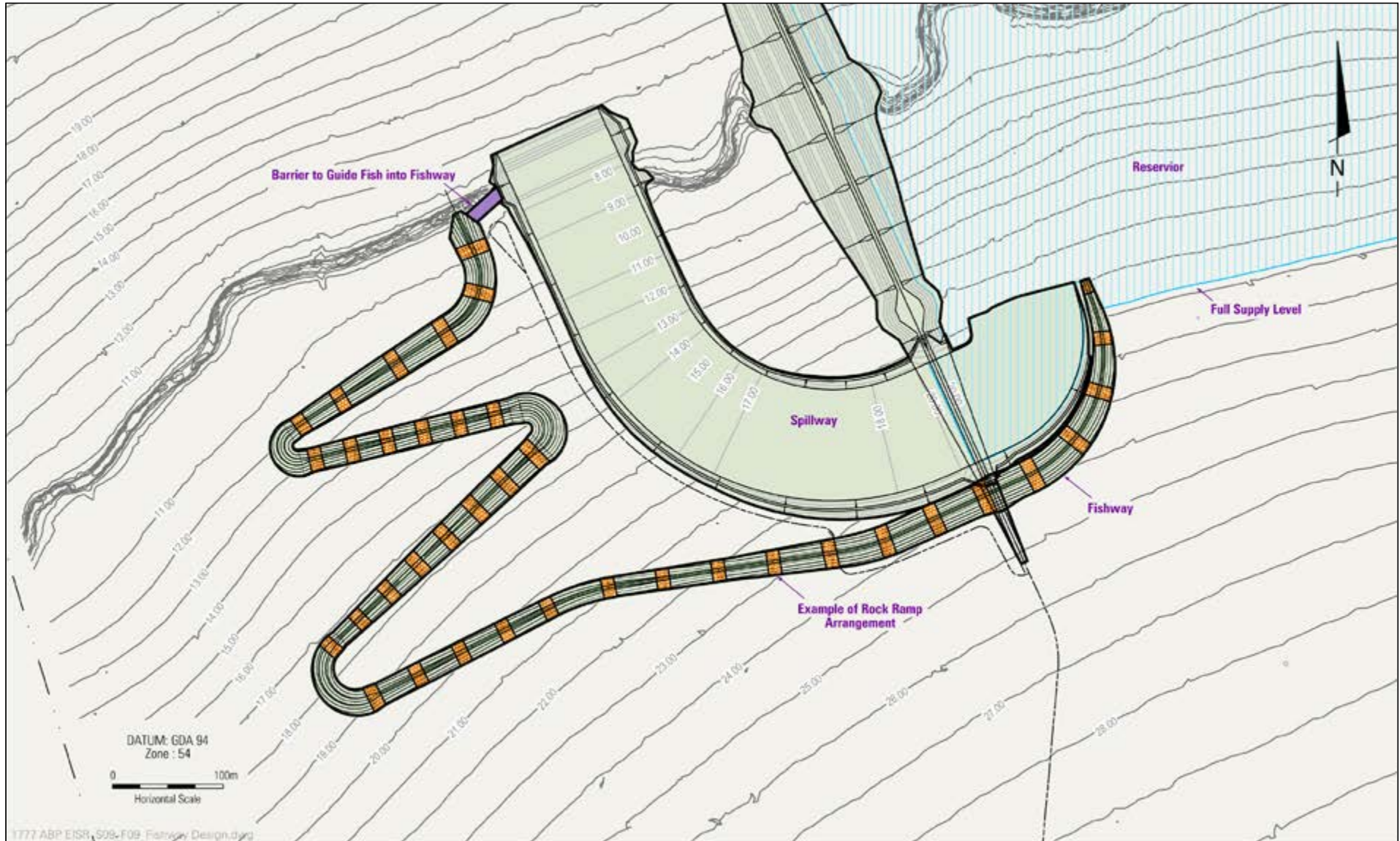
**FIGURE 11-62**



AURUKUN BAUXITE PROJECT

Project Disturbance Footprint

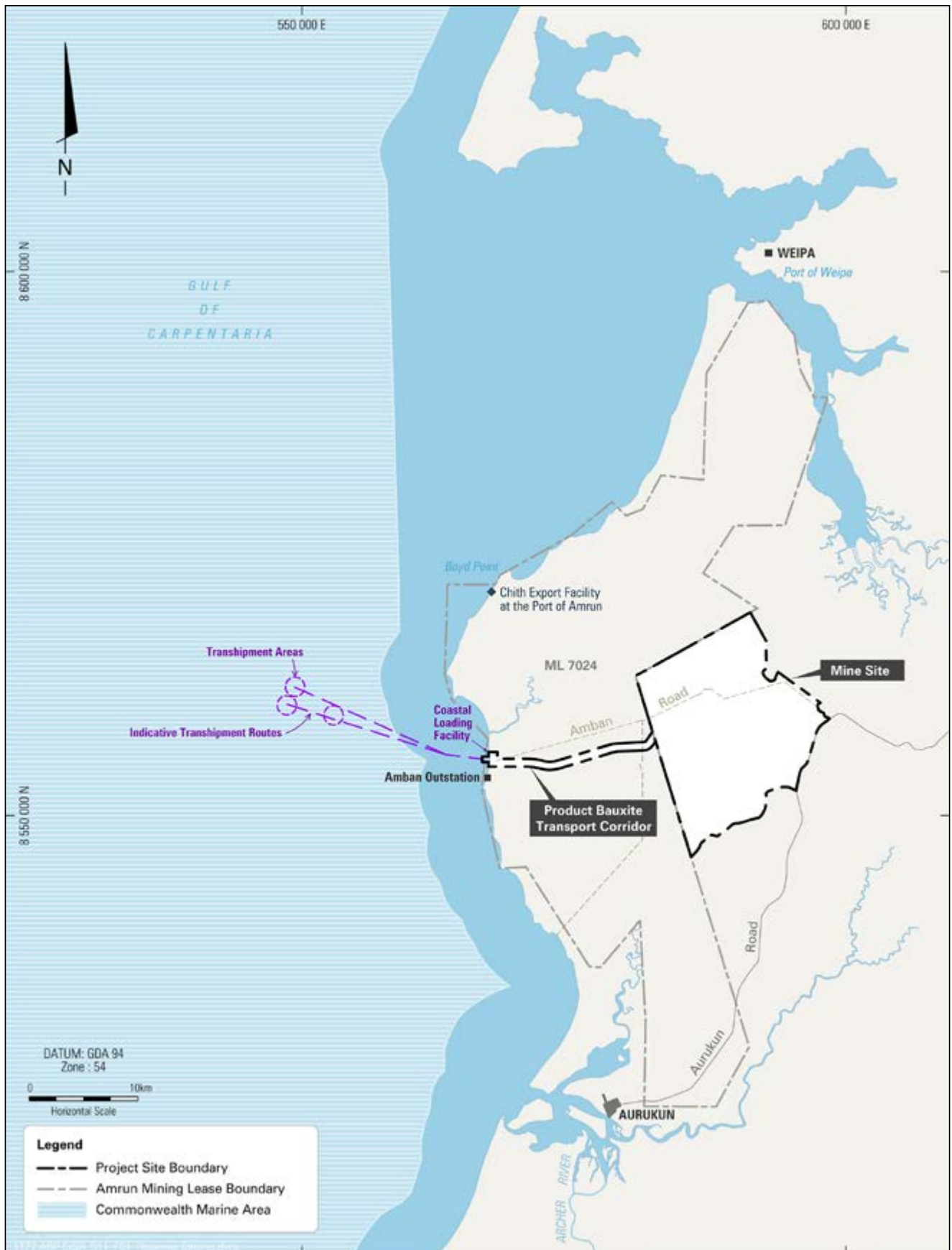
**FIGURE 11-63**



AURUKUN BAUXITE PROJECT

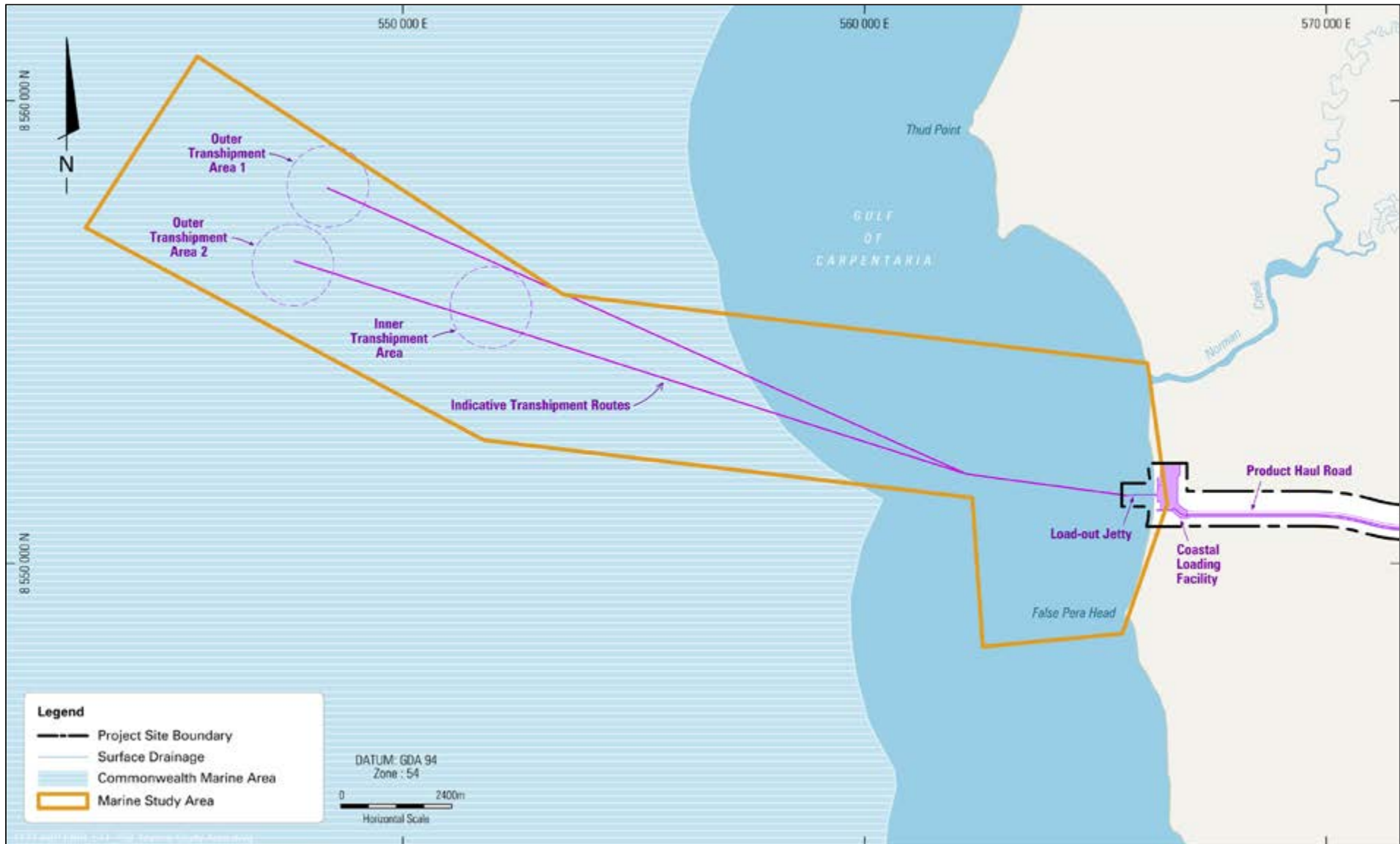
Fishway Conceptual Design

**FIGURE 11-64**



AURUKUN BAUXITE PROJECT  
 Regional Setting (Marine Environment)

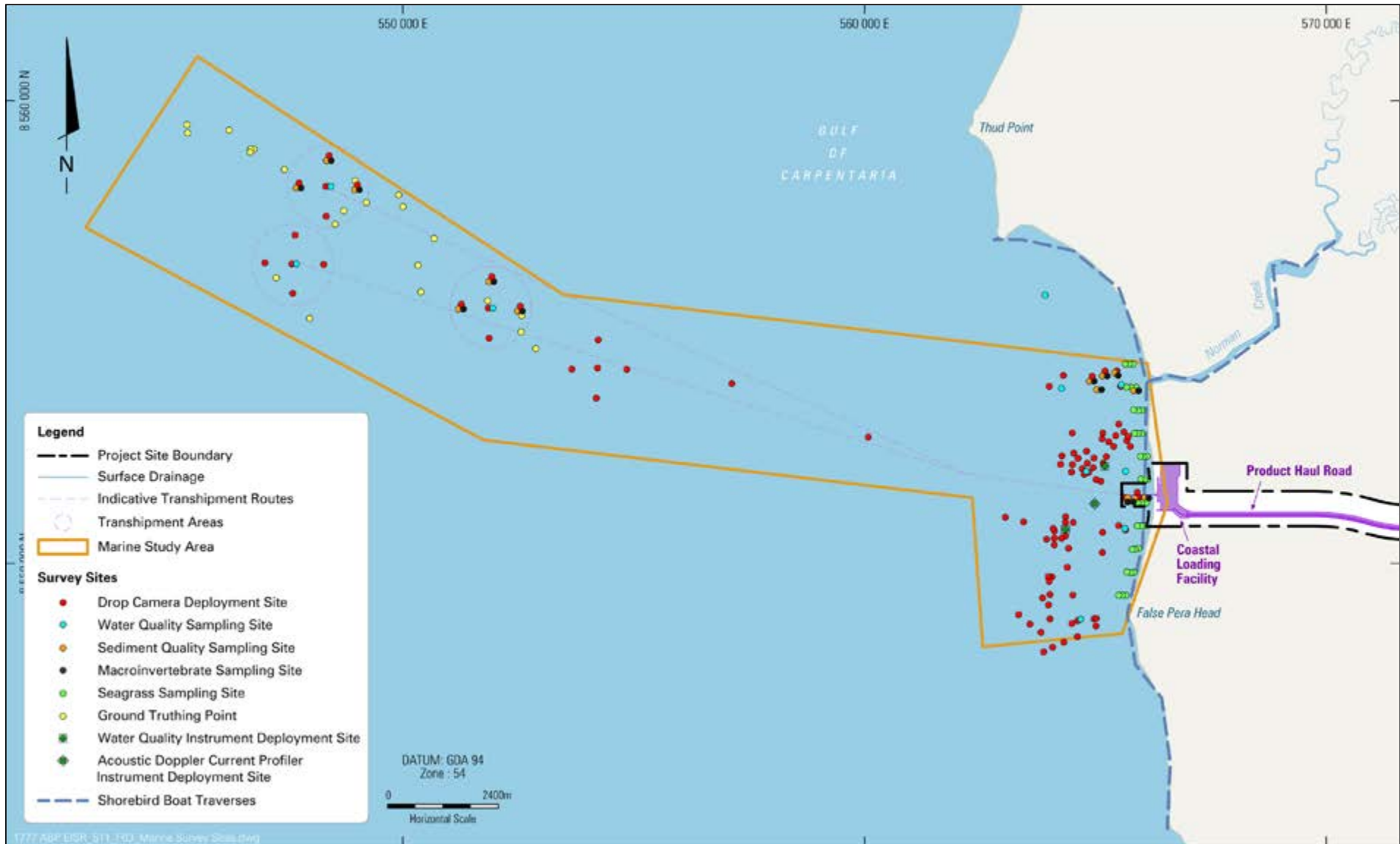
**FIGURE 11-65**



AURUKUN BAUXITE PROJECT

Marine Study Area

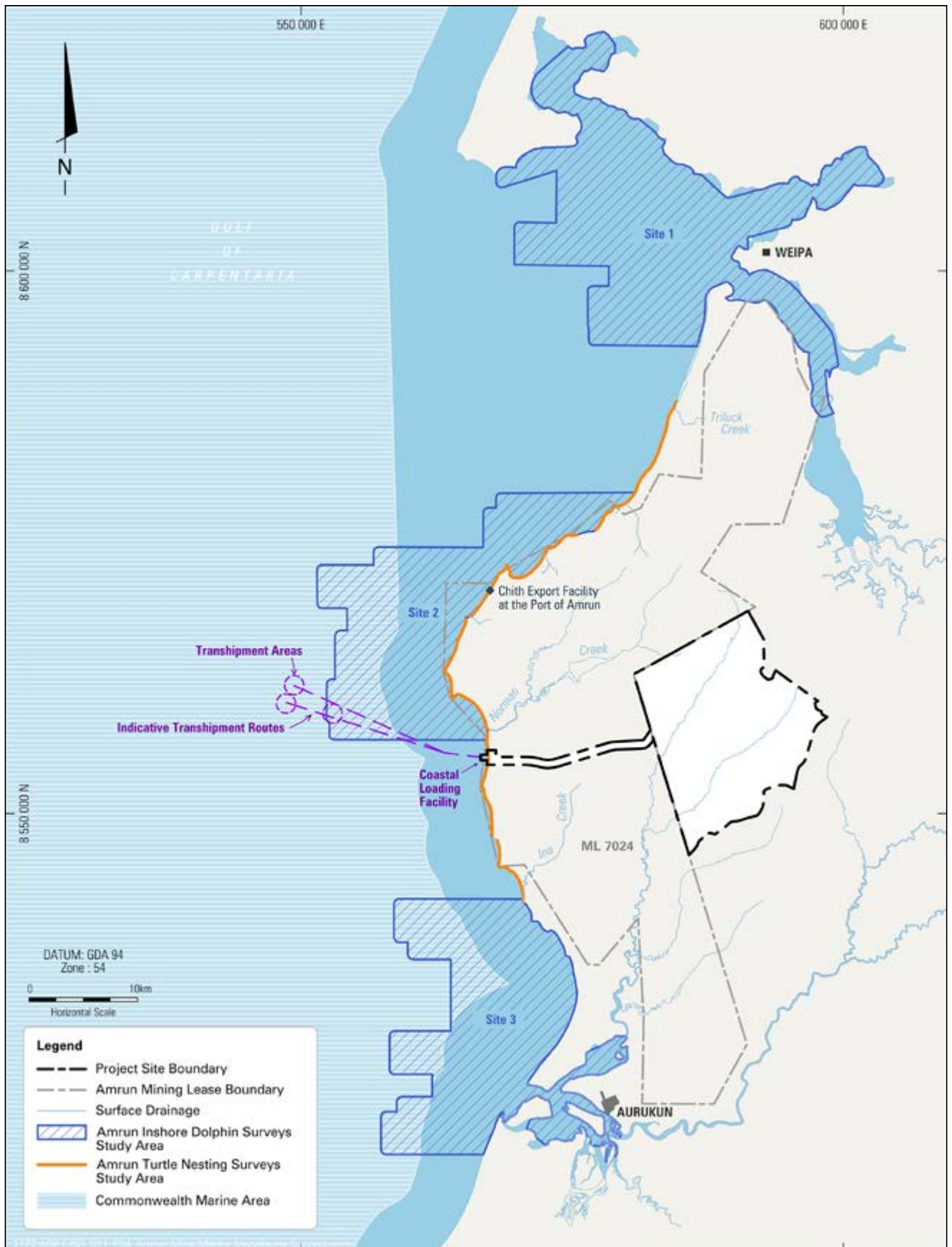
**FIGURE 11-66**



AURUKUN BAUXITE PROJECT

Marine Survey Sites

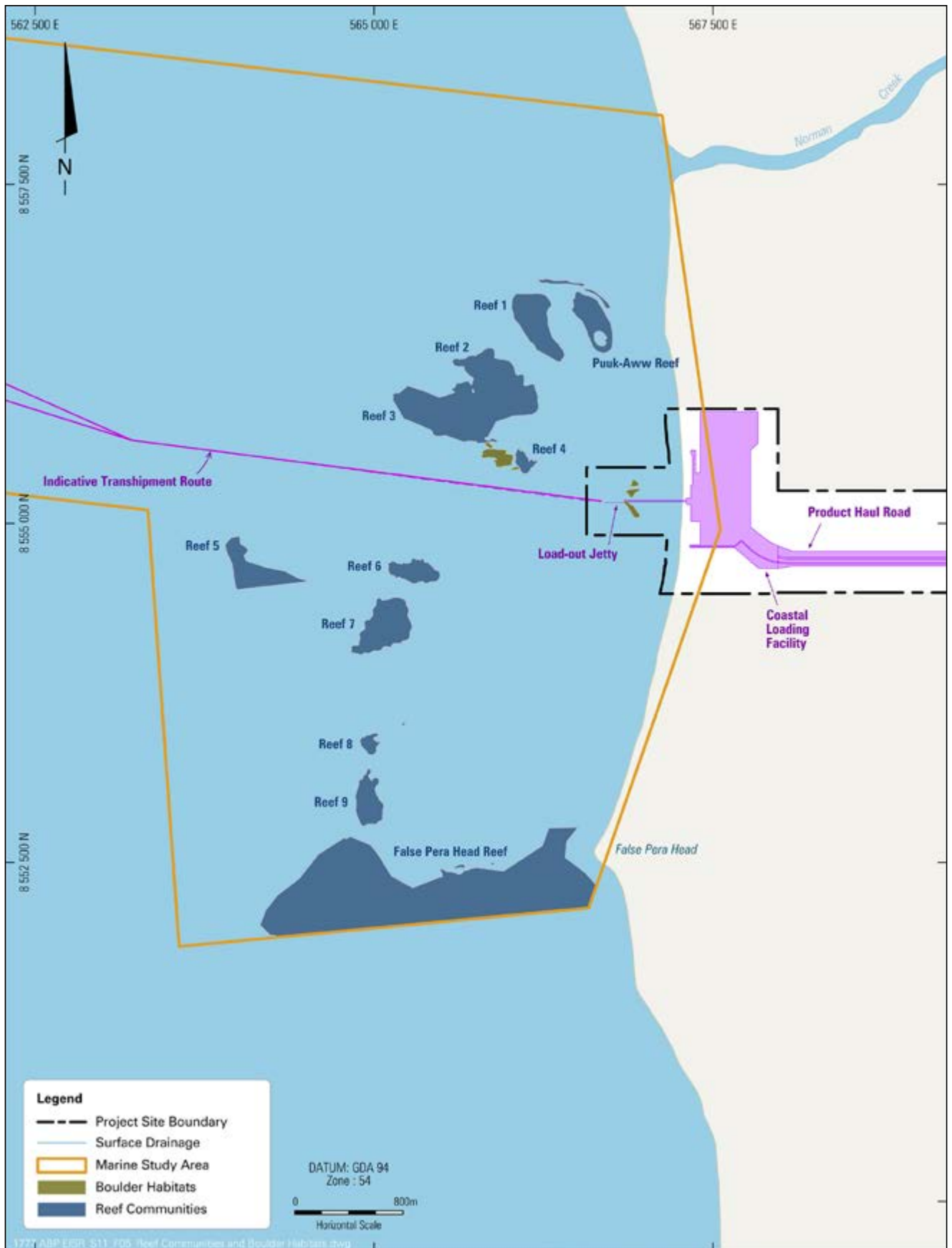
**FIGURE 11-67**



AURUKUN BAUXITE PROJECT

Amrun Marine Megafauna Surveys

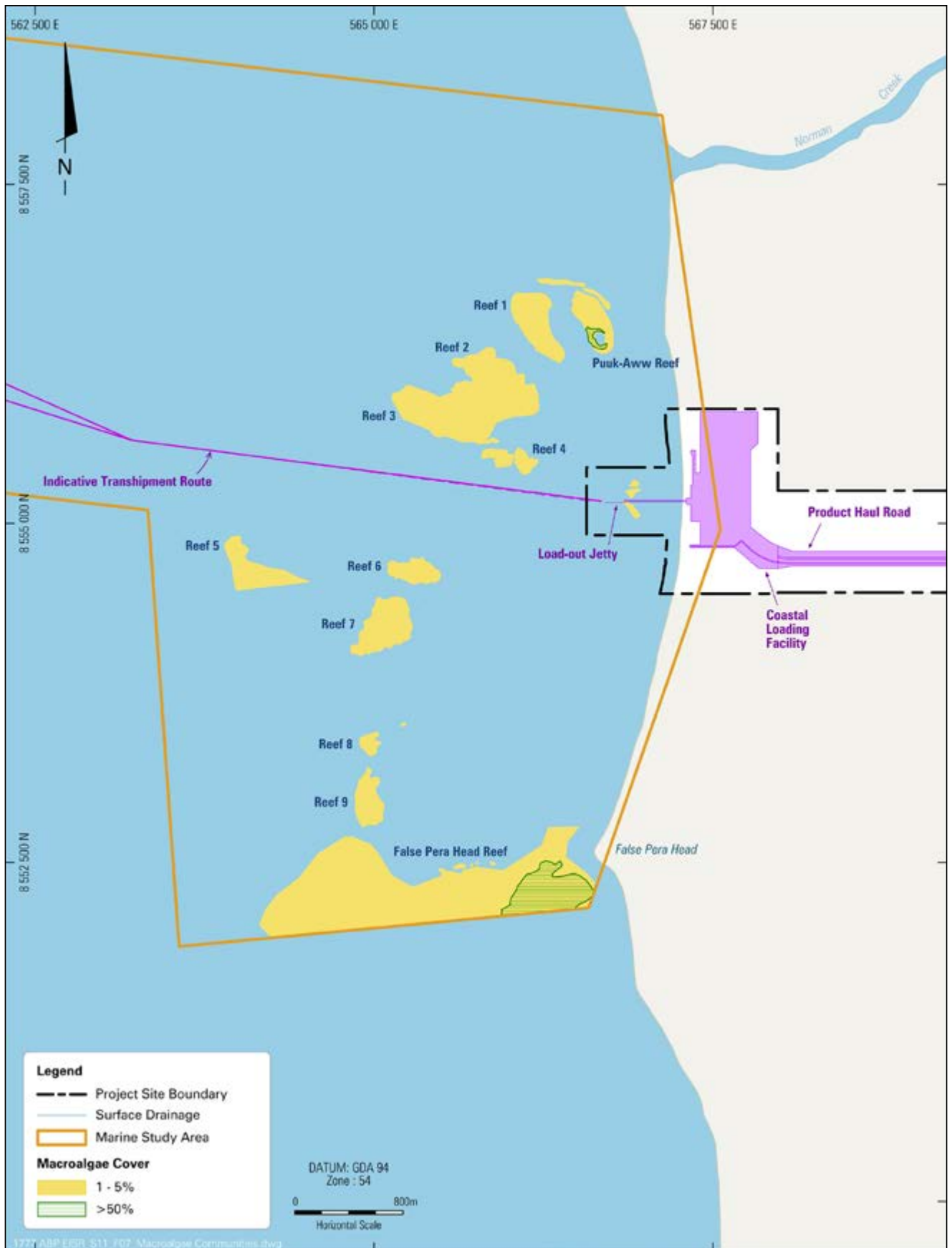
**FIGURE 11-68**



AURUKUN BAUXITE PROJECT

Reef Communities and Boulder Habitats within the Marine Study Area

**FIGURE 11-69**



AURUKUN BAUXITE PROJECT

Macroalgae Communities within the Marine Study Area

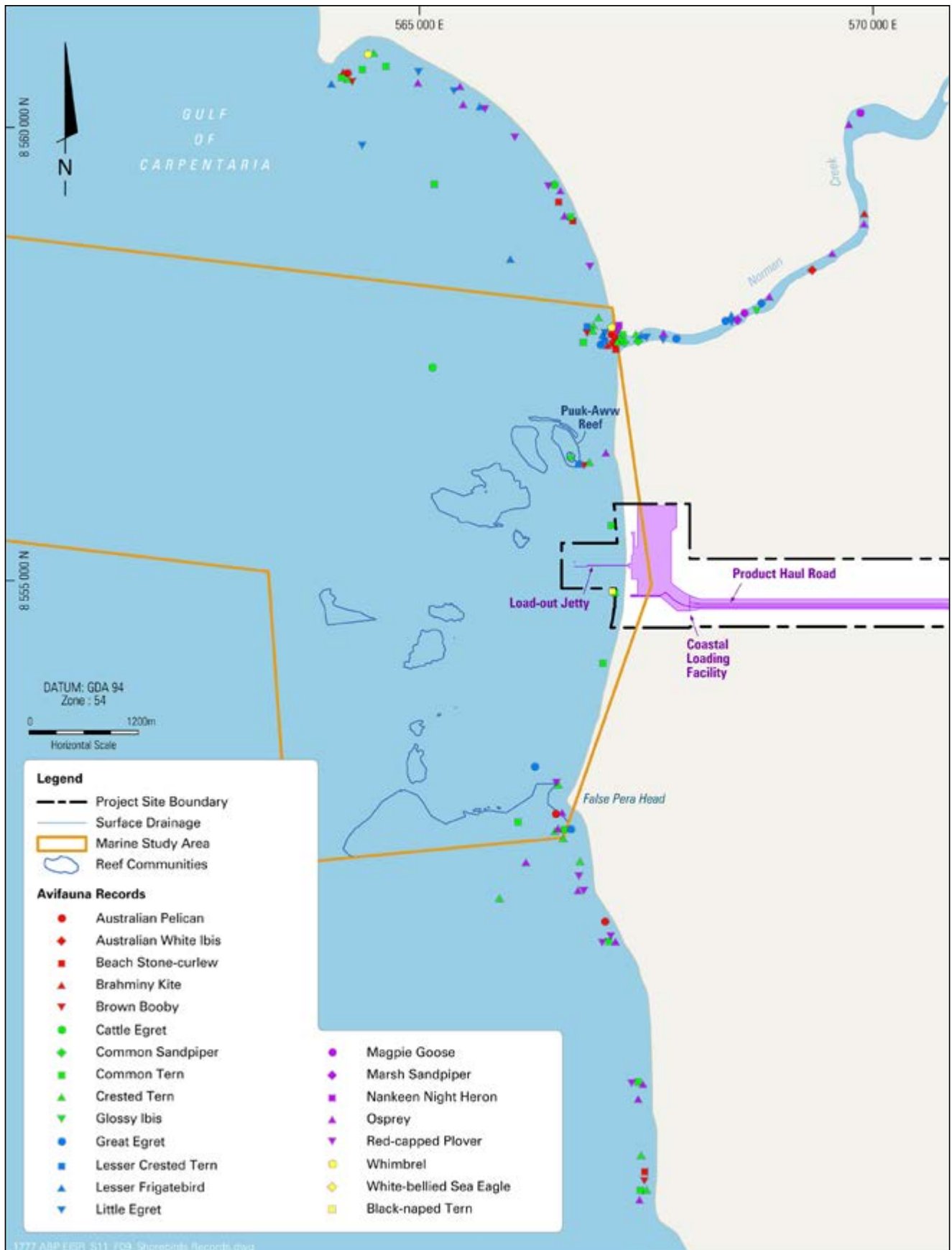
**FIGURE 11-70**



AURUKUN BAUXITE PROJECT

Offshore Reef Features

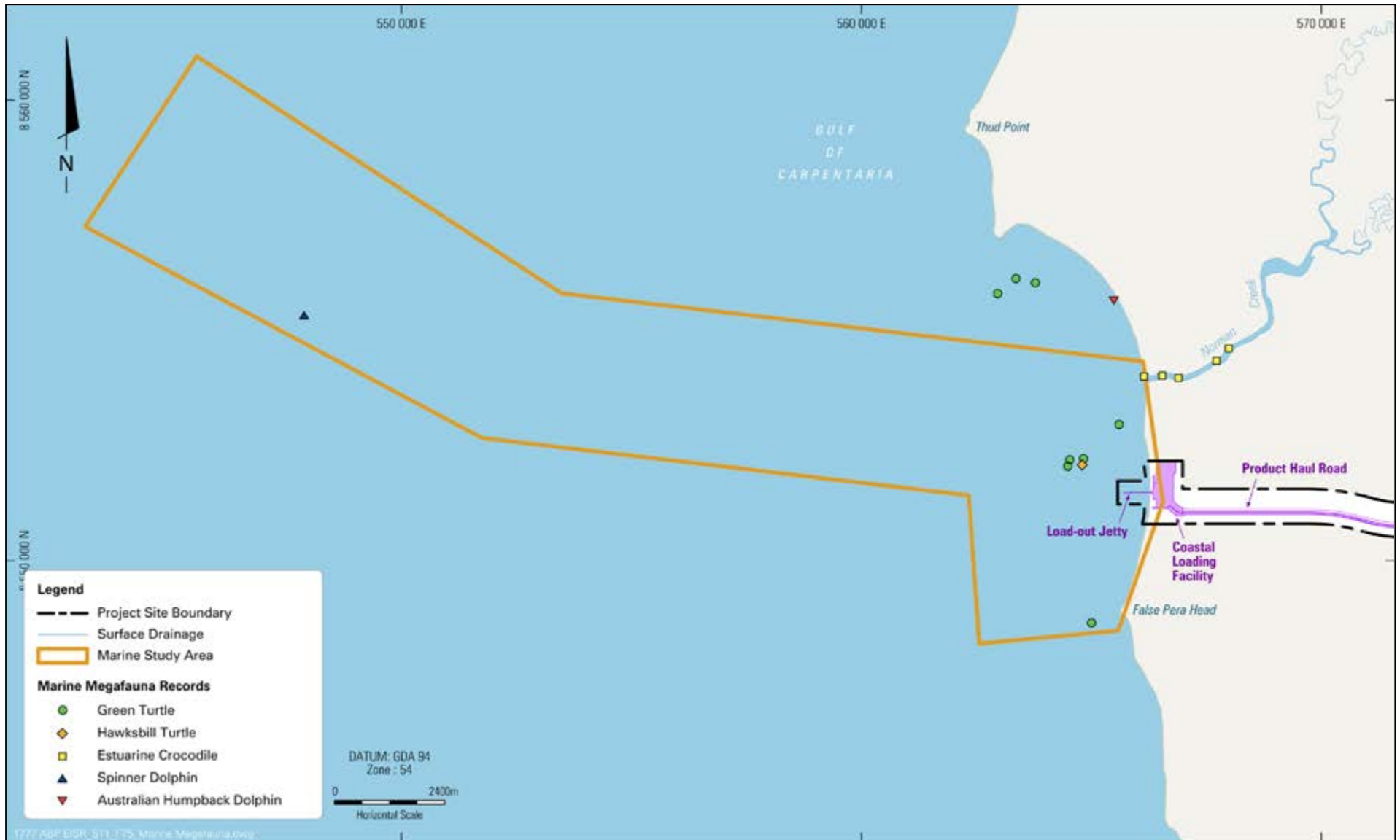
**FIGURE 11-71**



AURUKUN BAUXITE PROJECT

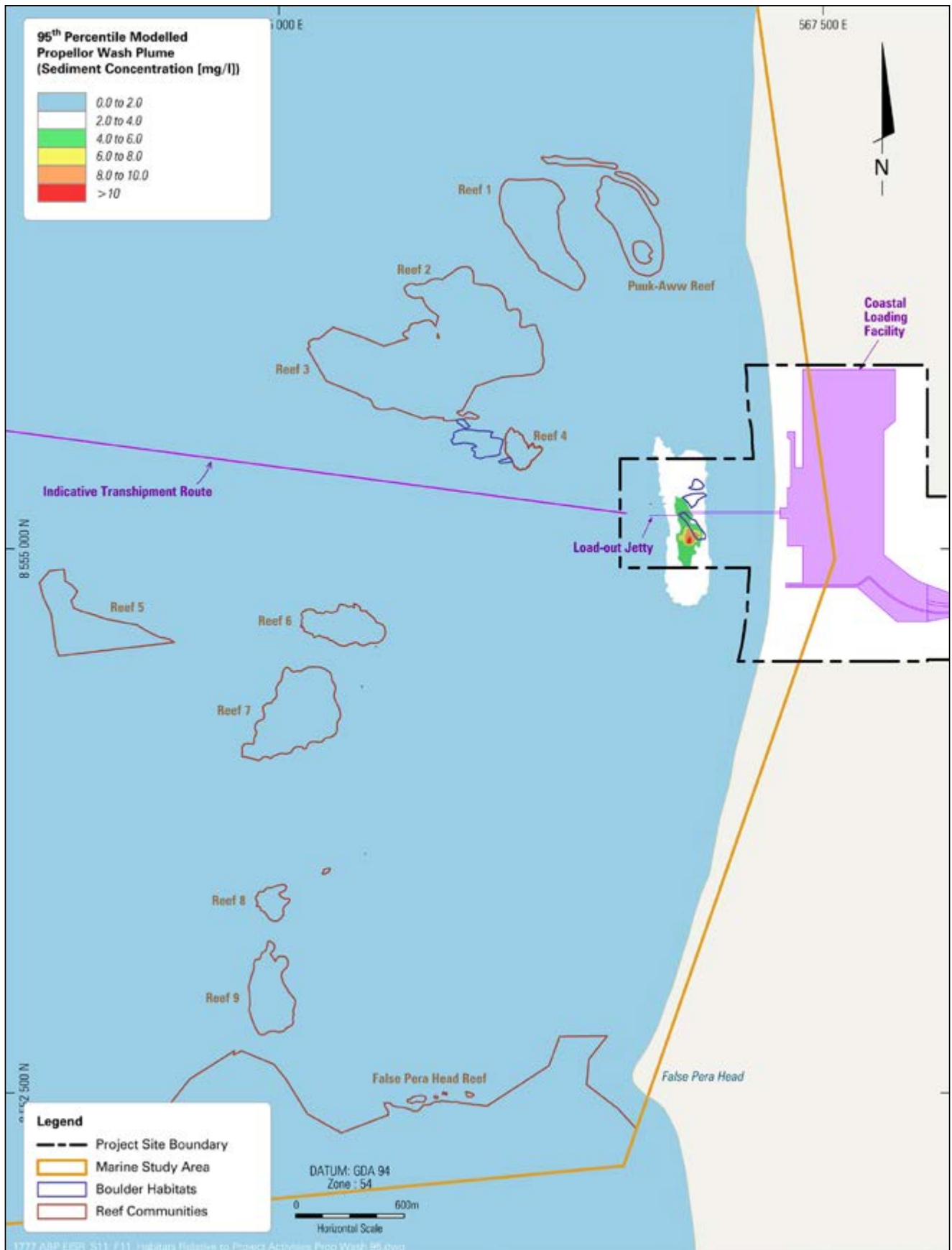
Avifauna Records

**FIGURE 11-72**



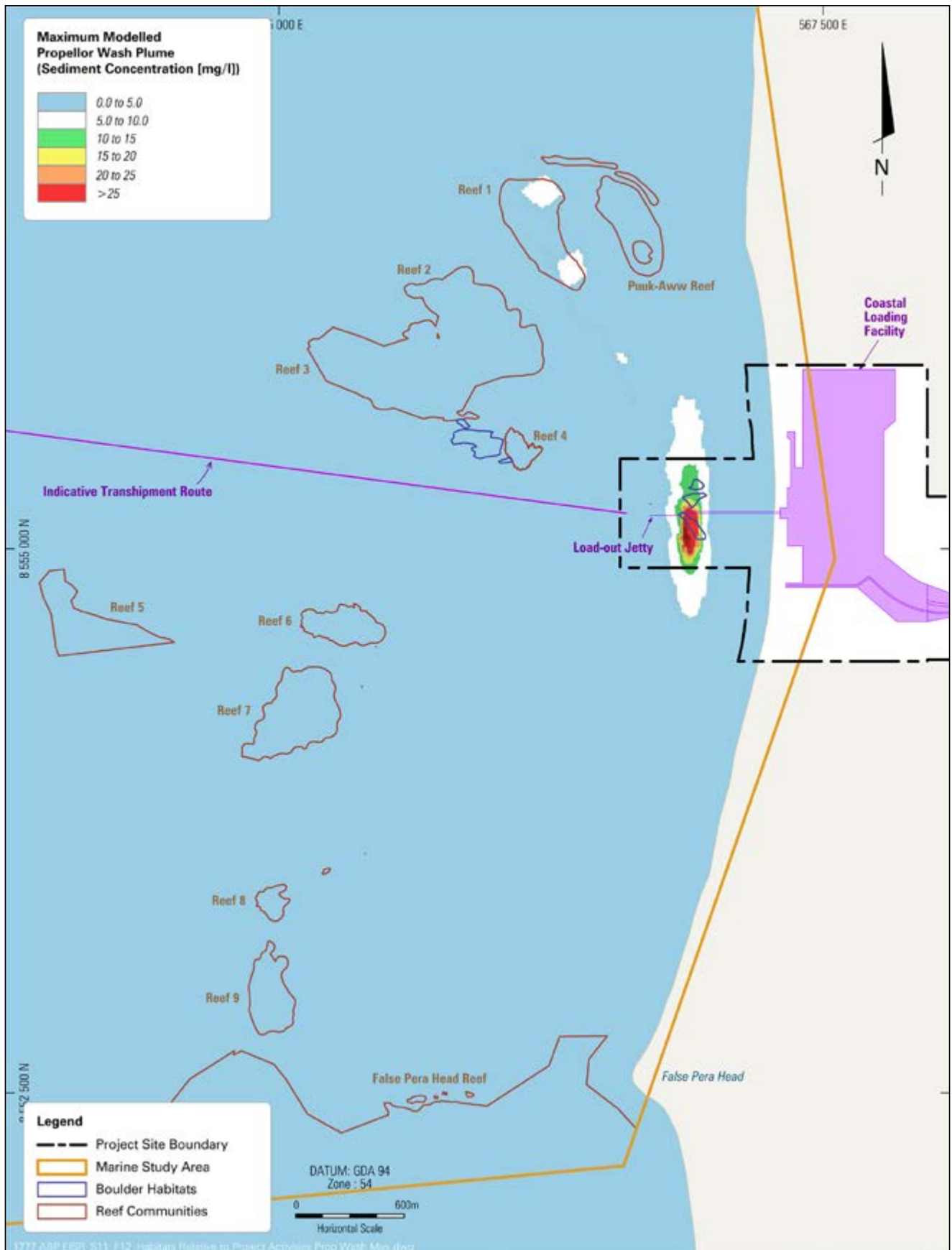
AURUKUN BAUXITE PROJECT  
Incidental Marine Megafauna Records

**FIGURE 11-73**



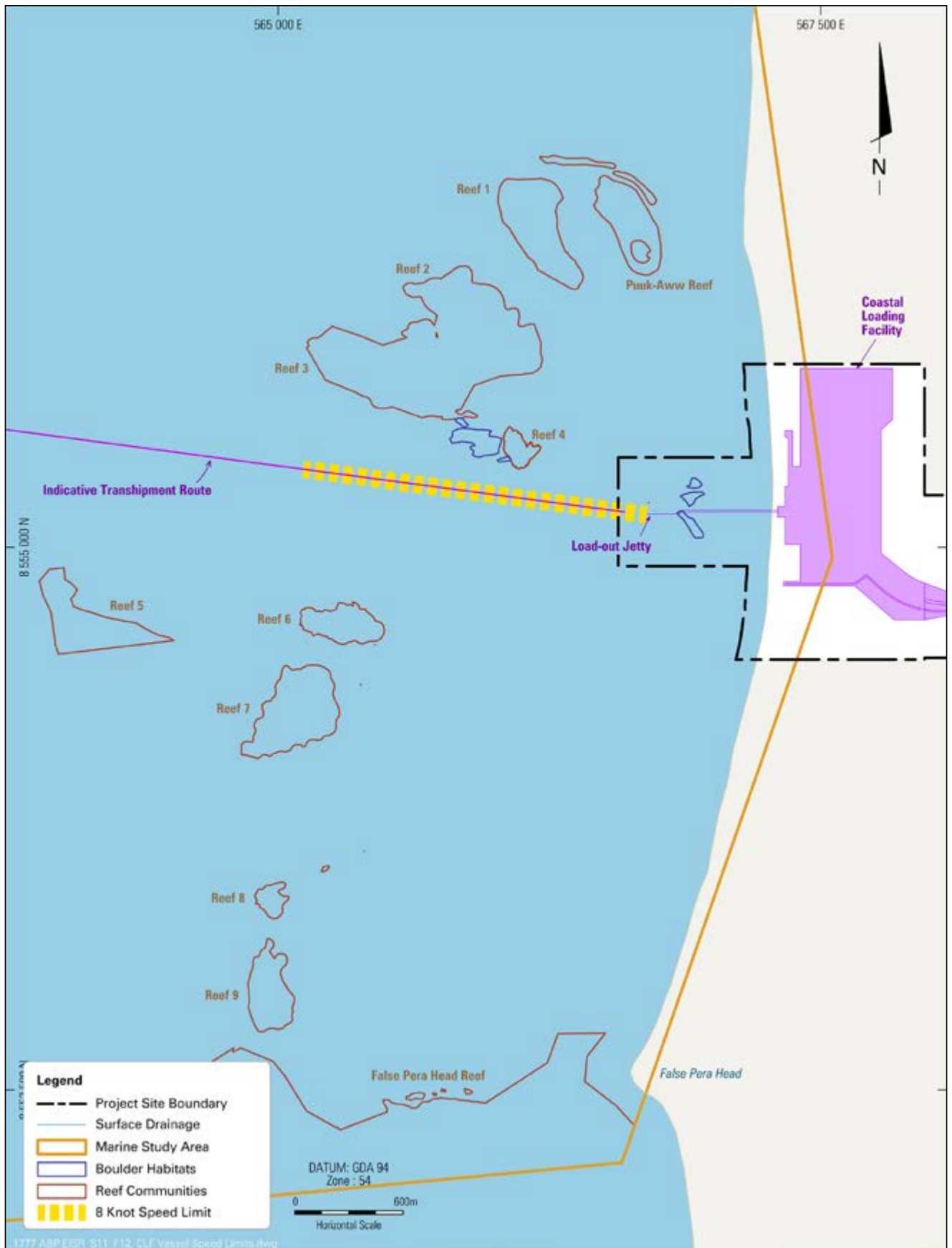
AURUKUN BAUXITE PROJECT  
 Reef Communities and Boulder Habitats Relative to Project Activities  
 (Propellor Wash: 95th Percentile Plume)

**FIGURE 11-74**



AURUKUN BAUXITE PROJECT  
 Reef Communities and Boulder Habitats Relative to Project Activities  
 (Propellor Wash: Maximum Plume)

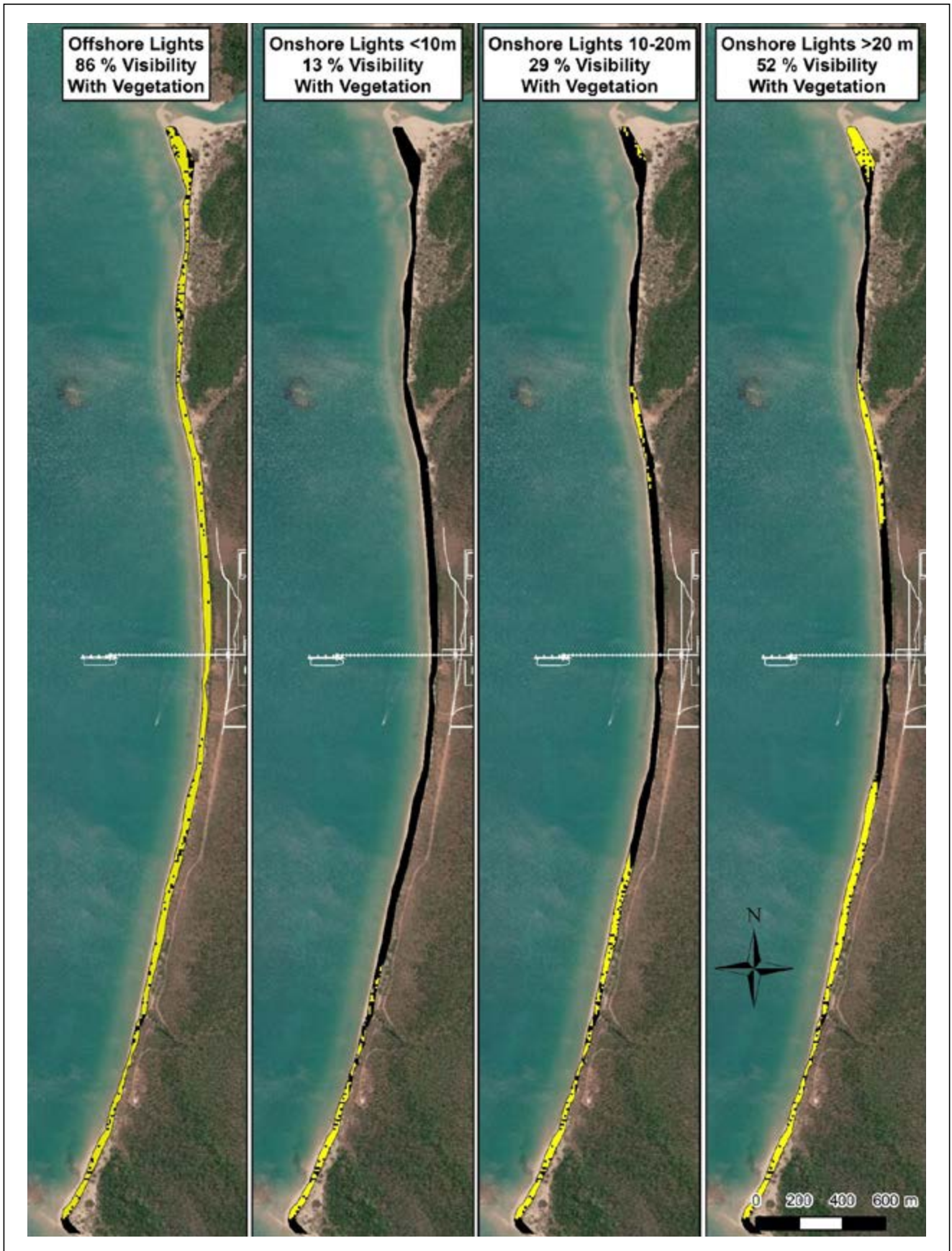
**FIGURE 11-75**



AURUKUN BAUXITE PROJECT

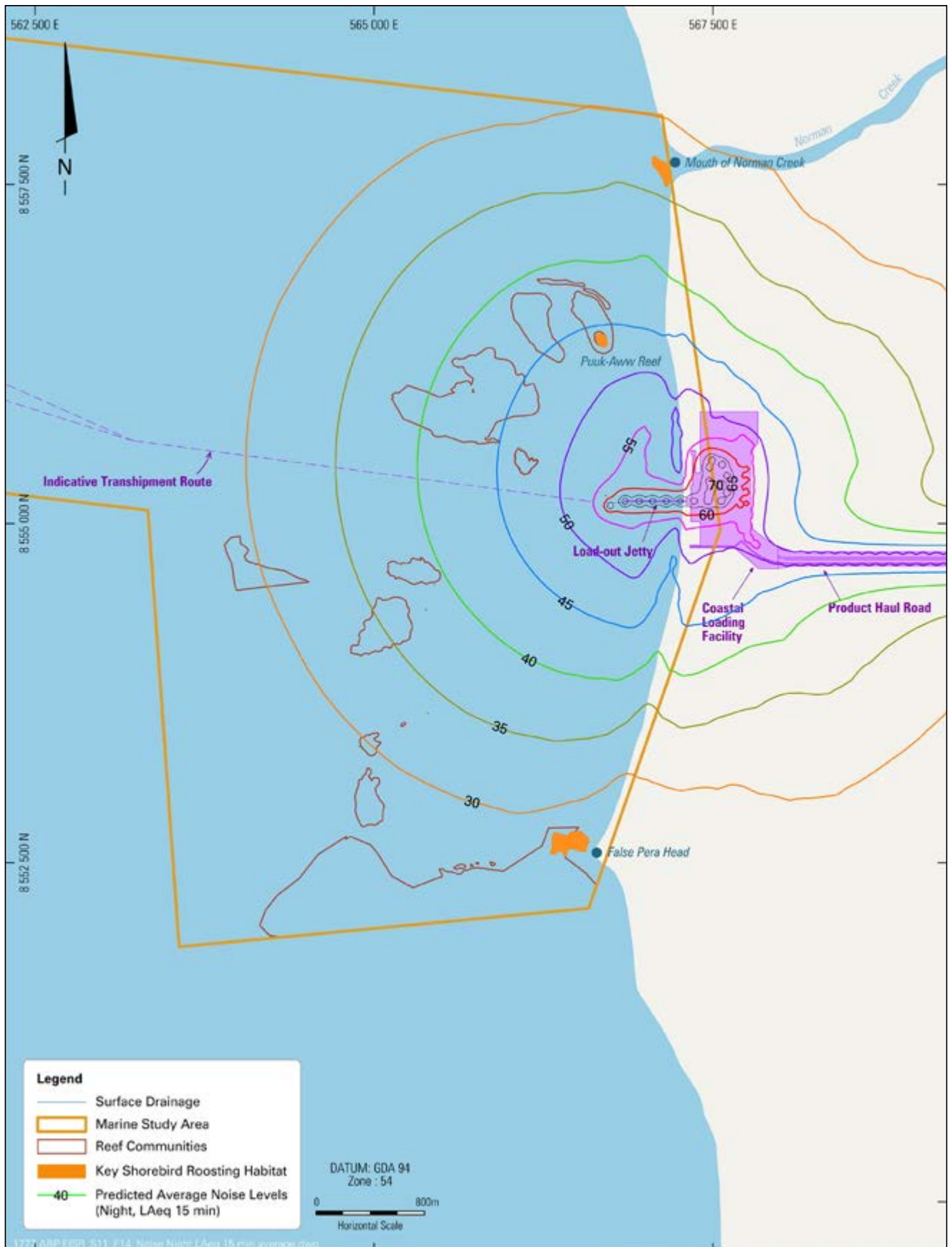
Vessel Speed Limits in Inshore Area

**FIGURE 11-76**



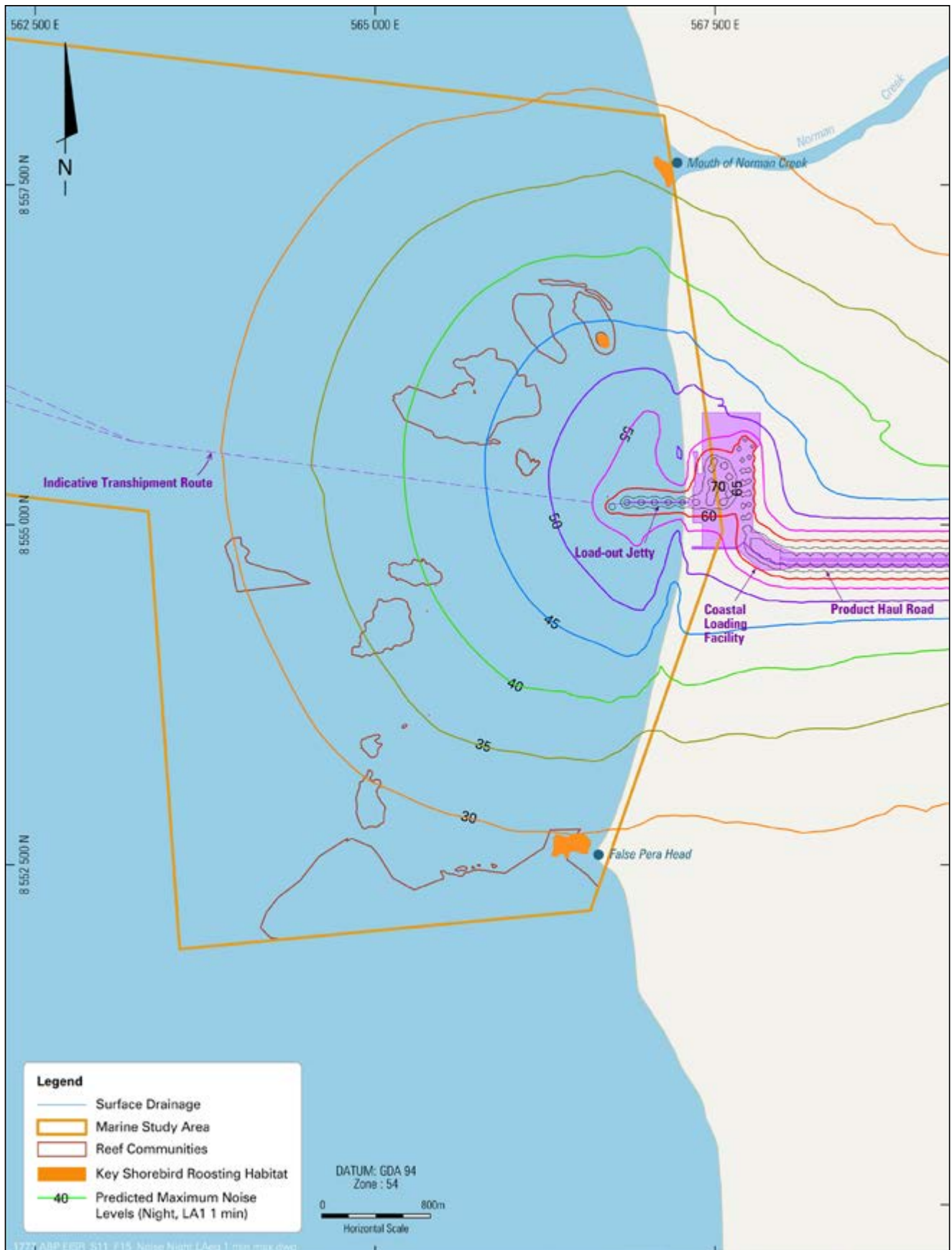
AURUKUN BAUXITE PROJECT  
 Visibility of Light at the Turtle Nesting Habitat for  
 Each Lighting Scenario (with Existing Vegetation)

**FIGURE 11-77**



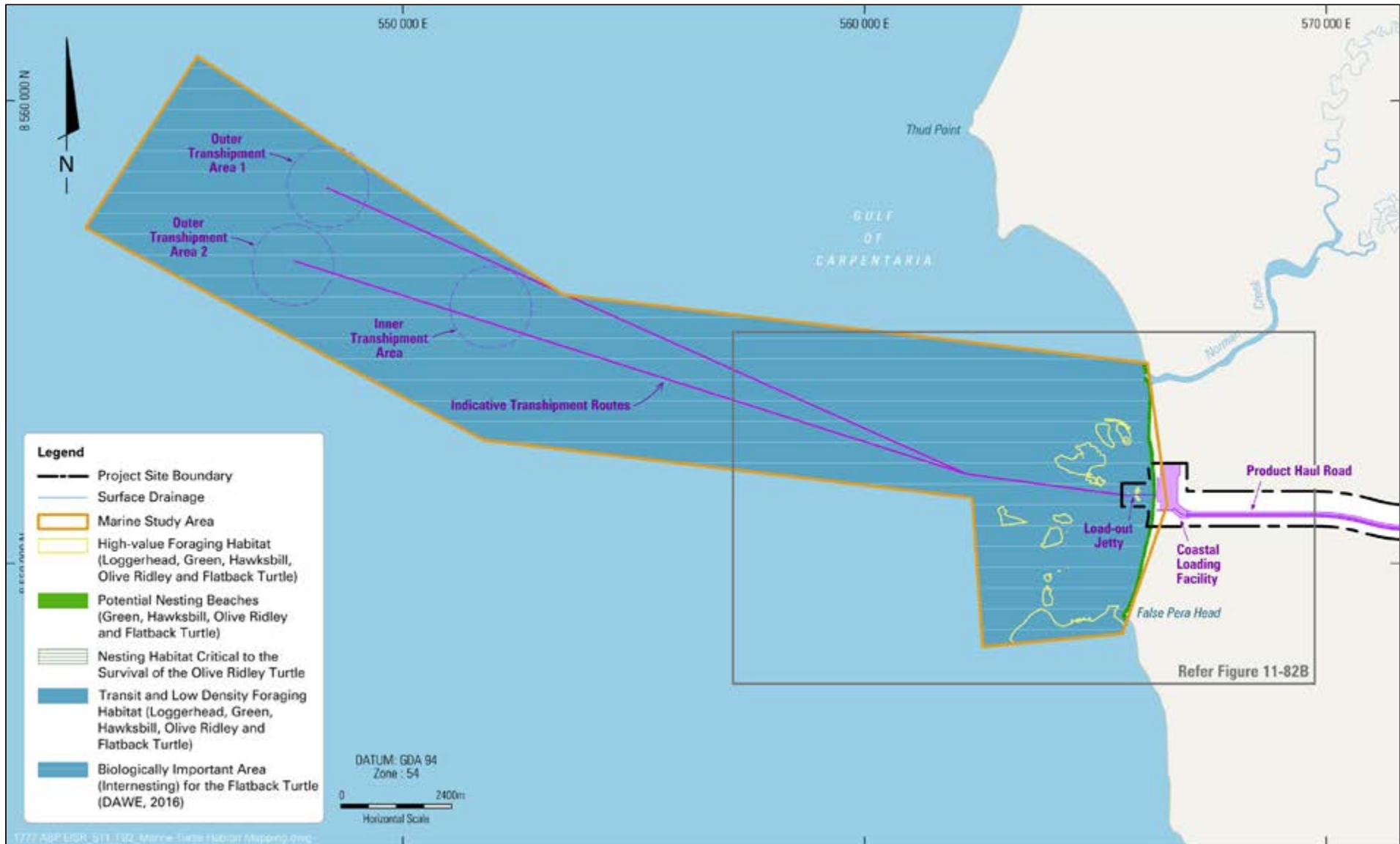
AURUKUN BAUXITE PROJECT  
 Predicted Average Noise Levels (Night, LAeq, 15 min)  
 in the Vicinity of the CLF During Operations

**FIGURE 11-78**



AURUKUN BAUXITE PROJECT  
 Predicted Maximum Noise Levels (Night, LA1, 1 min)  
 in the Vicinity of the CLF During Operations

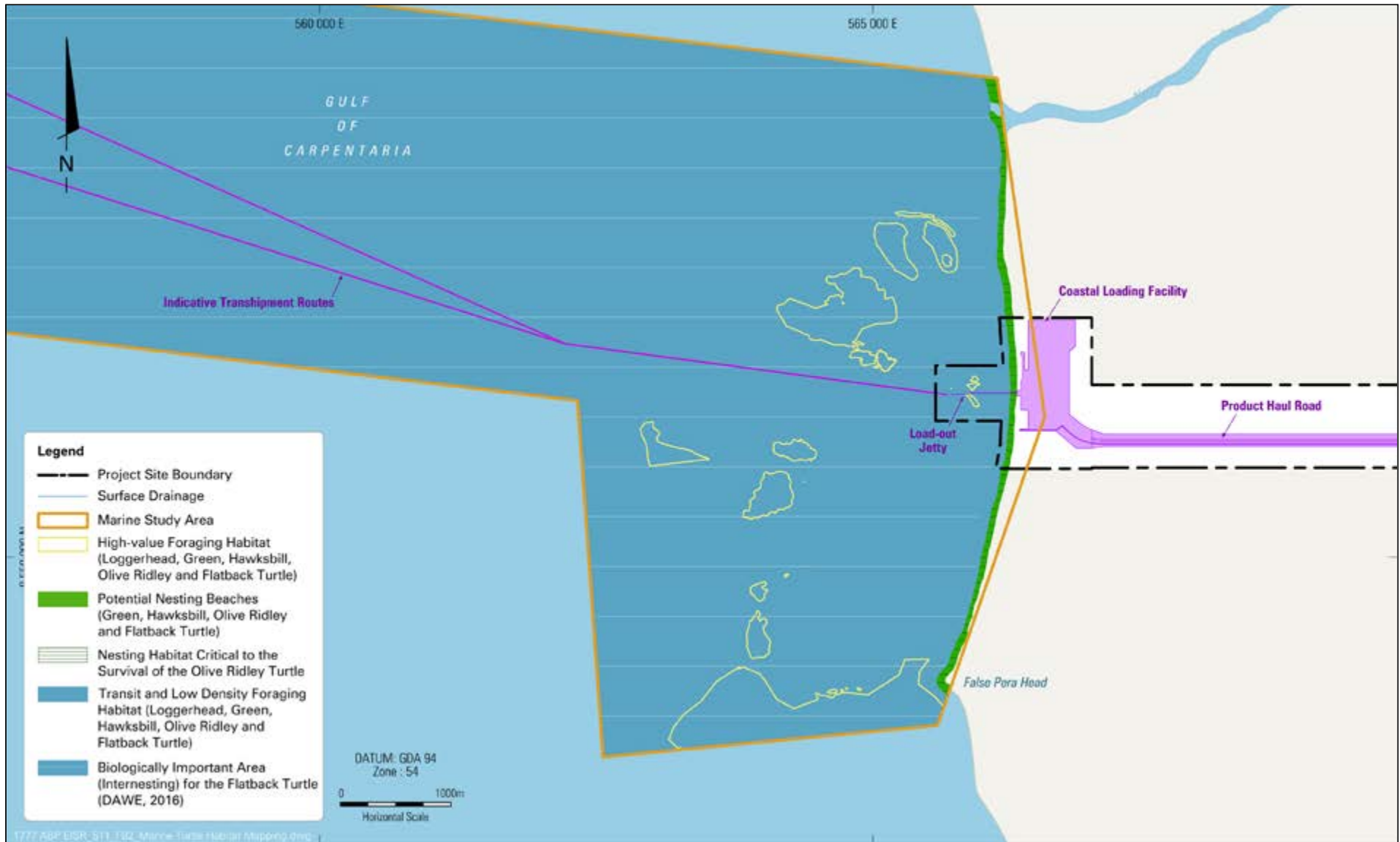
**FIGURE 11-79**



AURUKUN BAUXITE PROJECT

Marine Turtle Habitat Mapping within the Marine Study Area

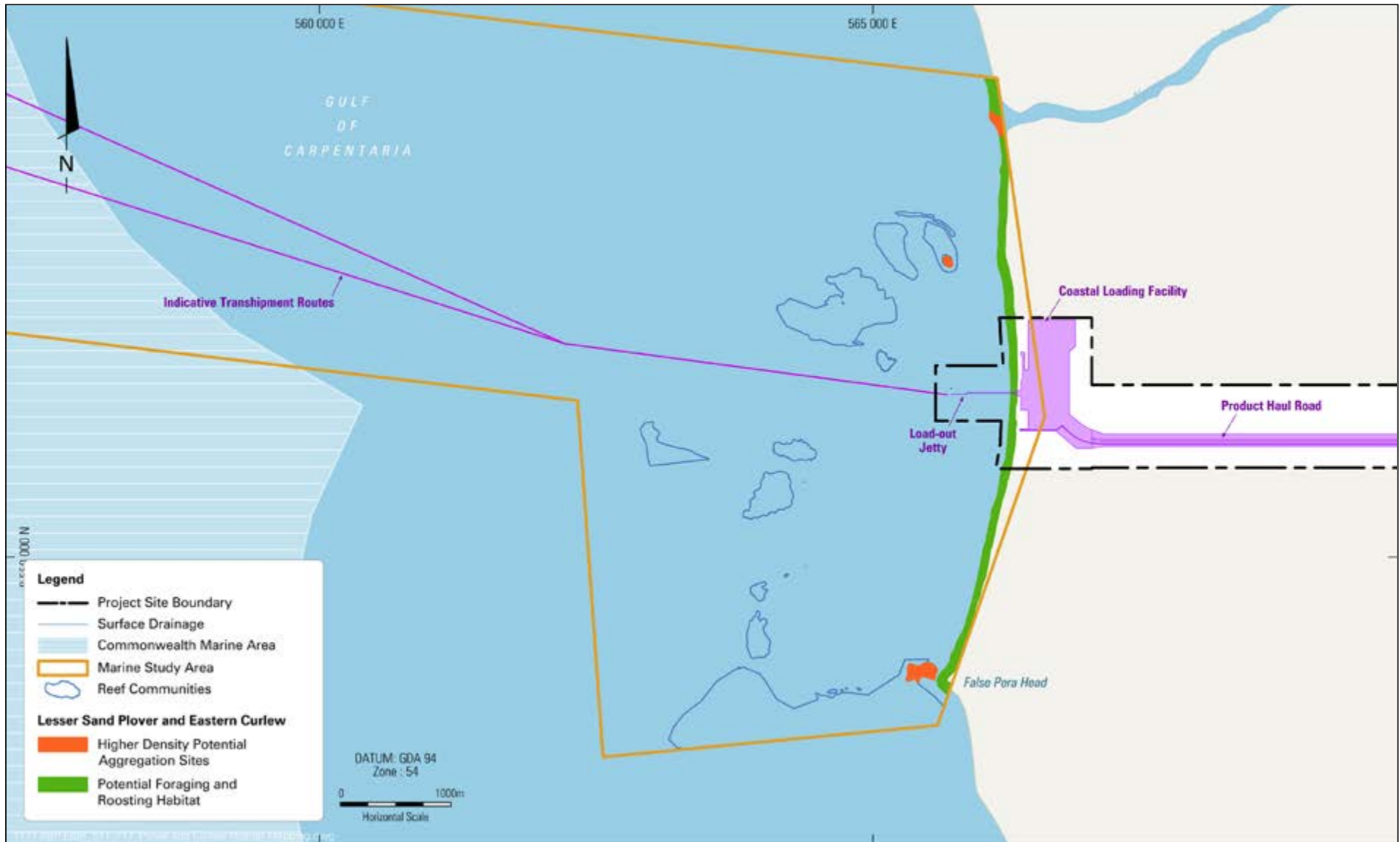
**FIGURE 11-80A**



AURUKUN BAUXITE PROJECT

Marine Turtle Habitat Mapping within the Marine Study Area

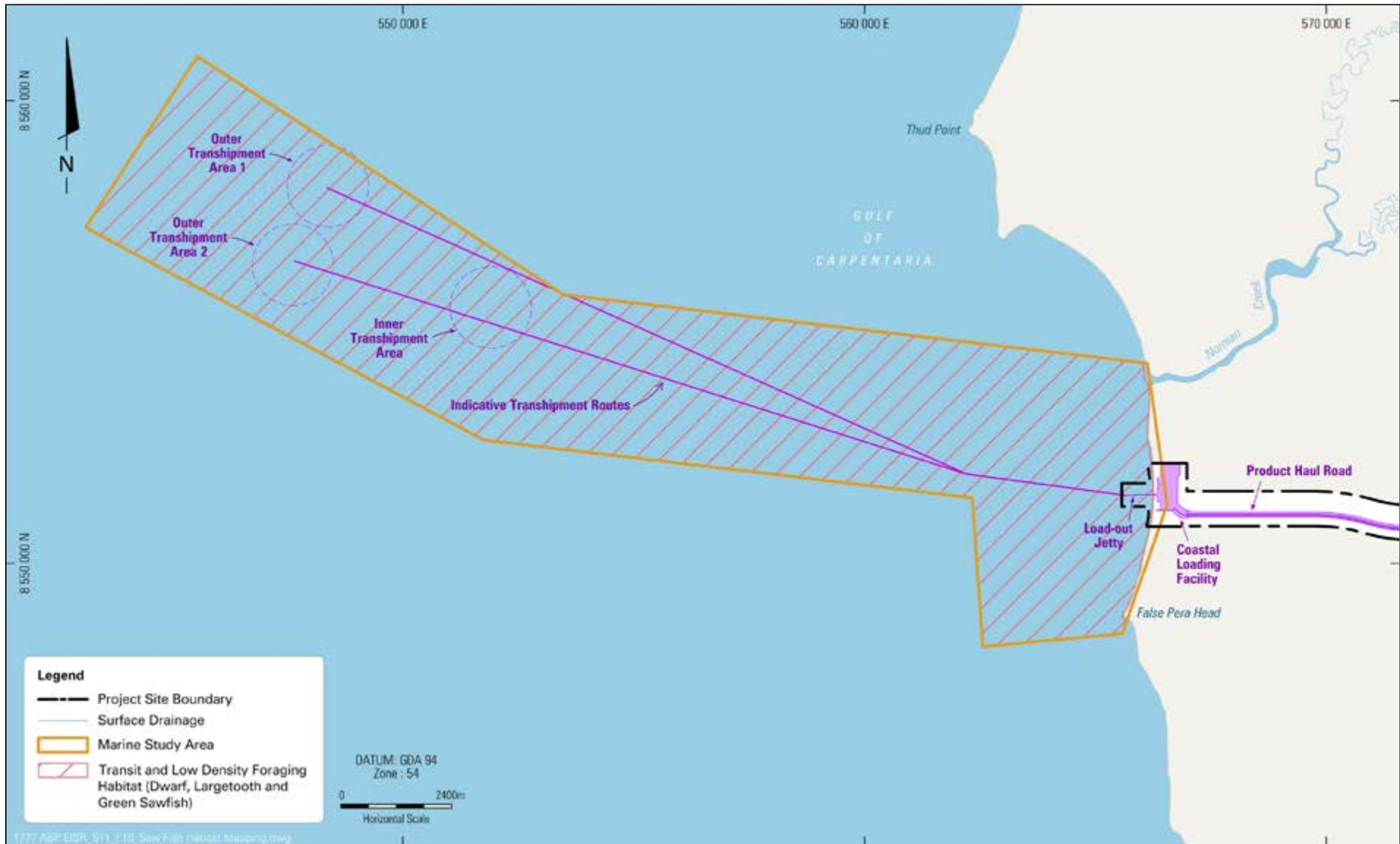
**FIGURE 11-80B**



AURUKUN BAUXITE PROJECT

Lesser Sand Plover and Eastern Curlew Habitat Mapping within the Marine Study Area

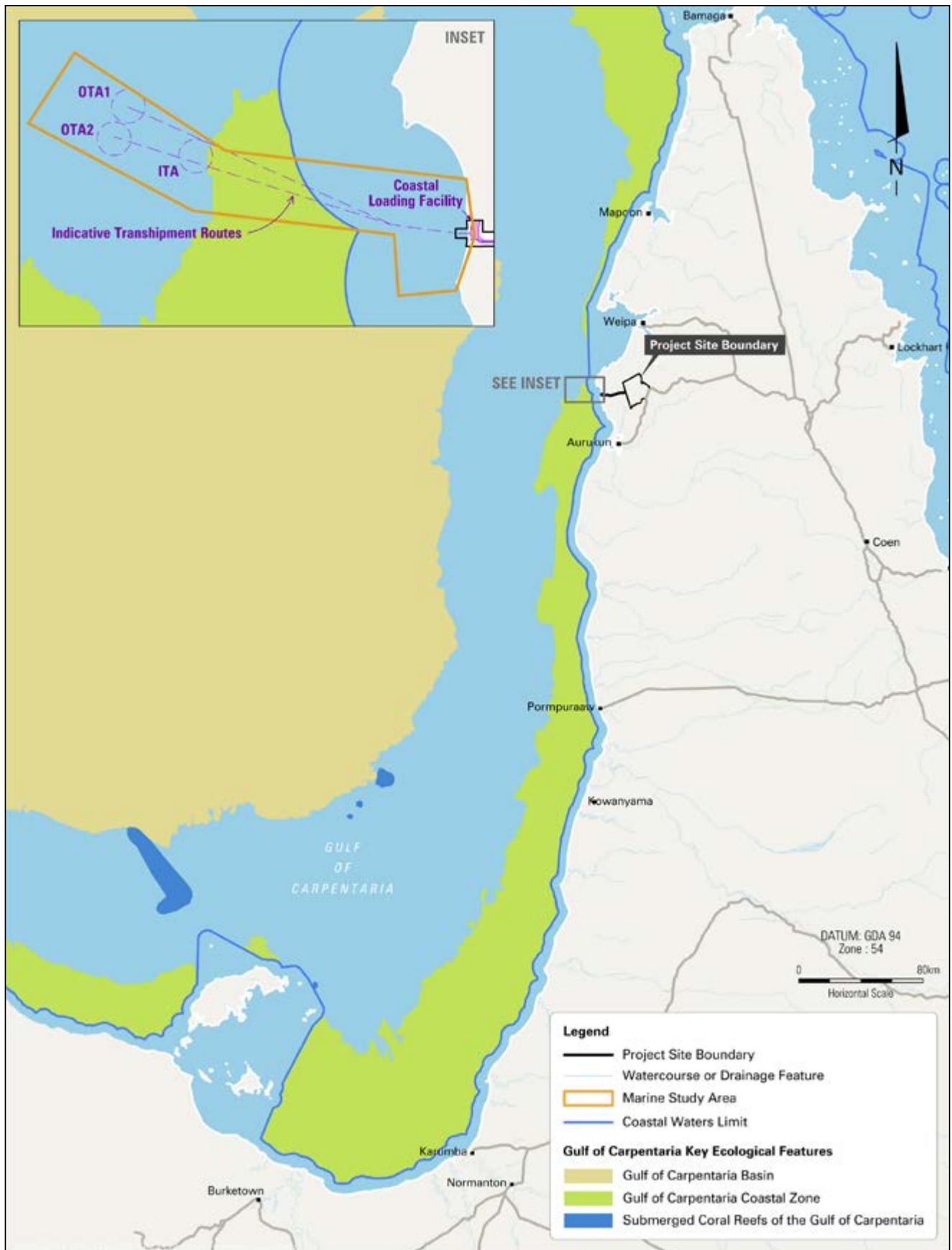
**FIGURE 11-81**



AURUKUN BAUXITE PROJECT

Dwarf, Largemouth and Green Sawfish Habitat Mapping within the Marine Study Area

**FIGURE 11-82**



AURUKUN BAUXITE PROJECT

Key Ecological Features of the Gulf of Carpentaria

**FIGURE 11-83**

# PLATES



**Plate 11-1** Example of *Eucalyptus* and *Corymbia* Woodland to Tall Woodland in the Terrestrial Ecology Study Area



**Plate 11-2** Example of Swamp Box Fringing Forest in the Terrestrial Ecology Study Area



**Plate 11-3 Example of Paperbark/Teatree Woodlands in the Terrestrial Ecology Study Area**



**Plate 11-4 Example of Brown Salwood Scrub in the Terrestrial Ecology Study Area**



**Plate 11-5 Coconut Creek (CC1) - Seep**



**Plate 11-6 Coconut Creek (CC2) - Seep**



**Plate 11-7 Coconut Creek (CC7) - Seep**



**Plate 11-8 Coconut Creek (CC4) – Wet Season**



**Plate 11-9 Coconut Creek (CC4) – Dry Season**



**Plate 11-10 Tapplebang Creek (TC6) – Wet Season**



**Plate 11-11 Tapplebang Creek (TC6) – Dry Season**



**Plate 11-12 Ward River – Upper Reaches**



**Plate 11-13 Ward River – Mid Reaches**



**Plate 11-14 Ward River – Lower Reaches**



Plate 11-15 Norman Creek (NC1) - Dry Season



**Plate 11-16 Wetland - MW**



**Plate 11-17 Wetland - SW**



**Plate 11-18 Wetland - OCW**



**Plate 11-19 View of Shoreline at Proposed CLF (Looking North)**



**Plate 11-20 View of Shoreline at Proposed CLF (Looking South)**





## **ATTACHMENTS**

11-1 Objects and Principles of the EPBC Act



**Table 1**      **Objects and Principles of the EPBC Act**

OBJECTS AND PRINCIPLES	RESPONSE/EIS CROSS REFERENCE
<b>OBJECTS OF THE ACT</b>	
a) To provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance	Protection of the environment, and particularly MNES, has been a fundamental consideration in the development of the EIS, including in the project design and in the selection of mitigation measures. Numerous assessments have been undertaken which assess potential impacts to MNES, determine the significance of these impacts, and describe the measures which will be implemented to avoid or mitigate potential impacts. These assessments are discussed in Section 11 – Matters of National Environmental Significance.
b) To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources	The principles of ecologically sustainable development are discussed further below.
c) To promote the conservation of biodiversity	Conservation of biodiversity has been a fundamental consideration in the project design and in the selection of mitigation measures. Environmental offsets are proposed for any significant, residual impacts.
d) To promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples	The proponent has taken a co-operative approach in the development of the EIS. A thorough stakeholder consultation program has been undertaken for the project over several years and is described in the <i>Stakeholder Consultation Report</i> (Appendix R). Responding to issues raised by stakeholders, and identifying appropriate strategies to address these issues, was a fundamental part of the consultation process. The design of the project and mitigation measures has been guided by this consultation and this has ensured a collaborative approach to the protection and management of the environment.
e) To assist in the co-operative implementation of Australia's international environmental responsibilities	Australia's international environmental obligations have been considered and referenced throughout the EIS, where relevant. Obligations considered include, but are not limited to, conventions and agreements relating to biodiversity (including migratory species), transshipment, climate change, hazardous waste, energy, and world heritage.
f) To recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity	The role of Indigenous people in the conservation and ecologically sustainable use of biodiversity has been recognised and utilised as an integral component of the project's development. The directly affected Traditional Owners and the Aboriginal Corporation which represents the Traditional Owners (Ngan Aaak-Kunch) have strong aspirations with respect to the conservation and ecologically sustainable use of the biodiversity within and adjoining the project site. The proponent is seeking the consent of the directly affected Traditional Owners for the development of the project through an Agreement making process. Appendix A of the <i>Social Impact Assessment</i> (Appendix S) describes the Agreement making process and provides a framework for the ongoing participation of Traditional Owners across all phases of the project.

OBJECTS AND PRINCIPLES	RESPONSE/EIS CROSS REFERENCE
<p>g) To promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge</p>	<p>An extensive Social Impact Assessment was undertaken for the project. The assessment has been informed through the findings of extensive consultation with Wik and Wik Waya people including residents of Aurukun and directly affected Traditional Owners. Cultural knowledge gained through consultation has informed a range of EIS technical studies. Appendix A of the <i>Social Impact Assessment</i> (Appendix S) describes a suite of actions to be taken by the proponent to promote the ongoing participation of Traditional Owners across all phases of the project.</p> <p>The proponent's <i>Offset Management Strategy</i> (Appendix Q) seeks to involve the knowledge and skills of the Wik and Wik Waya people in the delivery of land management measures to achieve conservation gains for threatened species.</p> <p>In addition, Traditional Owners participated in numerous field surveys, including those for terrestrial and aquatic ecology, and provided insights about the terrestrial and aquatic ecosystems.</p>

**PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT**

<p>a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations</p>	<p>Decision-making processes utilised in the development of this EIS have considered both long and short-term impacts and extensive environmental, social and economic assessments have been undertaken. The majority of impacts can be mitigated through the implementation of the management measures described in this EIS. In instances where residual impacts are predicted, environmental offsets will be provided.</p>
<p>b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation</p>	<p>This principle is termed the precautionary principle. The precautionary principle was integral to the preparation of this EIS. The management of environmental risks has been incorporated into project design and the proponent will implement the mitigation and management measures outlined in the EIS. For example, the transshipment route and areas have been sited to avoid sensitive marine features and the jetty has been sited and designed to avoid dredging. Potential impacts from Tapplebang Dam have been minimised by including a fishway and environmental releases as part of the design of the dam. The majority of project infrastructure has been located away from watercourses with a significant habitat buffer zone being retained between mining operations and the highest value vegetation for threatened species. In addition, consideration is given to the indirect impact on habitat of threatened species by including potential isolation of habitat. The individual sections of the EIS describe the measures that have been adopted to avoid and mitigate impacts.</p> <p>Given the inclusion of these design features and mitigation measures, the environmental impact assessment has concluded for most impacts that the project is not predicted to have a significant, residual impact on the environment. In instances where a significant, residual impact is predicted, environmental offsets are proposed to compensate for these impacts.</p>

OBJECTS AND PRINCIPLES	RESPONSE/EIS CROSS REFERENCE
	Minimising environmental impacts in this way, and providing offsets as necessary, is consistent with the precautionary principle.
c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations	The proponent will implement the management and monitoring strategies outlined throughout this EIS and summarised in Section 22 – Environmental Management and Commitments. Management commitments are also contained in the Social Impact Management Plan, which is appended to the <i>Social Impact Assessment</i> (Appendix S). These strategies are designed to ensure that the impacts on future generations will be minimised. The <i>Draft Proposed Progressive Rehabilitation and Closure Plan</i> (Appendix E) describes post-mining land use.
d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making	Conservation of biological diversity and ecological integrity has been a fundamental consideration in the project design and in the selection of mitigation measures. The design and implementation of habitat buffer zones adjacent to watercourses on the project site are intended to protect important habitat for terrestrial species, including listed threatened species. Environmental offsets are proposed for any significant, residual impacts. Indirect impacts are included where project activities may cause potential isolation of habitat.
e) Improved valuation, pricing and incentive mechanisms should be promoted	An extensive economic impact assessment was undertaken for the EIS to assess direct and indirect economic impacts of the project and is documented in the <i>Economic Impact Assessment</i> (Appendix T). The assessment also includes consideration of the costs of the mitigation measures described in the EIS.

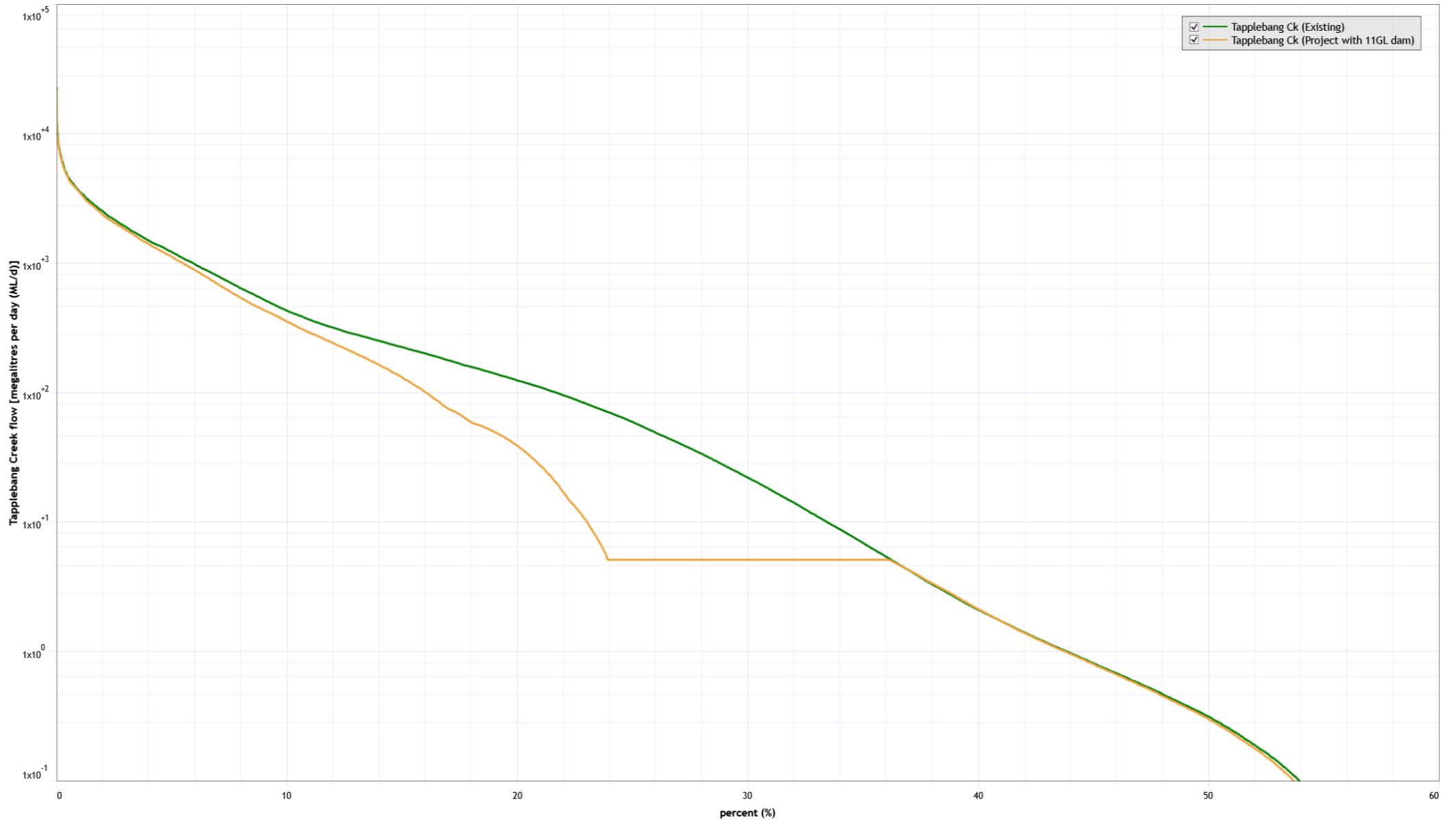


## **ATTACHMENTS**

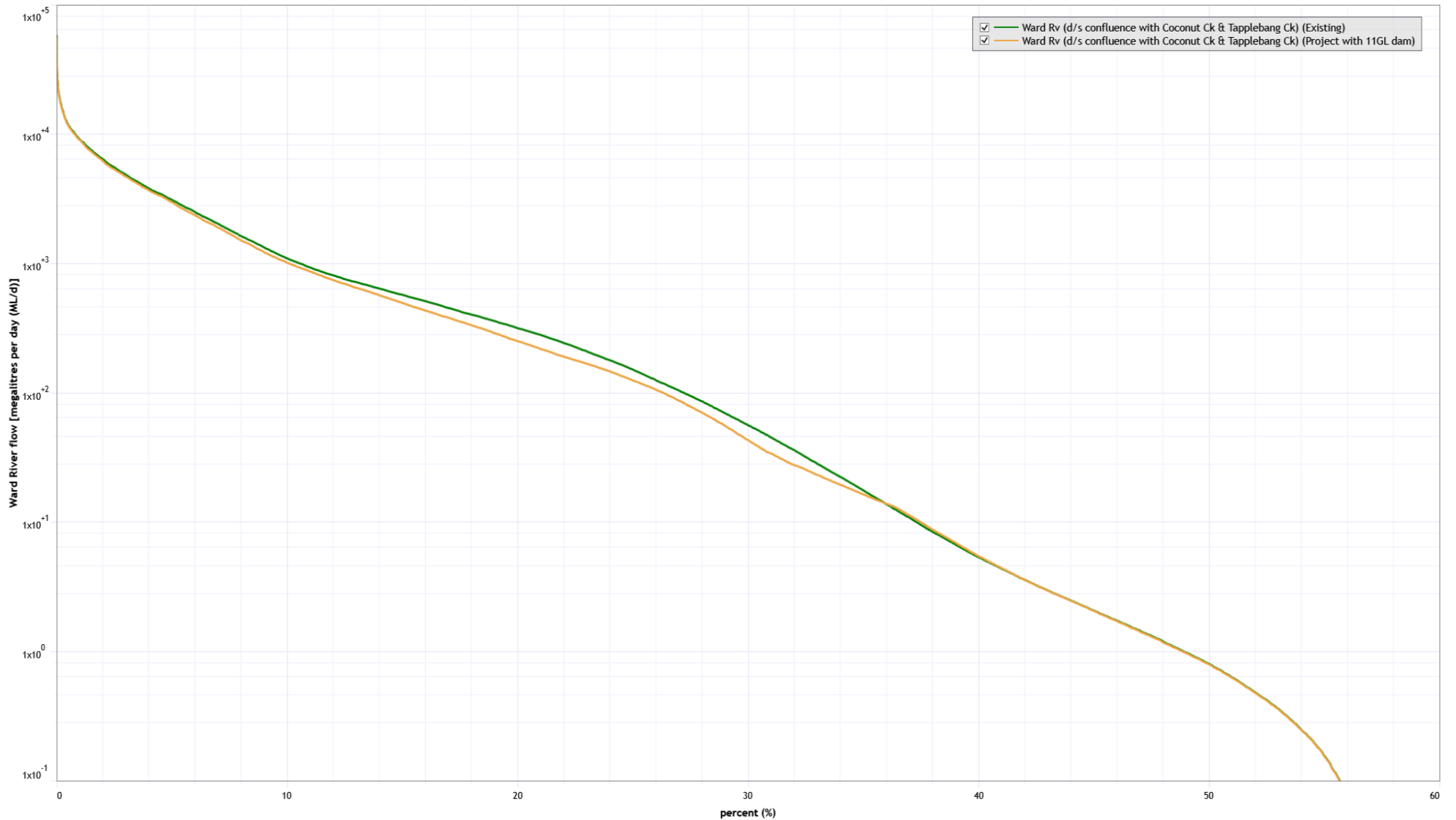
11-2 Flow Rate Exceedance Graphs



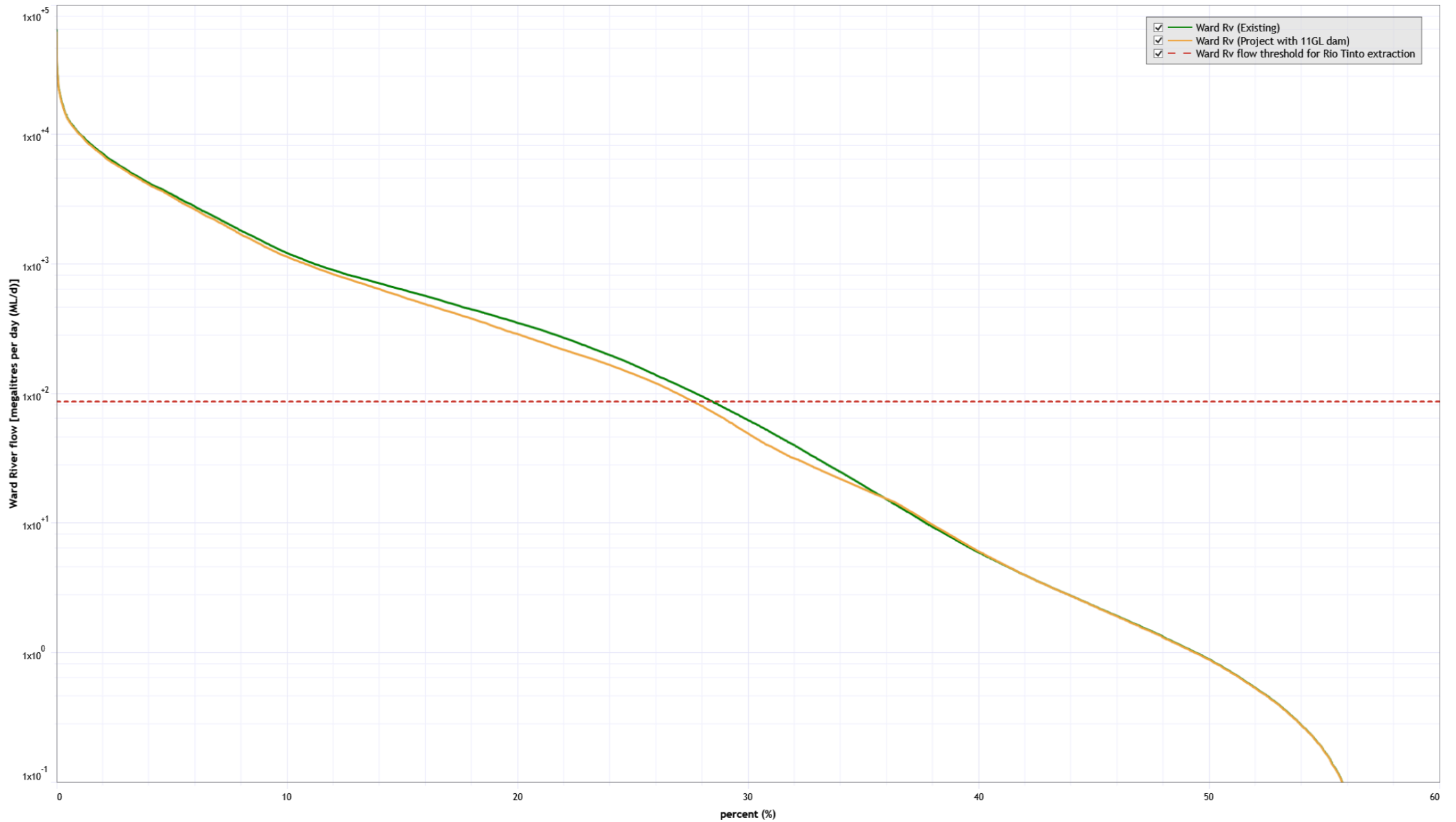
**Graph 1** Daily flow rate exceedance graph for Tapplebang Creek downstream of Tapplebang Dam



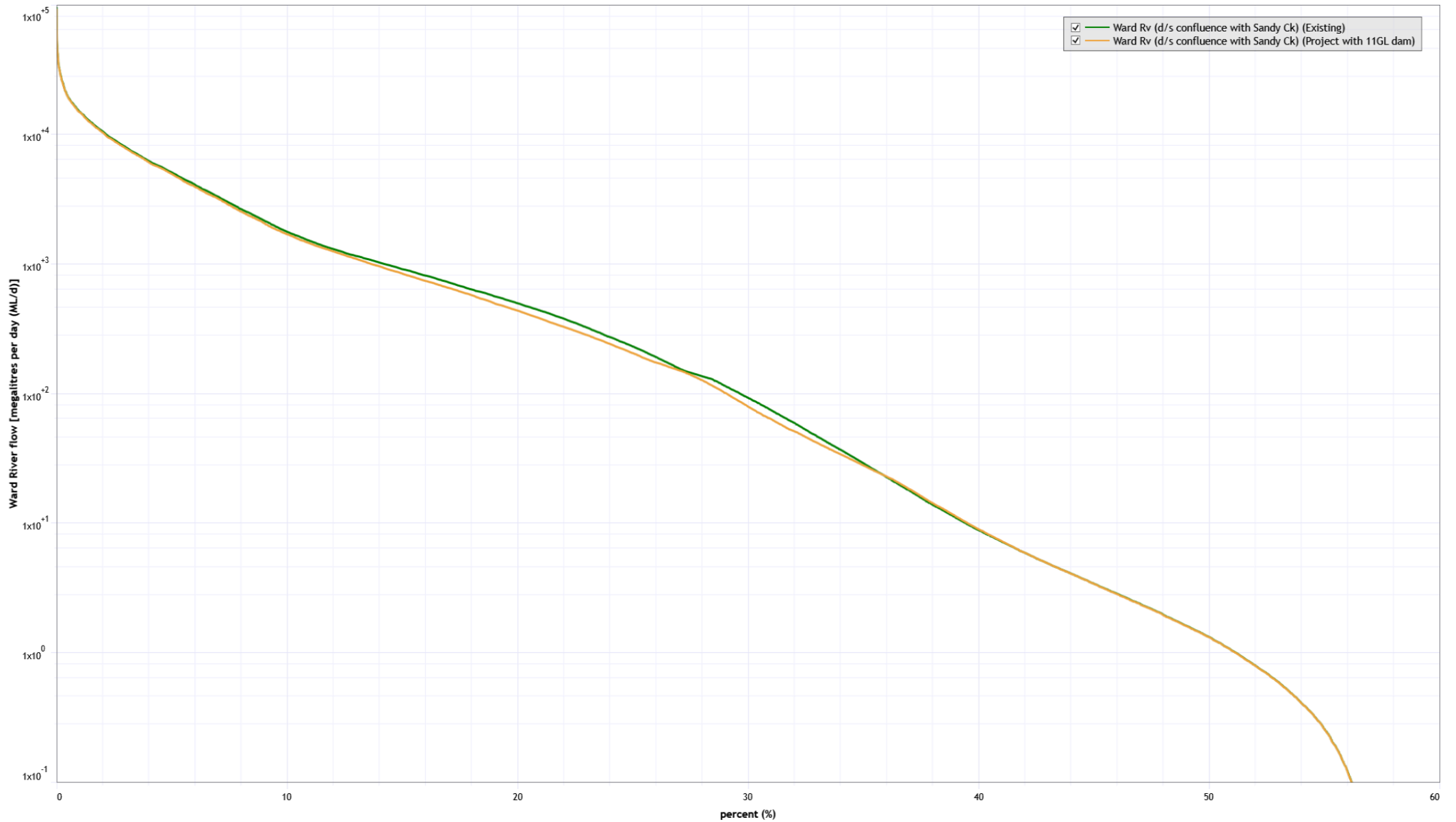
**Graph 2** Daily flow rate exceedance graph for the upper reach of the Ward River, downstream of the Tapplebang Creek and Coconut Creek confluence



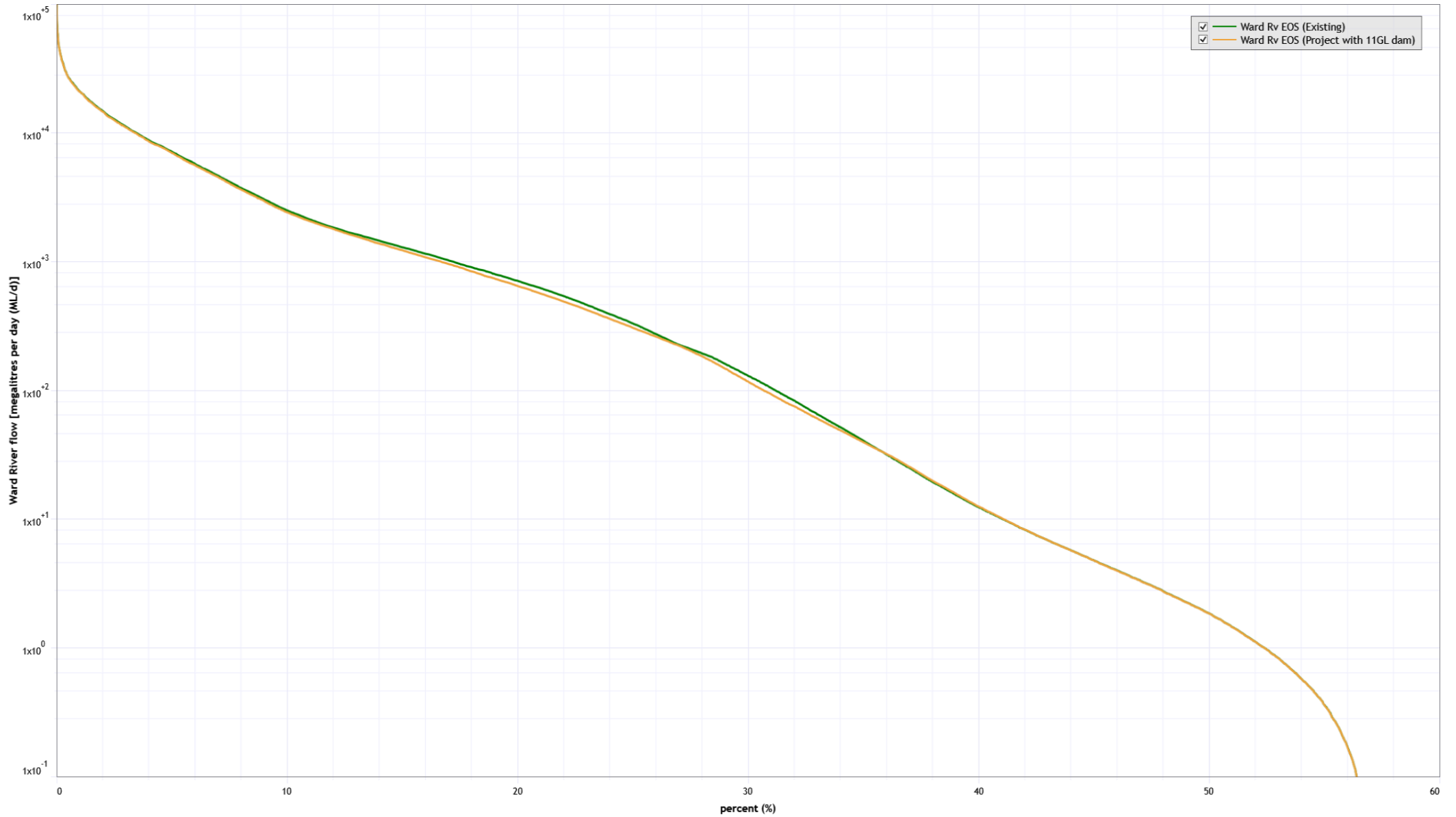
**Graph 3** Daily flow rate exceedance graph for the Ward River at the Amrun Mine Ward River abstraction site



**Graph 4** Daily flow rate exceedance graph for the lower reach of the Ward River, downstream of the Sandy Creek confluence



**Graph 5** Daily flow rate exceedance graph for the Ward River outlet





## **ATTACHMENTS**

11-3 EPBC Act Listed Threatened and  
Migratory Terrestrial Species with Low  
Likelihood of Occurrence in the  
Terrestrial Ecology Study Area



**Table 1 EPBC Act Listed Threatened Flora Species with Low Likelihood of Occurrence in the Terrestrial Ecology Study Area**

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
<i>Calophyllum bicolor</i> (no common name)	V	V	PMST, Wildlife Online, AVH	<p><b>Distribution:</b> Distribution of this species is from Bamaga in the north, down to Weipa in the west and Captain Billy's Landing on the east coast with an estimated extent of occurrence of 25,000 km<sup>2</sup>. <i>Calophyllum bicolor</i> is currently known from 17 populations on Cape York Peninsula, including conservation areas Kulla (McIlwraith) National Park, Unigan Nature Reserve and Olive River Reserve. It is highly likely that it is present at other rainforest locations that have not been surveyed (TSSC, 2014a).</p> <p><b>Habitat preferences:</b> <i>Calophyllum bicolor</i> is found in evergreen rainforest habitat with permanently wet organic substrate formed from springs, and is often found close to spring heads. It does not occur on stream banks away from the spring heads (TSSC, 2014a).</p> <p><b>Notable features:</b> This species is a large, spreading evergreen tree, with hairy young stems, yellow bark and attenuate leaves (TSSC, 2014a).</p> <p><b>Dispersal mode:</b> This species produces semi-fleshy fruits and is likely to be bird dispersed.</p> <p><b>Nearest record:</b> There are a number of records of preserved specimens collected approximately 30 km north of the ecology study area near Weipa (CSIRO, 2023).</p>	<p>Low: The ecology study area does not support evergreen rainforest communities with permanently wet organic substrate with which this species is typically associated.</p> <p>A system fed by three springs in close proximity to each other in the upper reaches of Coconut Creek appears to remain reasonably moist year-round as Pitcher Plants (<i>Nepenthes mirabilis</i>) were commonly recorded. However, detailed assessment of these areas failed to identify any specimens of this vegetatively distinct species. The more common Alligator Bark (<i>Calophyllum silt</i>) was frequently recorded within fringing forest along all major creeks in the study area, but <i>C. bicolor</i> can be distinguished from this species by its distinctively patterned trunk with white exudate (after blazing) and distinctive bright green leaves with a rusty underside, hairy young stems and more attenuate leaves.</p> <p>This species was not recorded in the study area during the surveys despite targeted searches in the limited area of preferred habitat.</p>
Chocolate Tea Tree Orchid ( <i>Cepobaculum johannis</i> (syn. <i>Dendrobium johannis</i> ))	V	V	PMST	<p><b>Distribution:</b> This species occurs from the tip of Cape York Peninsula, south to the McIlwraith Range and Coen in north Queensland. It also occurs in the Torres Strait islands, possibly New Guinea (and occurs on islands on the Great Barrier Reef (TSSC, 2008c).</p>	<p>Low: In relation to the nearest Atlas of Living Australia records, field studies in 2016 by Dr Michael Mathieson, of the Queensland Herbarium, confirmed there were no <i>D. johannis</i> within the impact area for the Amrun Mine project (RTA Weipa Pty Ltd, 2018). Furthermore, Dr Michael Mathieson confirmed the two nearby records</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p><b>Habitat preferences:</b> Grows in open humid habitats, on slopes in open woodland, Melaleuca woodland close to swamps and in pockets of monsoon forests. It has been recorded growing on Broad-leaved Tea Tree in a <i>Melaleuca</i> woodland in the Cowal Creek floodplain; and in a semi-evergreen vine thicket on an old stabilised sand dune where <i>Thryptomene</i> was dominant in the canopy (TSSC, 2008c).</p> <p><b>Notable features:</b> This species is an epiphytic orchid with spindle-shaped pseudobulbs that are often dark brown or purplish-brown. Flowers are chocolate brown with a bright yellow labellum (lip) and are long-lasting and have a strong, unpleasant scent (TSSC, 2008c).</p> <p><b>Dispersal mode:</b> Flowers are pollinated by wasps and seeds are wind dispersed (Jones, 2006).</p> <p><b>Nearest record:</b> This species was recorded in a number of locations during EIS studies for the Amrun Mine (previously known as the South of Embley Project), including near the mouth of Norman Creek approximately 2 km north of the Product Bauxite Transport corridor component of the study area (RTA Weipa Pty Ltd, 2011). There are two recorded locations of this species from 2016, including preserved specimens, within and adjacent to the ecology study area in the Atlas of Living Australia, although these records have been generalised to 10 km (CSIRO, 2023). The next nearest published Atlas of Living Australia database record for this species is approximately 65 km south-east of the ecology study area. This is a preserved specimen recorded on the lower Archer River, although due to the sensitivity of the species, the record location has been generalised to 10 km (CSIRO, 2023).</p>	<p>are incorrectly labelled in the Atlas of Living Australia. These specimens are identified as <i>D. trilamellatum</i> within the Queensland Herbarium collection (Dr Michael Mathieson, Queensland Herbarium, pers. comm. 26 April 2023). The Queensland Herbarium has no records of <i>D. johannis</i> from the western side of Cape York Peninsula within their collection at this time.</p> <p>Potentially suitable habitat, i.e. Melaleuca swamp forest, is not common within the ecology study area, being restricted to the small wetland adjacent to the lower reaches of Coconut Creek (i.e. REs 3.3.49, 3.3.50g and 3.3.64). This habitat was searched specifically for this species during the seasonal surveys.</p> <p>A number of Melaleuca species were recorded within vegetation assemblages in certain locations along Coconut and Tapplebang creeks and the upper reach of a tributary to Norman Creek within the ecology study area, e.g. Broad-leaved Tea Tree and Melaleuca saligna in RE 3.3.20/a/b; and Weeping Paperbark (<i>Melaleuca leucadendra</i>) and, to a lesser extent, Cajuput (<i>Melaleuca cajuputi</i>) in RE 3.3.9a/3.3.9b. Targeted searches were undertaken in these areas during the known flowering period of this species.</p> <p>Particular rigour was also applied to a small stand of Weeping Paperbark on the edge of the scarp retreat and Mixed foredune complex (REs 3.2.24/3.2.2) in the proposed CLF component of the Product Bauxite Transport Corridor, due to its relatively close proximity to other known records of threatened orchids.</p> <p>However, it is important to note that areas of potential habitat are heavily impacted by the fire regime in the</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
					<p>ecology study area. The majority of the ecology study area is subject to regular burns. Fire is known to be a threat to epiphytic orchids through the reduction in colonisation of host trees and reduced recruitment of host trees in impacted vegetation types (Cook, 2006). The fire regimes observed in the region reduces the suitability of potential habitats and the likelihood for the Chocolate Tea Tree Orchid to occupy the ecology study area.</p> <p>This species was not recorded in the study area despite targeting this species during the known flowering period of this species (i.e. May/June).</p>
Cooktown Orchid ( <i>Dendrobium bigibbum</i> )	V	V	PMST, Wildlife Online, AVH	<p><b>Distribution:</b> <i>Dendrobium bigibbum</i> is known from Cape York Peninsula, northern Queensland, south to the Archer River (TSSC, 2008b).</p> <p><b>Habitat preferences:</b> <i>Dendrobium bigibbum</i> grows at altitudes between 0 and 400 m above sea level. It grows on trees and rocks with moderate light intensity in a range of habitats including coastal scrub, streambank vegetation, monsoon vine thickets, and gullies in open forest and woodland where fire cannot penetrate (TSSC, 2008b).</p> <p><b>Notable features:</b> Flowering occurs between January and July or as late as October, and flowers last for about a month (TSSC, 2008b).</p> <p><b>Dispersal mode:</b> Flowers are pollinated by wasps and seeds are wind dispersed (Jones, 2006).</p> <p><b>Nearest record:</b> Studies undertaken for the Amrun Mine EIS (RTA Weipa Pty Ltd, 2011) identified this species at numerous locations in Norman Creek (approximately 1 km</p>	<p>Low: This species has been recorded at Norman Creek, which is approximately 1 km from the study area. The Queensland Government has also mapped two HRAs, one within and one adjacent to the far western end of the Product Bauxite Transport Corridor for this species (see Section 8 – Terrestrial Ecology, for further detail).</p> <p>Given this, a thorough, methodical approach was taken to determining whether this species is present in the study area. The work was undertaken by Chris Hansen, who has undertaken surveys for this species previously and located several hundred individuals in previous surveys to the south of the study area.</p> <p>The approach taken was to review the study area based on desktop information and on-ground site knowledge to identify areas that provided potential habitat. These areas were then thoroughly searched at a time of year when the orchids would be flowering. When flowering, the orchids are distinctive and more easily located.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>north of the Product Bauxite Transport Corridor) and along the upper reaches of the Ward River.</p> <p>There are scattered records for this species throughout Cape York Peninsula, including in the region surrounding the ecology study area. The nearest published database record, from 2016, is located on the coast of the Gulf of Carpentaria (at 'False Pera Head', location coordinates generalised) approximately 2 km from the CLF component of the ecology study area. At this location it was recorded in 'semi-deciduous vine thicket on coastal dunes and beach ridges...it was moderately common at the site' (CSIRO, 2023).</p>	<p>Potentially suitable habitat within the study area includes streambank vegetation (along Coconut and Tapplebang creeks and the upper reach of a tributary to Norman Creek) and to a much lesser degree, the narrow band of depauperate coastal scrub on the scarp retreat in the CLF. Monsoon thickets are absent from the study area.</p> <p>The areas of potential habitat are heavily impacted by the fire regime in the study area. The majority of the study area is subject to regular burns, with data from the North Australia Fire Information indicating that it has been burnt 6 of the last 10 years, with greater than 95% of the area burnt after July 31 within this period (North Australia Fire Information, 2020). Based on observations made during surveys over the past few years, many of the fires in the local area have been late in the dry season (e.g. October, November and December). At this time of year there is hayed-off vegetation, less soil moisture, and higher fuel loads, which lead to hotter, damaging fires that extend higher into the canopies in woodland communities and encroach further into closed forest communities (Edwards et al. 2018; Evans and Russell-Smith, 2019; Russell-Smith and Edwards, 2006). This effect is particularly important for fire-sensitive communities fringing narrow, drainage lines in tropical savanna (Douglas et al. 2015). Fire is known to be a threat to epiphytic orchids through the reduction in colonisation of host trees and reduced recruitment of host trees in impacted vegetation types (Cook, 2006). The fire regimes observed in the region reduces the potential</p>

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					<p>for the Cooktown Orchid to be present in the study area.</p> <p>Nonetheless, areas of potential habitat were extensively surveyed via two to four person traverses (assisted by Traditional Owners at times) along both banks and where possible within the channels of suitable stream systems throughout the entire study area, wherein the identification of epiphytic orchids was the primary focus of the survey effort. The surveys were specifically timed for the known flowering period for this species. In order to provide certainty that the species was flowering when the surveys were undertaken, a known population of Cooktown Orchids, approximately 20 km south of the study area, was visited. Numerous flowering Cooktown Orchids were recorded at this known population, but none were recorded in the study area. Given that this is a distinctive species, readily recorded when flowering, and extensive surveys were undertaken during the confirmed flowering period, the lack of records indicates that the species is highly unlikely to be present in the study area.</p>
<p>Cooktown Orchid (<i>Vappodes phalaenopsis</i> (syn. <i>Dendrobium phalaenopsis</i>))</p>	<p>V</p>	<p>LC</p>	<p>PMST</p>	<p><b>Distribution:</b> <i>Vappodes phalaenopsis</i> is known from Cooktown to the Font Hills west of Mt Molloy, Queensland. It grows as far north as Princess Charlotte Bay and has been recorded from locations including Helenvale Road, Black Mountain, Marina Plains Rd 52 km from Musgrave Station, and the Johnstone River. <i>V. phalaenopsis</i> is locally common within its restricted range and it rapidly recolonises disturbed sites (TSSC, 2008d).</p> <p><b>Habitat preferences:</b> <i>V. phalaenopsis</i> grows on trees and rocks in coastal scrub, littoral rainforest, riverine vegetation,</p>	<p>Low: The ecology study area is at the northern limit of the predicted distribution of this species according to the SPRAT profile.</p> <p>The ecology study area is at least 200 km north-west of its most northern known distribution at Princess Charlotte Bay, according to the DCCEEW.</p> <p>Potentially suitable habitat is present in riparian vegetation along Coconut and Tapplebang creeks and the upper reach of a tributary to Norman Creek (RE 3.3.9a) and the intergrade of this community with the</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>monsoon thickets, swamps and gullies in open forests at altitudes of up to 400 m above sea level. It also grows in vegetation near beaches, in areas with a hot climate and extremely seasonal rainfall (TSSC, 2008d).</p> <p><b>Notable features:</b> Flowers are usually lilac-purple, or occasionally white, blueish, or pinkish. Flowering occurs between March and July and flowers last for one month (TSSC, 2008d). <i>V. phalaenopsis</i> varies in appearance from the very similar <i>Dendrobium bigibbum</i> by the absence of a white 'spot' on the darker purple labellum (lip) (TSSC, 2008d).</p> <p><b>Dispersal mode:</b> Flowers are pollinated by wasps and seeds are wind dispersed (Jones, 2006).</p> <p><b>Nearest record:</b> This species was previously treated as a synonym of <i>Dendrobium bigibbum</i>, but <i>Vappodes</i> has now been separated from <i>Dendrobium</i>, and <i>bigibbum</i> and <i>phalaenopsis</i> are recognised as separate species in the Australian Plant Census (TSSC, 2008d). However, while the EPBC Act recognises <i>D. bigibbum</i> and <i>V. phalaenopsis</i> as distinct species, at this stage, the Queensland Herbarium treats <i>V. phalaenopsis</i> as a synonym (i.e. form or variety) of <i>D. bigibbum</i>. This makes differentiating between the two species difficult in ALA or Wildnet database records (Queensland managed databases), if not impossible, as plants of either species may have been recorded as <i>D. bigibbum</i> in the database. There are no records in the ALA for this species in the region in which the ecology study area is located. There are no <i>V. phalaenopsis</i> records in the ALA database at present (CSIRO, 2023)</p>	<p>adjacent Darwin Stringybark woodland (RE 3.5.36b), although the frequent and intense fire regime for the region has likely resulted in narrow riparian habitats restricted to the very top of banks and 'thinning' of the community and habitat in many areas. Fire is known to be a threat to epiphytic orchids through the reduction in colonisation of host trees and reduced recruitment of host trees in impacted vegetation types (Cook, 2006). The fire regimes observed in the region reduces the suitability of potential habitats and the likelihood for this orchid to occupy the ecology study area.</p> <p>Nonetheless, targeted surveys for threatened orchids were conducted, over a period of 10 days, tracking approximately 81 km, whereby all potential habitat areas were traversed by two experienced ecologist and two traditional owners in June 2018, during the known flowering period of this species (i.e. March to July). The 'random meander' technique described by Cropper (1993) and the 'educated walk' technique as described in Garrard et al. (2008) were used and both are recognised as being appropriate and effective techniques in the Commonwealth and State flora survey guidelines.</p> <p>Despite this intensive survey effort, no specimens were recorded during the targeted flora surveys, which provides confidence this species is not present within the ecology study area. Furthermore, this species has not been recorded on Cape York Peninsula, although there are a handful of records of <i>D. bigibbum</i> within 10-20 km of the ecology study area (CSIRO, 2023). It is noted that there is an overlap of DCCEE mapped</p>

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					distribution for <i>V. phalaenopsis</i> and <i>D. bigibbum</i> in the Aurukun region, i.e. both species potentially occur.
<i>Fimbristylis adjuncta</i> (no common name)	E	E	Wildlife Online, AVH	<p><b>Distribution:</b> This species of sedge has a limited distribution with records from the Cape York Peninsula at Weipa and Ely Dam (approximately 35 km north of Weipa), and Eubenangee Swamp north of Garradunga in Queensland (approximately 57 km south of Cairns) (DSITIA, 2018; TSSC, 2008e).</p> <p><b>Habitat preferences:</b> This species grows in dried out places in swamps (TSSC, 2008e). Herbarium-backed records indicate this species is typically associated with freshwater wetlands, swamps and other sedgeland subject to ponding and periodic inundation (DSITIA, 2018).</p> <p><b>Notable features:</b> Glumes of this sedge species have a long sharply-pointed tip and are spirally arranged. Fruits are obovate shaped nuts that are white, striate and have an open, latticed or porous structure (TSSC, 2008e).</p> <p><b>Dispersal mode:</b> Gravity and water.</p> <p><b>Nearest record:</b> The nearest record is approximately 35 km north of the study area (coordinates generalised) in a localised ponded area of Trunding Creek near Weipa and another 30 km further north at Ely Dam (CSIRO, 2023). These are the only published records on Cape York Peninsula and are based on preserved specimens (CSIRO, 2023).</p>	<p>Low: The <i>Melaleuca</i> swamp forest adjacent to the lower reaches of Coconut Creek (RE 3.3.50g) potentially provides marginal (being relatively small, shallow and supports stunted vegetation) habitat for this species. This is a very cryptic species, however, detailed targeted traverses of this vegetation type during optimal conditions failed to identify this particular <i>Fimbristylis</i> species. Further, the known occurrences of this species are limited to a few locations in the Mapoon and Weipa localities, where they appear to be associated with seasonally ponded wetlands in close proximity of built infrastructure. There are no other suitable wetland habitats within the study area for this species</p> <p>This species was not recorded in the study area during the surveys.</p>
Pink Tea Tree Orchid ( <i>Cepobaculum carronii</i> (syn. <i>Dendrobium carronii</i> ))	V	V	PMST, AVH	<p><b>Distribution:</b> <i>Cepobaculum carronii</i> occurs mainly in northern Queensland on eastern Cape York Peninsula from Bamaga south to the Mcllwraith Range. This species has been recorded from five general locations including the Jardine River area near Bamaga; near Heathlands; the Hann</p>	<p>Low: Potentially suitable habitat is present in the riparian open forest fringing Coconut and Tapplebang creeks, and the upper reach of a tributary to Norman Creek within the study area (RE 3.3.9a), as well as within <i>Melaleuca</i> swamp forest near the lower reaches of Coconut Creek (REs 3.3.49 and 3.3.50g).</p>

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				<p>Creek area; the Tozers Gap area; and McIlwraith Range (DCCEEW, 2023e).</p> <p><b>Habitat preferences:</b> This species grows in well-lit areas from sea level to 600 m altitude, in humid areas of gallery forest, hillside scrub and low-lying areas subject to periodic inundation. It often grows on the papery bark of the Broad-leaved Tea Tree. The species has also been recorded on Swamp Box and other paperbarks (<i>Melaleuca</i> spp.) (DCCEEW, 2023e).</p> <p><b>Notable features:</b> Plants usually form small clumps and flowering occurs from August to October (DCCEEW, 2023e).</p> <p><b>Dispersal mode:</b> Flowers are pollinated by wasps and seeds are wind dispersed (Jones, 2006).</p> <p><b>Nearest record:</b> There are few records on the western side of Cape York Peninsula, the nearest is from a preserved specimen collected approximately 40 km north of the ecology study area (coordinates generalised), near Weipa (CSIRO, 2023).</p>	<p>However, the frequent and intense fire regime for the region has likely resulted in narrow riparian habitats restricted to the very top of banks and 'thinning' of the community and habitat in many areas. Fire is known to be a threat to epiphytic orchids through the reduction in colonisation of host trees and reduced recruitment of host trees in impacted vegetation types (Cook, 2006). The fire regimes observed in the region reduces the suitability of potential habitats and the likelihood for this orchid to occupy the ecology study area.</p> <p>The streambank vegetation fringing these creeks and the <i>Melaleuca</i> swamp forest were extensively surveyed during the known flowering period of this species, i.e. August to October.</p> <p>This species was not recorded in the study area during the surveys.</p> <p>It should be noted that the morphologically similar Large Tea Tree Orchid (<i>Cepobaculum trilamellatum</i>), which has similar length, shape and coloured canes as Pink Tea-Tree Orchid, was identified in the study area in large numbers along Tapplebang and Coconut creeks in September 2018 and September 2019. Excessive care was employed to ensure that Pink Tea Tree Orchid was not also present and mistakenly identified as Large Tea Tree Orchid.</p>
<i>Solanum dunalianum</i> (no common name)	V	V	PMST, Wildlife Online, AVH	<p><b>Distribution:</b> In Australia, <i>Solanum dunalianum</i> is known from Thursday Island, Sabai Island and near Weipa on Cape York Peninsula, but Landsberg and Clarkson (2004) considered that it was "likely to be much more widespread". Targeted searches in the Weipa area re-discovered one</p>	<p>Low: Suitable habitat (i.e. rainforest or semi-deciduous notophyll vine forest) is not present in the study area. Elements of vine forest exist in certain stretches of the creeks fringed by RE 3.3.9a/3.39b in the study area, however, these habitats are marginal and no specimens of the <i>Solanum</i> genus were identified.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>population during surveys in 2001 and 2002 but failed to find any additional populations (TSSC, 2008f).</p> <p><b>Habitat preferences:</b> It inhabits semi-deciduous notophyll vine forest, or the edges of that community (TSSC, 2008f).</p> <p><b>Notable features:</b> <i>Solanum dunalianum</i> is a shrub growing to 2 to 4 m high with branches, leaves and inflorescence being virtually hairless. Prickles are absent (TSSC, 2008f).</p> <p><b>Dispersal mode:</b> Red globular fruit are likely to be vertebrate dispersed.</p> <p><b>Nearest record:</b> This species has been recorded at a number of locations near the Embley River south of Weipa, approximately 25 km north of the study area. Habitat characteristics have included 'edge of rainforest' and 'simple evergreen notophyll vine forest' (CSIRO, 2023).</p>	<p>This species, which is vegetatively distinct due its large dark green hairless leaves on a short petiole (leaf stalk), was not recorded during the extensive flora surveys of this particular habitat type.</p>
<i>Xylopiya monosperma</i> (no common name)	E	LC	PMST, Wildlife Online, AVH	<p><b>Distribution:</b> <i>Xylopiya monosperma</i> is a shrub species known from five locations in the Northern Territory and an unknown number of locations in Queensland. Queensland populations occur from Cape York to Mount Tozer (TSSC, 2008g).</p> <p><b>Habitat preferences:</b> <i>Xylopiya monosperma</i> occurs in simple sclerophyll/notophyll vine forest (i.e. poorly developed rainforest). Climate is characterised by hot, wet summers and hot winters with annual precipitation of 1600 to 2200 mm. In Queensland, this species is associated with poorly developed rainforest growing on yellow soils derived from sandstone. Associated species in Queensland include <i>Asteromyrtus myrtifolia</i>, <i>Asteromyrtus brassii</i>, <i>Blepharocarya involucrigera</i>, <i>Canthium lamprophyllus</i>, <i>Endiandra glauca</i>, <i>Flindersia iffiaiana</i> and <i>Syzygium angophoroides</i> (TSSC, 2008g).</p>	<p>Low: Suitable habitat (i.e. rainforest or vine forest) and underlying geology is not present in the study area.</p> <p>This species was not recorded in the study area during the surveys.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p><b>Notable features:</b> This shrub species has bark that is striated and aromatic and flowers that are solitary with triangular to ovate yellowish-green petals (TSSC, 2008g).</p> <p><b>Dispersal mode:</b> As a member of the <i>Annonaceae</i> family, it is anticipated that the fruit of this species is spread by gravity and birds.</p> <p><b>Nearest record:</b> There a number of records, based on preserved specimens, on Cape York Peninsula, the nearest located approximately 30 km north of the ecology study area, around Weipa. Habitat descriptions include 'semi-deciduous notophyll vine forest on red soils formed on bauxite, spoil deposit, low vine forest patche, rainforest, 'semi-deciduous notophyll vine forest – deciduous notophyll vine forest – deciduous vine thicket on lateritic soils, vine forest on ridge' (CSIRO, 2023)..</p>	

<sup>1</sup> E = Endangered, V = Vulnerable, under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

<sup>2</sup> E = Endangered, V = Vulnerable, NT = Near Threatened, LC = Least Concern under the *Nature Conservation Act 1992* (Qld)

<sup>3</sup> Record source:

- PMST - EPBC Act Protected Matters Search Tool
- Wildlife Online - Wildlife Online database
- AVH - Australasian Virtual Herbarium

<sup>4</sup> Nearest record information has been collated primarily from the Atlas of Living Australia (ALA), which is a collection of records from a range of sources, including Museums, Herbaria, community groups, studies and individual observations. While some records are vouchered and confirmed by recognised institutions, others have not been validated. Furthermore, presentation and categorisation of ALA information has not necessarily been vetted by the institution relevant to the record. Therefore, nearest record information from ALA can be erroneous and is not consistently reliable and therefore should be considered in this context.

**Table 2 EPBC Act Listed Threatened Fauna with Low Likelihood of Occurrence in the Terrestrial Ecology Study Area**

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
<b>Birds</b>					
Australian Painted Snipe ( <i>Rostratula australis</i> )	E (M/Ma)	E	PMST	<p><b>Distribution:</b> The Australian Painted Snipe has been recorded at wetlands in all states of Australia. It is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, New South Wales, Victoria and south-eastern South Australia. This population is considered to occur as a single, contiguous breeding population (DCCEEW, 2023f).</p> <p><b>General habitat preferences:</b> This secretive, cryptic, crepuscular (active at dawn, dusk and during the night) species occurs in terrestrial shallow wetlands, both ephemeral and permanent, usually freshwater but occasionally brackish. They also use inundated grasslands, salt-marsh, dams, rice crops, sewage farms and bore drains with rank emergent tussocks of grass, sedges, rushes or reeds or samphire, and often with scattered clumps of Lignum (<i>Muehlenbeckia florulenta</i>), canegrass or sometimes tea trees. It has been known to use areas lined with trees, or that have some scattered fallen or washed-up timber (DCCEEW, 2023f).</p> <p><b>Foraging habitat:</b> The species feeds on vegetation, seeds, and invertebrates including crustaceans and molluscs as well as insects, worms and other invertebrates. Foraging habitats are not well understood (DCCEEW, 2023f).</p> <p><b>Breeding habitat:</b> Requirements are specific and include shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Almost all records of nests occur on or near small islands in freshwater wetlands characterised by a combination of very shallow water,</p>	<p>Low: Potentially suitable habitat is highly restricted in the ecology study area to a small area of potentially suitable Paperbark woodlands and sedgeland wetland adjacent to the lower reaches of Coconut Creek. However, this small wetland is disconnected from other wetland habitats in the region. Furthermore, this species is not known from Cape York Peninsula.</p> <p>This species was not recorded within or adjacent to the study area.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>exposed mud, dense low cover and sometimes some tall dense cover. Although this species uses modified habitat, it doesn't necessarily breed in these habitats. It most likely breeds in response to wetland conditions rather than during a particular season (DCCEEW, 2023f).</p> <p><b>Nearest record:</b> There are no published records of this species within the Cape York Peninsula bioregion. The most northern record of this species is near Port Douglas, approximately 500 km south-east of the ecology study area (CSIRO, 2023).</p>	
<p>Crimson Finch (white-bellied) (<i>Neochmia phaeton evangelinae</i>)</p>	<p>E</p>	<p>E</p>	<p>PMST, Wildlife Online, Birdlife Australia Atlas</p>	<p><b>Distribution:</b> In Australia, the Crimson Finch (white-bellied) is found only on the Cape York Peninsula in northern Queensland, where it occurs in four separate sub-populations. The four sub-populations are located near Aurukun, near Pormpuraaw, at Magnificent Creek (near Kowanyama), and in Lakefield National Park, where the Crimson Finch (white-bellied) has been recorded along the Normanby River and in surrounding areas to the north, and along the Laura River to the south. There has also been a single record of the Crimson Finch (white-bellied) from between Aurukun and Pormpuraaw (DCCEEW, 2023g).</p> <p><b>General habitat preferences:</b> The Crimson Finch (white-bellied) occurs in rank grasses and other vegetation that grows near bodies of fresh water such as rivers and swamps. It is especially common in habitats that are associated with <i>Pandanus</i> or dune swales. Two key habitat types have been identified. The first, <i>Pandanus</i> type habitat, is usually located within 10 km of the coast, and consists of swampy grasslands with scattered <i>Pandanus spiralis</i>, or of dune woodlands with a dense understorey of long grass, a mid-storey dominated by <i>P. spiralis</i>, and a canopy comprised of</p>	<p>Low: The dunal scrub at the CLF, including REs 3.2.24/3.2.2 is dry, fragmented and also lacks the tall grasses preferred by this species.</p> <p><i>Pandanus</i> trees within the ecology study area are not abundant and rarely progressed to a functional height due to the frequency of fire events in the area, which also impact the grassy ground layer in the area. Habitat degradation through frequent, large, dry season fires is described as a major threat to this species.</p> <p>Furthermore, there are no recent records of this species in the region, despite the surveys undertaken for this project since 2018 or EIS studies, post-approval monitoring and research undertaken as part of the Amrun Mine project in the same region since 2006.</p>

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				<p>varying species of trees. Crimson Finch (white-bellied) sub-populations near Aurukun and Pormpuraaw inhabit this type of habitat. The second key habitat, cane-grass type habitat, consists of open forest with a dense understorey of grasses, and is usually located along watercourses. This is the type of habitat used by the Crimson Finch (white-bellied) sub-populations near Kowanyama and in the Lakefield region. The canopy in cane-grass habitat is usually dominated by <i>Corymbia tessellaris</i> on the east coast of the Cape York Peninsula, and by <i>C. tessellaris</i> var. <i>dallachiana</i> on the west coast. The mid-storey includes deciduous shrubs and palms such as <i>Corypha elata</i> and species of <i>Livistona</i>. In the Lakefield region, the understorey is mostly composed of <i>Chionachne cyathopoda</i>, although other grasses probably fulfil a similar role (DCCEEW, 2023g).</p> <p><b>Breeding habitat:</b> The Crimson Finch (white-bellied) builds its nests in <i>Pandanus</i> and <i>Corypha</i> palms, and occasionally in bushes (DCCEEW, 2023g).</p> <p><b>Notable features:</b> The species has been recorded breeding from January to May in Australia (DCCEEW, 2023g).</p> <p><b>Nearest record:</b> There are many records of the species on the western side of Cape York Peninsula, although the subspecies is not always identified in these records and there appears to be some overlap with the black-bellied subspecies at the southern end of its distribution (DCCEEW, 2023). The Aurukun population has declined between the 1930s and 1980s, and many records in the Aurukun area are undated or from the early 20<sup>th</sup> century. The nearest record, a specimen from 1914 (coordinates generalised to 10 km), is located approximately 10 km south of the ecology study area, (CSIRO, 2023).</p>	

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Golden-shouldered Parrot, ( <i>Psephotus chrysopterygius</i> )	E	E	Wildlife Online	<p><b>Distribution:</b> The Golden-shouldered Parrot is restricted to two populations in central Cape York Peninsula. The range of the Morehead population, in the headwaters of the Morehead River catchment, is currently about 1,380 km<sup>2</sup>, but is still contracting, at least along its eastern boundary for which detailed distributional data is available (Garnett and Crowley, 2002a). The Staaten population, primarily on Staaten River National Park, is contained in an area of about 300 km<sup>2</sup>. The historical distribution was more extensive, covering most of Cape York Peninsula (Garnett and Crowley, 2002).</p> <p><b>General habitat preferences:</b> This species inhabits areas of tropical grassy woodland where the vegetation is of scattered Eucalypts and Paperbarks, and occasionally river-edge mangroves, where termite nests are abundant (Morcombe and Stewart, 2013).</p> <p><b>Foraging habitat:</b> The species feed on the fallen seeds of annual grasses, particularly fire grass <i>Schizachyrium spp.</i> The parrots may spend many months feeding in small areas where seeds are abundant, and prefer open habitat created by dry season fires where the seed is most accessible (Garnett and Crowley, 2002). The Golden-shouldered Parrot rests through the heat of the day in shady foliage and visits waterholes early in the morning (Morcombe and Stewart, 2013).</p> <p><b>Breeding habitat:</b> Golden-shouldered Parrots nest in the terrestrial mounds of grass-feeding termites (Garnett and Crowley, 2002).</p> <p><b>Nearest record:</b> There are historical and undated records of this species scattered across Cape York Peninsula, including one undated observation approximately 7 km north of the</p>	<p>Low: This species is now thought to be restricted to two populations on Cape York Peninsula, in the headwaters of the Morehead River and Staaten River, which are approximately 250 km south-east and &gt;350 km south of the ecology study area, respectively. The distribution of this species is thought to have contracted south on Cape York Peninsula from its original range and no new populations have been detected in the last 30 years despite surveys for this species on Cape York Peninsula (TSSC, 2017a).</p> <p>Although Darwin Stringybark woodland is potentially suitable for this species and is prominent throughout the ecology study area (i.e. RE 3.5.36b), and termite nests are common, the vegetation is denser than is likely to be preferred by this species and paperbarks are generally limited within the ecology study area, being restricted to a small wetland in the south-west of the study area (i.e. this species is thought to prefer scattered Eucalypts and Paperbarks).</p> <p>This species was not recorded within or adjacent to the study area.</p>

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				<p>proposed CLF, as well as undated and early 20th century records near Aurukun, approximately 15-25 km south of the ecology study area (CSIRO, 2023). However, the majority of recent records, of this species, i.e. observed within the last 20 years, are from Yarraden (known as the Morehead population), and are located approximately 250 km south-east of the ecology study area (CSIRO, 2023).</p>	
<b>Mammals</b>					
<p>Bare-rumped Sheathtail Bat (<i>Saccolaimus saccolaimus nudicluniatus</i>)</p>	<p>V</p>	<p>E</p>	<p>PMST, Wildlife Online</p>	<p><b>Distribution:</b> The Bare-rumped Sheathtail Bat has been recorded from Babinda Creek near Cardwell, North Queensland, with occasional individuals collected from a narrow coastal region (less than 40 km inland) between Ayr and Cooktown, North Queensland, and one isolated specimen from north of Coen on Cape York Peninsula. Other observations include a road-kill record of an individual on Magnetic Island off Townsville; a sighting of up to 15 individuals flushed from a roost tree in the Iron Range area, Cape York, Queensland and likely acoustic detection in an area to the west of Townsville (DCCEEW, 2023h).</p> <p><b>General habitat preferences:</b> The Bare-rumped Sheathtail Bat occurs mostly in lowland areas, typically in a range of woodland, forest and open environments, including Poplar Gum woodland and riverine vine forest with adjacent open forest/woodland (DCCEEW, 2023h). Near Coen the species was recorded in riverine vine forest with adjacent open forest/woodland (DCCEEW, 2023h).</p> <p><b>Foraging habitat:</b> Only anecdotal information is available on foraging habitat that is based on habitat around roosts. The species has been suggested to forage over habitat</p>	<p>Low: Although generally lacking riverine vine forest or rainforest, which is thought to be used for foraging, broadly suitable habitat is present within the ecology study area in the form of <i>E. tetradonta</i> and <i>C. clarksonia</i> woodland. These species within the ecology study area also provide potential roosting habitat in the form of hollows. There are a handful of historic records for this species from eastern Cape York near Coen and the sub-species is known from the Northern Territory. However, there have not been any recent confirmed records of this species on Cape York, none have ever been recorded on the western side of Cape York, and the next nearest records of this species to the ecology study area are 450 km south-west near Cooktown and 700 km west in the Northern Territory (CSIRO, 2023).</p> <p>A total of 47 Anabat trap nights (full spectrum) were conducted across the ecology study area over a period of 54 days during the seasonal surveys in 2018 and 2019.</p> <p>Targeted mist netting surveys were previously undertaken for the nearby Amrun Mine (previously</p>

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				<p>edges such as the edges of rainforest and forest clearings (Churchill, 2009; DCCEEW, 2023h).</p> <p><b>Roosting habitat:</b> No studies have been conducted on the roosting ecology of this species and all located roosts are from incidental records (such as, as a result of land clearance). In Australia, all confirmed roosting records are from deep tree hollows in Poplar Gum, Darwin Woollybutt (<i>Eucalyptus miniata</i>) and Darwin Stringybark (Churchill, 2009; DCCEEW, 2023h). Hollows in these tree species have also been used as maternity roosts (DCCEEW, 2023h). On Cape York at Iron range, roosts were located in Darwin Stringybark woodland (<i>Eucalyptus tetradonta</i>) with Clarkson’s Bloodwood (<i>Corymbia clarksoniana</i>) and Carbeen (<i>C. tessellaris</i>) (DCCEEW, 2023h).</p> <p><b>Nearest Record:</b> There are a number of records around Cooktown and along the east coast south to Townsville. However, the only publicly available record on Cape York is approximately 150 km east-south-east of the ecology study area on the western side of the Mcllwraith Range (CSIRO, 2023).</p>	<p>known as the South of Embley Project) in June and October 2012 totalling 47 trap nights (3.5-5 hours at 45 sites), during which this species was not detected (RTA Weipa Pty Ltd, 2011). It is understood that the Commonwealth environment department was consulted regarding the survey approach undertaken for the Amrun Mine and that the survey for the Bare-rumped Sheathtail Bat was at that time, considered the ‘most intensive endeavour’ to detect the species in Australia (RTA Weipa Pty Ltd, 2011). Furthermore, there are no publicly available records within the Amrun Mine area for this species, since ongoing operational monitoring commenced for the Amrun Mine.</p> <p>While the Cape York bioregion has not been extensively surveyed compared with other regions of Queensland, the seasonal survey effort for this project in combination with surveys conducted since 2006 for the Amrun Project, immediately adjacent to the ecology study area, provide some level of confidence about the absence of this species from the region between Weipa and Aurukun.</p> <p>This species was not positively recorded within or adjacent to the ecology study area. A number of <i>Saccolaimus sp.</i> full spectrum Anabat calls were recorded during the surveys that could not be positively distinguished between this threatened species and the common Papuan Sheath-tailed Bat (<i>S. mixtus</i>). However, the Papuan Sheath-tailed Bat was positively identified in the ecology study area at numerous Anabat sites (refer Appendix I). Therefore,</p>

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					these unidentified calls are more likely to be that of the common Papuan Sheath-tailed Bat within the ecology study area.
Ghost Bat ( <i>Macroderma gigas</i> )	V	E	PMST	<p><b>Distribution:</b> It is predicted, based on analysis of historic climatic data, fossils, and modelling that the Ghost Bat is a geographically relictual species in southern, arid landscapes, present only because caves provide suitable roost microclimates (TSSC, 2016b; van Dyck &amp; Strahan, 2008). Although this species is thought to have once occupied much of Australia, its current range is discontinuous across northern Australia, with colonies known in the Pilbara, Kimberly, northern Northern Territory, the Gulf of Carpentaria, coastal and near coastal eastern Queensland from Cape York to near Rockhampton and the Riversleigh and Camooweal districts in western Queensland and occupying both arid and lush rainforest habitats (TSSC, 2016b; van Dyck and Strahan, 2008).</p> <p><b>General habitat preferences:</b> Habitat is comprised of thicket, open woodland, and spinifex and black soil grasslands (van Dyck, Gynther and Baker, 2013; van Dyck and Strahan, 2008). Monsoon forests, open savannah woodland, tall open forest, deciduous vine forest and tropical rainforest is also used (Churchill, 2009). Cave habitat is important for roosting and breeding van Dyck and Strahan, 2008). Ghost bats usually require a number of caves to move between seasonally (TSSC, 2016b).</p> <p><b>Foraging habitat:</b> This species feeds on frogs, lizards, birds, small mammals and sometimes other bats (TSSC, 2016; van Dyck and Strahan, 2008). It captures prey on the ground and then returns to an established feeding site, e.g. rock overhang or small cave, to feed (van Dyck and Strahan,</p>	<p>Low: Suitable cave habitat is not present within or adjacent to the ecology study area and is unlikely to occur within 2 km of the ecology study area. There are no recent or historic published records in the region despite the survey effort applied to the area between Aurukun and Weipa through this project and the Amrun project, and ongoing operational monitoring for the Amrun Mine, since 2006.</p> <p>This species was not recorded within or adjacent to the study area.</p>

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				<p>2008). It is known to forage up to 2 km from the roost cave and will use the same foraging area each night. Foraging areas are approximately 60 ha in size (Churchill, 2009; TSSC, 2016b).</p> <p><b>Roosting habitat:</b> Caves provide suitable roost microclimates and it is known to rest during the day in large sandstone or limestone caves, boulder piles, shallow escarpments or deep rock fissures and mines (Churchill, 2009; TSSC, 2016b; van Dyck and Strahan, 2008). This species appears to require caves with specific temperature and humidity ranges (DSITIA, 2012; TSSC, 2016). Groups of greater than 100 individuals are unusual (van Dyck and Strahan, 2008).</p> <p><b>Breeding habitat:</b> Breeding is likely to occur in July or August with young being born between September and November. Nursery colonies are formed separately from male bat roosts (van Dyck and Strahan, 2008). Only 14 breeding sites are currently known (TSSC, 2016b). Young are fully weaned by about March each year but may be left in nurseries or forage with the mother up until this age (Churchill, 2009). There is a tendency for breeding caves to have multiple entrances (TSSC, 2016b).</p> <p><b>Nearest record:</b> There is a pocket of records of preserved specimens collected 1978/1979 approximately 140 km east-south-east of the ecology study area on the western side of the McIlwraith Range (CSIRO, 2023). Further records are located greater than 270 km south-south-east of the ecology study area near (CSIRO, 2023).</p>	

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<p>Large-eared Horseshoe Bat (<i>Rhinolophus robertsi</i>)</p>	<p>V</p>	<p>E</p>	<p>PMST</p>	<p><b>Distribution:</b> This micro-bat has been recorded predominantly along the eastern coast of Cape York Peninsula from between the Iron Range and Townsville (possibly to Cape Cleveland) and west to the Chillagoe and Mitchell-Palmer Karst limestone regions (DCCEEW, 2023i). Specialist ecologist Greg Ford has also recorded this species in gallery rainforest communities in the upper reaches of the Archer River near the Peninsula Development Road near the northern edge of the Oyala Thumotang National Park (Greg Ford pers. comm. 24 April 2018).</p> <p><b>General habitat preferences:</b> This species forages in relatively dense stands of vegetation in lowland rainforest, along gallery forest-lined creeks within open eucalypt forest, <i>Melaleuca</i> spp. forest with rainforest understorey, open savanna woodland, wattle-dominated ridges in rainforest, and tall riparian woodland of <i>Melaleuca</i> spp., Forest Red Gum (<i>Eucalyptus tereticornis</i>) and Moreton Bay Ash (<i>Eucalyptus tessellaris</i>). The species tends to forage amongst thicker vegetation, i.e. in gullies or along creeks or along forest edges. It is known to roost in caves and underground mines located in rainforest, and open eucalypt forest and woodland, as well as road culverts and possibly basal hollows of large trees, dense vegetation, rock piles and areas beneath creek banks. The species feeds on mainly moths, beetles, grasshoppers and crickets to a lesser extent (DCCEEW, 2023i).</p> <p><b>Breeding habitat:</b> It is thought that breeding females prefer roost habitat with warm and very humid conditions even when ambient conditions may not be. Breeding is thought to occur in October and November (DCCEEW, 2023i).</p>	<p>Low: This species is not known from the western side of Cape York Peninsula, preferring moist, high humidity rainforest habitat on the east coast. The drier forested communities that dominate the study area and surrounding areas combined with limited roosting and breeding habitat, i.e. lack of rugged areas of cave-bearing hills, within or close to the ecology study area indicate it is unlikely that this species would use the ecology study area.</p> <p>This species is typically readily identified from Anabat recordings. However, there are no recent or historic published records in the region despite the survey effort applied to the area between Aurukun and Weipa through this project and the Amrun project, and ongoing operational monitoring for the Amrun Mine, since 2006.</p> <p>This species was not recorded within or adjacent to the study area.</p>

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				<p><b>Nearest record:</b> The Atlas of Living Australia shows only a few scattered records on Cape York along the east coast between Lockhart River and Cooktown from the late 1970s/early 1980s based on preserved specimens. The nearest of these records is approximately 155 km north-east of the study area in Kutini-Payamu (Iron Range) National Park on the east coast of Cape York Peninsula (CSIRO, 2023). Micro-bat specialist ecologist Greg Ford has recorded this species in the upper reaches of gallery rainforest along the Archer River near the Peninsula Development Road, i.e. more than 100 km east of the study area (Greg Ford pers. comm. 24 April 2018).</p>	
<p>Northern Quoll (<i>Dasyurus hallucatus</i>)</p>	<p>E</p>	<p>LC</p>	<p>PMST, Wildlife Online</p>	<p><b>Distribution:</b> The Northern Quoll was historically common across northern Australia, occurring almost continuously from the Pilbara, Western Australia, to near Brisbane, Queensland. The species now occurs in five regional populations across Queensland, the Northern Territory and Western Australia both on the mainland and on offshore islands. In Queensland the Northern Quoll is known to occur in the south near Gracemere and Mt Morgan, south of Rockhampton, sometimes as far south as Maleny on the Sunshine Coast, and as far north as Weipa in Queensland and extends as far west into central Queensland to the vicinity of Carnarvon Range National Park (DCCEEW, 2023j).</p> <p><b>General habitat preferences:</b> This species is usually associated with dissected rocky escarpments but also known from Eucalypt forest and woodlands, around human settlement and occasionally rainforest. Some form of rocky area surrounded by vegetated habitat is usually required for denning purposes (DCCEEW, 2023j). In areas where the quoll persists in Queensland the species tend to be found in</p>	<p>Low: The Northern Quoll is known from the broader region, with the nearest record approximately 50 km from the study area. Eucalyptus and Corymbia woodland to tall woodland and Swamp Box fringing forest provides potential habitat for this species in the study area. However, the study area does not provide dissected rocky escarpments where this species is usually observed.</p> <p>Suitability of habitat within the study area is also lessened due to the local fire regime. Inappropriate fire regimes is a recognised threat to this species (DCCEEW, 2023j). The majority of the ecology study area (i.e. &gt;85%) has been burnt at least 6 of the last 10 years and the majority of these areas have been late fires (i.e. burnt after 31 July) (North Australia &amp; Rangelands Fire Information 2023). Observations made during field surveys, indicate that in recent years fires have occurred late in the season (i.e. October to December). At this time of year, hayed-off vegetation,</p>

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				<p>steep, rocky areas, close to water that have not been recently burnt. They appear to have become extinct in many lowland habitats formerly occupied (Woinarski et al., 2008).</p> <p><b>Foraging habitat:</b> Northern Quolls are opportunistic omnivores (feeding on plants and animals). Their diet is varied and includes fruits, eucalypt nectar, grevillea flowers, invertebrates, ground-dwelling and arboreal mammals, birds and their eggs, reptiles and frogs. They have also been known to prey on Cane Toads (<i>*Bufo marinus</i>).</p> <p><b>Breeding habitat:</b> Dens are made in rock crevices, tree hollows or occasionally termite mounds (TSSC, 2005). Breeding success is higher in animals that have a den near a creek line (TSSC, 2005).</p> <p><b>Nearest record:</b> There are a numerous number of records of this species to the north-east of the study area from the 1980s, the nearest being approximately 50 km from the study area. There are more recent records further north of Weipa. There is also a record of a preserved specimen approximately 60 km south-east of the ecology study area on the edge of Oyala Thumotang National Park (CSIRO, 2023).</p>	<p>reduced soil moisture and higher fuel loads, leads to hotter, more damaging fires that extend higher into the canopies in woodland communities and encroach further into closed forest communities (Edwards et al, 2018; Evans and Russell-Smith, 2019; Russell-Smith and Edwards, 2006). Frequent fires are considered to reduce habitat suitability for this species by removing fallen logs to provide den sites. Anecdotal information indicates that the known habitat near Weipa has a high cover of large fallen logs.</p> <p>In addition, infrared camera data collected for the study area and observations during vehicle-based spotlighting suggests a high abundance of Feral Cats within the study area. Feral Cats were recorded at 10 of 27 camera trap sites and were often seen while driving at night. Predation of Northern Quoll by Feral Cats is a recognised threat to this species (DCCEEW, 2023j)</p> <p>The colonisation of Cape York by the Cane Toad in the 1980s and 1990s is recognised as having resulted in crashes in the Northern Quoll populations on Cape York and ingestion of the Cane Toad is a recognised threat to this species (DCCEEW, 2023j). Cane Toads were recorded at 2 of the 18 trap sites and 7 of the 92 supplementary sites as well as frequently observed on tracks at night.</p> <p>No evidence of this species has been recorded as part of seasonal surveys for the project, which has included a total of; 508 infrared camera nights, 360 Elliot B trap nights, 87 person hours spotlighting, 125 person hours active searching and more than 450 nocturnal person</p>

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					<p>hours of incidental activities and survey, conducted across the ecology study area over a period of 61.5 days during the seasonal surveys in 2018, 2019 and 2021. Furthermore, this species has not been recorded in the region despite the survey effort applied to the area between Aurukun and Weipa through this project and the Amrun project, and ongoing operational monitoring for the Amrun Mine, since 2006.</p> <p>This species is considered to have a low likelihood of occurring in the ecology study area due to the absence of dissected rocky escarpments, a fire regime that leads to a lack of denning habitat, a high abundance of Cane Toads and Feral Cats and lack of records in the region.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Water Mouse, False Water Rat, Yirrkoo ( <i>Xeromys myoides</i> )	V	V	PMST	<p><b>Distribution:</b> The Water Mouse is patchily distributed within three regions of coastal Australia: The Northern Territory, central south Queensland and south-east Queensland (DCCEEW,2023k).</p> <p><b>General habitat preferences:</b> All known locations of this species contain similar habitat including, mangroves, saltmarsh, sedgelands, clay pans, heathlands and freshwater wetlands. The main habitat difference at each location is the littoral, supra-littoral and terrestrial vegetation, which differs in structure and composition. The species has also been recorded from a variety of freshwater wetland and wet heath habitats in south-east Queensland (DCCEEW,2023k).</p> <p><b>Foraging habitat:</b> From observational accounts in tidal areas, the water mouse utilises exposed mangrove substrata</p>	<p>Low: Suitable littoral habitat is not present in the ecology study area and the ecology study area is located more than 3 km upstream of potentially suitable habitats connected with marine environments. This species has not been recorded in the Cape York Peninsula bioregion and Therefore, the Water Mouse is considered unlikely to occur in the ecology study area.</p> <p>This species was not recorded within or adjacent to the study area.</p>

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				<p>to hunt for invertebrate prey amongst pneumatophores (roots rising above the ground or water) and in shallow pools. These activities occur nocturnally when individuals follow the tide out to the low water mark and forage until advancing waters inundate the mangrove community. The ecology of the species utilising non-tidal environments has not been investigated (DNRM, 2010). Diet includes crustaceans, marine polyclads, marine pulmonates and marine bivalves as well as mud lobster and crabs (DCCEEW,2023k).</p> <p><b>Breeding habitat:</b> Nests are used for breeding and refuge from high tide and predators. Five types of nests may be constructed: free-standing, termitarium-like mound nests or mounds at the base of mangrove trees (e.g. <i>Avicennia marina</i>), mound nests on small elevated 'islands' within the tidal zone, mound nests or holes in supra- littoral banks; nests inside hollow tree trunks, and nests in spoil heaps created as a result of human activity. Nests are usually 20-60 cm in height and a basal circumference of between 1.6 and 4.8 m and with at least one entrance hole. It is assumed that the species does not need to build mounds in non-tidal environments. Breeding is likely to occur throughout the year (DCCEEW,2023k)</p> <p><b>Nearest record:</b> There are no publicly available records of this species north of Cairns, which is more than 550 km south-east of the ecology study area (CSIRO, 2023).</p>	

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
<b>Reptiles</b>					
Yakka Skink ( <i>Egernia rugosa</i> )	V	V	PMST	<p><b>Distribution:</b> The distribution of this species is highly fragmented. It extends from the coast to the hinterland of sub-humid to semi-arid eastern Queensland. It has been recorded between the Queensland/New South Wales border to Oyala Thumotang National Park on Cape York Peninsula, and from Bundaberg and the region west of Gympie to Mariala National Park west of Charleville (DCCEEW, 2023I).</p> <p><b>General habitat preferences:</b> This species occurs in woodland and open forest habitats, wet/dry sclerophyll forest and ecotonal rainforest habitats. This species is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation (Wilson, 2005; Cogger, 2000; DCCEEW, 2023h). In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The species has also been found sheltering under sheds and loading ramps. This species is not generally found in trees or rocky habitats (Chapple, 2003). The species occurs in a range of land zones within Queensland, including land zones 3, 4, 5, 7, 8, 9 and 10, although land zone 8 is not thought to be representative of core habitat for the species. Common vegetation types in which the species occurs includes; Brigalow (<i>Acacia harpophylla</i>), Mulga (<i>A. aneura</i>), Bendee (<i>A. catenulata</i>), Lancewood (<i>A shirleyi</i>), Belah (<i>Casuarina cristata</i>), Poplar Box (<i>Eucalyptus populnea</i>), Ironbark</p>	<p>Low: The habitat preferences of this species are not well understood and appear to be quite variable. Therefore, the ecology study area may be considered to contain broadly suitable habitat, in terms of food resources and overall vegetation assemblages, for this species in the form of Eucalyptus and Corymbia woodland to tall woodland and Swamp Box fringing forest, although these types of habitat have not been specifically described for this species in the literature. Nonetheless, the species has not been identified in the region since 1933 (at Aurukun), and the nearest most recent record is 160 km south-east of the ecology study area and more than 40 years old. These historic records correspond with the predictive distribution modelling for this species on the DCCEEW SPRAT Profile, which is the most northern potential distribution for the species.</p> <p>The paucity of records on Cape York Peninsula in combination with the marginal habitat present, scarcity of logs, absence of rocky habitats and the frequent and intense fire regime for the area reduces the suitability of habitat in the ecology study area for the Yakka Skink as this reduces ground layer microhabitat, particularly accumulated litter and fallen timber.</p> <p>No evidence of burrows or possible latrine sites have been recorded as part of seasonal surveys for the project, which has included a total of; 2,160 Elliot trap nights, 432 funnel trap nights, 288 pitfall trap nights,</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES <sup>4</sup>	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>(<i>Eucalyptus spp.</i>) and White Cypress Pine (<i>Callitris glaucophylla</i>) (DCCEEW, 2022c).</p> <p><b>Feeding habitat:</b> This species burrows and feeds on soft plant material and fruits as well as a variety of invertebrates that venture into or near the burrow entrance (DCCEEW, 2023I).</p> <p><b>Notable features:</b> This species defecates in a pile outside burrow entrances (DCCEEW, 2023I).</p> <p><b>Nearest record:</b> The nearest publicly available record of this species is from 1933, approximately 25 km south of the study area near Aurukun. The next nearest record is from 1978, approximately 160 km south-east of the study area near Coen Airport (CSIRO, 2023).</p>	87 person hours spotlighting, 125 person hours active searching and more than 1,000 diurnal and more than 450 nocturnal person hours of incidental activities and survey, conducted across the ecology study area over a period of 61.5 days during the seasonal surveys in 2018, 2019 and 2021. Furthermore, this species has not been recorded as part of the Amrun EIS and post-approval research and monitoring studies conducted between 2006 and 2009 and most recently between 2015 and 2018.

<sup>1</sup> E = Endangered, V = Vulnerable, under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

<sup>2</sup> E = Endangered, V = Vulnerable, NT = Near threatened, SLC = Special least concern, LC = Least concern under the *Nature Conservation Act 1992* (Qld)

<sup>3</sup> PMST = Protected Matters Search Tool

Note: Terrestrial species listed under the marine provisions of the EPBC Act have not been considered as Commonwealth marine areas do not occur within or adjacent to the terrestrial ecology study area.

<sup>4</sup> Nearest record information has been collated primarily from the Atlas of Living Australia (ALA), which is a collection of records from a range of sources, including Museums, Herbaria, community groups, studies, and individual observations. While some records are vouchered and confirmed by recognised institutions, others have not been validated. Furthermore, presentation and categorisation of ALA information has not necessarily been vetted by the institution relevant to the record. Therefore, nearest record information from ALA can be erroneous and is not consistently reliable and therefore should be considered in this context.

**Table 3 EPBC Act Listed Migratory Fauna Species with Low Likelihood of Occurrence in the Terrestrial Ecology Study Area**

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE STUDY AREA
Barn Swallow ( <i>Hirundo rustica</i> )	M/Ma	SLC (M)	PMST	<p><b>General distribution and habitat:</b> This species occurs in northern Australia from Cocos-Keeling Island, the north coast of the Pilbara region in Western Australia to Fraser Island in Queensland. It prefers open country in coastal lowlands, often near water, towns and cities, in or over freshwater wetlands, paperbark (<i>Melaleuca spp.</i>) woodland, mesophyll shrub thickets and tussock grassland. The species does not breed in Australia (DCCEEW, 2023m).</p> <p><b>Nearest record:</b> The nearest record of this species is undated and approximately 125 km north-east of the study area (CSIRO, 2023).</p>	<p>Low: The study area comprises woodlands and forests which are unlikely to be preferred by this species.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Common Greenshank ( <i>Tringa nebularia</i> )	M/Ma	SLC (M)	PMST, Wildlife Online, BirdLife Australia Atlas	<p><b>General distribution and habitat:</b> This species occurs mainly in coastal regions with some scattered records south of a line from near Dalby to Mt Guide. It occurs in all types of wetlands and has the widest distribution of any shorebird. It is widespread in the Gulf country and eastern Gulf of Carpentaria. It uses inland wetlands and sheltered coastal habitats of varying salinity. This species uses permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, salt flats mudflats, saltmarsh, mangroves, seagrass, tidal pools, rock flats and platforms, embayments, harbours, river estuaries, deltas and lagoons. It will also use artificial wetlands and impoundments. Suitable wetlands are generally edged with mud or clay and sometimes sand but may also be bare or with fringing vegetation. It generally does not occur in dry grassland. This species does not breed in Australia (DCCEEW, 2023n).</p>	<p>Low: This species has been recorded in the region and is primarily associated with the coast or larger estuarine systems. It was recorded approximately 17 km downstream of the study area on saltmarsh near mangroves (i.e. REs 3.1.5/3.1.6) during seasonal surveys. However, suitable open wetland habitat is not present in the study area.</p> <p>This species was not recorded in the study area during the surveys.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<b>Nearest record:</b> There are a number of historic and undated records approximately 10 km to the south of the study area at the confluence of the Ward, Archer and Watson Rivers. There is another undated record approximately 10 km to the north of the Product Bauxite Transport Corridor (CSIRO, 2020).	
Garganey ( <i>Anas querquedula</i> )	M/Ma	SLC (M)	Wildlife Online	<p><b>General distribution and habitat:</b> This species is a rare vagrant to Australia, breeding across Western Eurasia. Its non-breeding habitat in Australia includes large freshwater or occasionally brackish lakes, with abundant floating, emergent and fringing vegetation (although not too tall or dense), shallow flood plains, shallow dams, pans and sewage ponds. Sometimes coastal saltmarshes and lagoons (BirdLife International, 2020).</p> <p><b>Nearest record:</b> There are very few records of this species in north Queensland. There are three on Cape York Peninsula, the nearest is approximately 10 km to the north of the Product Bauxite Transport Corridor (CSIRO, 2023).</p>	<p>Low: Preferred habitats for this species, in the form of large ponded habitats, lakes and lagoons are not present within the study area. The Paperbark/Tea tree wetlands and sedgelands habitat adjacent to the lower reaches of Coconut Creek in the study area is densely vegetated and therefore unlikely to be suitable for this species.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Latham's Snipe ( <i>Gallinago hardwickii</i> )	M/Ma	SLC (M)	PMST, Wildlife Online, BirdLife Australia Atlas	<p><b>General distribution and habitat:</b> This is a non-breeding migrant to south-eastern Australia and is a passage migrant through northern Australia (i.e. travels through northern Australia to reach south-eastern habitats). It occurs along the east coast of Australia from Cape York Peninsula to south-eastern South Australia and extends over the eastern tablelands in south-east Queensland and west of the Great Dividing Range in New South Wales. This species occurs in permanent and ephemeral wetlands up to 2,000 m above sea level and prefer open, freshwater wetlands with low, dense vegetation, but will also use saline or brackish water, in modified or artificial habitats and sometimes in close proximity to humans. Wetland habitats are wide ranging,</p>	<p>Low: This species prefers open wetland habitat with low dense vegetation, which does not occur in the study area.</p> <p>This species was not recorded within or adjacent to the study area.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>including flooded meadows, seasonal or semi-permanent swamps, or open waters, bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. May also sometimes use saltmarsh, mangrove creeks, around bays and beaches and tidal rivers, particularly during migration (DCCEEW, 2023o).</p> <p><b>Nearest record:</b> There are a number of records for this species on Cape York Peninsula. The nearest record of this species is approximately 30 km north of the study area in Weipa (CSIRO, 2023).</p>	
Oriental Pratincole ( <i>Glareola maldivarum</i> )	M/Ma	SLC (M)	PMST	<p><b>General distribution and habitat:</b> This species is widespread in northern areas of Australia, primarily around the coast, but also scattered inland. The species migrates to Australia during the non-breeding season (i.e. late October to late March. The species usually occurs on open plains, floodplains, short grasslands, often with extensive bare areas, but also often near terrestrial wetlands, e.g. billabongs, creeks, lakes. It will also occur in coastal habitats such as mudflats, beaches and coastal lagoons (DCCEEW, 2023p).</p> <p><b>Nearest record:</b> There are very few published records of this species on Cape York Peninsula. The nearest record of this species is undated, approximately 125 km north north-east of the study area (CSIRO, 2023).</p>	<p>Low: Suitable open wetland or grassland habitat does not occur in the study area. Furthermore, this species has not been regularly recorded on Cape York Peninsula.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Pin-tailed Snipe ( <i>Gallinago stenura</i> )	M/Ma	SLC (M)	PMST	<p><b>General distribution and habitat:</b> This species has been recorded in New South Wales, south-west Western Australia and northern Australia and as such its distribution is not well understood. However, it breeds in Siberia and migrates to Australia from late September to the end of March. Non-breeding habitat includes edges of shallow</p>	<p>Low: This species is likely to prefer slightly more open wetland habitats than that provided by the small Paperbark woodlands and sedgeland wetland in the study area. Furthermore, this small wetland is disconnected from other wetland habitats in the region. Given the scarcity of</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<p>freshwater swamps and lakes with emergent, sparse to dense cover of grass/sedge or other vegetation. It can also use claypans, but not normally in saline or inter-tidal wetlands (DCCEEW, 2023q).</p> <p><b>Nearest record:</b> This species is a rare visitor to Queensland. The Atlas of Living Australia shows only one record in Queensland, at Ingham from 1988 and there is some uncertainty about the identification of this record (CSIRO, 2023).</p>	<p>this species in Queensland, the habitats in the ecology study area is unlikely to attract this species.</p> <p>This species has not been recorded on Cape York Peninsula.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Red-necked Phalarope ( <i>Phalaropus lobatus</i> )	M/Ma	SLC (M)	BirdLife Australia Atlas	<p><b>General distribution and habitat:</b> In Queensland this species has been recorded at a handful of locations, i.e. Lake Moondarra, Mount Isa, Hood's Lagoon and Helidon. It visits Australia in the non-breeding season from the Arctic and subarctic North America, Europe and Russia. When in Australia it prefers inland and coastal lakes/swamps, including highly saline waters and artificial wetlands, particularly saltfields. However, the species occurs mainly at sea during the non-breeding season (DCCEEW, 2023r).</p> <p><b>Nearest record:</b> This species has been infrequently recorded on Cape York Peninsula (CSIRO, 2023). There is an offshore record approximately 60 km north-west of the study area and only a handful of records further north at the tip of Cape York and approximately 300 km south-east of the study area in Lakefield National Park (CSIRO, 2023).</p>	<p>Low: This species is likely to prefer more open and saline wetland habitats than that provided by the small Paperbark woodlands and sedgeland wetland in the ecology study area. Furthermore, this small wetland is disconnected from other wetland habitats in the region. There is a general lack of suitable habitat in the ecology study area for this species.</p> <p>This species was not recorded within or adjacent to the study area.</p>
Red-rumped Swallow ( <i>Cecropis daurica</i> )	M/Ma	SLC	PMST	<p><b>General distribution and habitat:</b> This species occurs in northern Australia. The species migrates to Australia during the non-breeding season. The species predominantly forages over wetlands and open well-watered grasslands (DotE, 2015a).</p>	<p>Low: Suitable open wetland and grassland habitat is not present within the study area and this species has rarely been recorded on Cape York Peninsula.</p> <p>This species was not recorded within or adjacent to the study area.</p>

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	RECORD SOURCE <sup>3</sup>	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE STUDY AREA
				<b>Nearest record:</b> This species is rarely recorded on Cape York Peninsula, with the nearest record being on Thursday Island off the tip of Cape York Peninsula (CSIRO, 2023).	
Swinhoe's Snipe ( <i>Gallinago megala</i> )	M/Ma	SLC (M)	PMST	<p><b>General distribution and habitat:</b> This species breeds in central and southern Siberia. Records of this species are few and scattered across mostly northern Australia. In Queensland the species has been recorded at Normanton and Mt Isa. In Australia the species occurs in dense clumps of grass or rushes around the edges of fresh and brackish wetlands, including swamps, billabongs, river pools, small streams and sewage ponds. They have also been observed in drying claypans and inundated plains pitted with crab holes (DCCEEW, 2023s).</p> <p><b>Nearest record:</b> There are only a few scattered records of this species on Cape York Peninsula, the closest being preserved specimens and observations of the species approximately 150 km east-north-east of the ecology study area near Lockhart River, and another group of records of preserved specimens from 1922 at Coen approximately 170 km south-east of the ecology study area (CSIRO, 2023).</p>	<p>Low: Open wetland habitat does not occur in the study area.</p> <p>This species was not recorded within or adjacent to the study area.</p>

1 M = Migratory, Ma = Marine, under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

2 SLC(M) – Special Least Concern (Migratory) under the *Nature Conservation Act 1992* (Qld)

3 PMST = Protected Matters Search Tool

Notes: Terrestrial species listed under the marine provisions of the EPBC Act have not been considered as Commonwealth marine areas do not occur within or adjacent to the ecology study area. Aquatic, marine, and wader or shorebird species have not been considered as part of this likelihood of occurrence table, as these species will be assessed by other specialists.

## **ATTACHMENTS**

11-4 EPBC Act Listed Threatened and  
Migratory Aquatic Species with Low  
Likelihood of Occurrence in the  
Aquatic Ecology Study Area



**Table 1 EPBC Act Listed Threatened and Migratory Species - Likelihood of Occurrence in the Freshwater Reaches of the Aquatic Ecology Study Area**

SPECIES NAME	MNES LISTED THREATENED OR MIGRATORY SPECIES (EPBC ACT)	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE FRESHWATER REACHES OF THE STUDY AREA
Narrow Sawfish ( <i>Anoxypristis cuspidate</i> )	Migratory	<p><b>Distribution:</b> The Narrow Sawfish inhabits tropical coastal waters throughout northern Australia, likely from the Pilbara region of Western Australia to the central Queensland east coast (Kyne and Pillans, 2014).</p> <p><b>Habitat preferences:</b> Juveniles of the species inhabit the tidal reaches of estuaries and rivers as well as coastal mud and sand flats, while adults are generally found offshore (Kyne and Pillans, 2014). Unlike the other species of sawfish, the Narrow Sawfish is often found inhabiting the mid reaches of the water column. Little is known of their breeding behaviour.</p> <p><b>Nearest record:</b> This species has been recorded in the coastal waters, west of Aurukun (CSIRO, 2020).</p>	<p>Low: Targeted surveys undertaken for these species (employing approved methods) within Tapplebang Creek and Coconut Creek were restricted due to access constraints during the post-wet season survey and limited water/suitable habitat present for sampling during the dry season survey. However, the estuarine and freshwater reaches of the Ward River (within the downstream study area) were surveyed for each of the species with considerable effort, employing various techniques recommended within the <i>Survey guidelines for Australia's threatened fish</i> (DSEWPaC, 2011a).</p> <p>Of the sawfish species that occur in the region, the Largetooth Sawfish is the only species known to spend extended periods of time in freshwater reaches (Peverell, 2009). Using an assessment of laser ablation techniques to compare strontium and calcium ratios, combined with tagging and tracking methods as well as stomach content analysis, Peverell (2009) found no evidence to suggest that the other three listed species of sawfish utilise freshwater environments for any stage of their life history. Instead, the study found that the Dwarf Sawfish, the Green Sawfish and the Narrow Sawfish all utilise inshore coastal waters and estuaries as well as offshore waters throughout their life histories (Peverell, 2009). Therefore, these three species will not inhabit the project site study area, or any reach of Coconut Creek or Tapplebang Creek, and are unlikely to inhabit the freshwater reaches of the Ward River.</p>
Dwarf Sawfish ( <i>Pristis clavate</i> )	Vulnerable Migratory	<p><b>Distribution:</b> This species is thought to have historically had a vast global distribution although more recent data suggests that the Australian population is one of the last significant populations in the world (Stevens et al., 2005). Within Australia, the species is known to inhabit coastal waters from just north of Weipa in the east to south of Port Headland in Western Australia (Field, Charters, Buckworth, Meekan and Bradshaw, 2008; DotE, 2015b).</p> <p><b>Habitat preferences:</b> The Dwarf Sawfish occurs exclusively in shallow (2-3 m) coastal waters and estuarine habitats and does not use freshwater environments (TSSC, 2009; DotE, 2015b). Estuarine environments are used as nursery habitats for</p>	

SPECIES NAME	MNES LISTED THREATENED OR MIGRATORY SPECIES (EPBC ACT)	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE FRESHWATER REACHES OF THE STUDY AREA
		<p>juveniles up to three years while adult sawfish range more broadly within nearshore areas (TSSC, 2009).</p> <p><b>Nearest record:</b></p> <p>The species has been recorded in the coastal waters adjacent to the Ward River catchment area (DotE, 2015b).</p>	
Green Sawfish ( <i>Pristis zijsron</i> )	Vulnerable Migratory	<p><b>Distribution:</b></p> <p>Similar to the Dwarf Sawfish, this species is thought to have historically had a vast global distribution although the Australian population is now thought to be one of the last significant populations in the world (Stevens, Pillans and Salini, 2005). Within Australia, the species is known to inhabit tropical coastal waters from south of Ayr on the east coast of Australia to south of Port Headland in Western Australia (Field et al., 2008; DotE, 2015b).</p> <p><b>Habitat preferences:</b></p> <p>This species utilises both coastal and estuarine habitats, with adults thought to breed in coastal waters, potentially in aggregations before the females return to estuaries to spawn. However, as with the Dwarf Sawfish, the Green Sawfish only inhabits the tidal reaches of these systems until they are sub-adults before moving into coastal waters (Field et al., 2008).</p> <p><b>Nearest record:</b></p> <p>The closet confirmed sighting was recorded approximately 45 km north of the aquatic ecology study area (CSIRO, 2020).</p>	
Spear-tooth Shark ( <i>Glyphis glyphis</i> )	Critically Endangered	<p><b>Distribution:</b></p> <p>The species' known range includes various rivers that drain into the Arafura Sea and along the northwest side of Cape York Peninsula, but there are no known records from drainages south of Weipa within the Gulf of Carpentaria (Field et al., 2008).</p>	<p>Low: It is highly unlikely the Spear-tooth Shark would inhabit Tapplebang Creek and Coconut Creek, both of which are clear, highly freshwater watercourses. If the species did inhabit the Ward River, it would likely not progress upstream of the areas of tidal influence (i.e. approximately WR4).</p>

SPECIES NAME	MNES LISTED THREATENED OR MIGRATORY SPECIES (EPBC ACT)	HABITAT PREFERENCES	LIKELIHOOD TO OCCUR IN THE FRESHWATER REACHES OF THE STUDY AREA
		<p><b>Habitat preferences:</b></p> <p>Juvenile to sub-adult Speartooth Sharks inhabit tidal rivers and estuaries in tropical northern Australia (Stevens, Pillans and Salini, 2005). The species utilises various reaches of turbid river systems and is thought to be able to tolerate a range of salinity levels from freshwater through to marine, although tracking data suggests the species only inhabits waters that are tidally influenced (Pillans et al., 2005; Stevens, Pillans and Salini, 2005; Stevens, McAuley, Simpfendorfer and Pillans, 2008). It is thought that adult Speartooth Sharks migrate to coastal marine environments, although only one possible adult specimen (assessment based only on weight) has been caught in open waters despite extensive commercial fishing effort (Field et al., 2008). The species is classified as euryhaline (i.e. a fish species that is predominantly marine but can tolerate a wide range of salinities) (Stevens et al., 2008).</p> <p><b>Nearest record:</b></p> <p>The nearest record is from the Wenlock River approximately 100 km north of the aquatic ecology study area.</p>	



## **ATTACHMENTS**

11-5 EPBC Act Listed Threatened,  
Migratory, Marine and Cetacean  
Marine Species with Low Likelihood of  
Occurrence in the Marine Study Area



**Table 1 EPBC Act Listed Fauna with Low Likelihood of Occurrence in the Marine Study Area**

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	HABITAT PREFERENCES AND LIKELIHOOD TO OCCUR IN THE MARINE STUDY AREA
Red Knot ( <i>Calidris canutus</i> )	E (M/Ma)	E	Low: Not observed by BMT or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Closest sighting at Weipa (approximately 52 km NE) with very few sightings regionally (CSIRO, 2020). This species does not breed in Australia. Foraging habitat includes in soft substrate near the edge of water on intertidal mudflats or sandflats (Higgins and Davies, 1996). While this habitat occurs at the mouth of Norman Creek, the lack of observations in this area and the paucity of records within the northern and central gulf indicate the species is unlikely to occur, other than as individuals overflying the site.
Curlew Sandpiper ( <i>Calidris ferruginea</i> )	CE (M/Ma)	SLC	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Historically, the closest sighting is 8 km NW in 1975 with several sightings regionally (CSIRO, 2020). This species prefers intertidal mudflats in sheltered coastal areas (Higgins and Davies, 1996) which does not occur within the study area.
Greater Sand Plover ( <i>Charadrius leschenaultia</i> )	V (M/Ma)	E	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The closest sighting is 10 km north with several sightings regionally (CSIRO, 2020). This species does not breed in Australia. Its preferred habitat includes sheltered sandy, shelly, or muddy beaches with large intertidal mudflats or sandbanks (Stewart, Rogers and Rogers, 2007) which does not occur within the study area.
Bar-tailed Godwit (baueri) ( <i>Limosa lapponica baueri</i> )	V	V	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The closest sighting is 8 km NW in 1975 with very few sightings regionally (CSIRO, 2020). This species does not breed in Australia. Foraging habitat includes near the edge of water or in shallow water in tidal estuaries (Marchant and Higgins, 1994) which does not occur within the study area.
Northern Siberian Bar-tailed Godwit ( <i>Limosa lapponica menzbieri</i> )	CE	E	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). There have been no sightings in the regional area, with the closest sighting 350 km SE near Cooktown on the eastern coast (CSIRO, 2020). Foraging habitat includes soft substrates near the edge of water or in shallow tidal estuaries (Higgins and Davies, 1996) which does not occur within the study area.
Leatherback Turtle ( <i>Dermochelys coriacea</i> )	E (M/Ma)	E	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). This species is rarely found in Queensland; with one sighting on the western coast of north Queensland south of Aurukun (~100 km south) in January 2019 (CSIRO, 2020).

SPECIES NAME	EPBC ACT STATUS <sup>1</sup>	NC ACT STATUS <sup>2</sup>	HABITAT PREFERENCES AND LIKELIHOOD TO OCCUR IN THE MARINE STUDY AREA
Blue Whale ( <i>Balaenoptera musculus</i> )	E (M/C)	LC	Low: This species was not observed by BMT surveys or detected in eDNA samples. There have been no sightings within the Gulf of Carpentaria, the closest sighting is approximately 1,000 km away off the north coast of the Northern Territory in 2003 (CSIRO, 2020).
White Shark ( <i>Carcharodon carcharias</i> )	V (M)	LC	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). This species inhabits offshore waters and therefore there is a possibility of occurrence offshore but unlikely as this species' dominant distribution in Australia is on the western, southern, and eastern coasts. The closest observation in Queensland is south of Cairns (~700 km south-east) (CSIRO, 2020).
Whale Shark ( <i>Rhincodon typus</i> )	V (M)	LC	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The study area is within the geographic range, however, the nearest confirmed sightings are in the western Gulf of Carpentaria (~500 km W) (CSIRO, 2020). The study area includes offshore areas which this species is known to inhabit. However, the species is unlikely to occur due to the absence of recorded sightings in the area.
Speartooth Shark ( <i>Glyphis glyphis</i> )	CE	LC	Low: This species was not observed by BMT surveys or detected in eDNA samples. The study area is outside of the known geographical extent with the nearest recorded sighting in the Wenlock River, 110 km north (CSIRO, 2020).
Oriental Pratincole ( <i>Glareola maldivarum</i> )	M/Ma	SLC (M)	Low: This species was not observed by BMT surveys or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Historically, the closest sighting was 200 km NE in 1976 with only very few sparse sightings in northern Queensland (CSIRO, 2020). This species does not breed in Australia. The preferred habitat for this species (open plains, floodplains, or short grassland) is not present within or adjacent to the study area but this species can also inhabit coastal areas such as beaches and mudflats (Finch and Cox, 1974).
Red-necked Stint ( <i>Calidris ruficollis</i> )*	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Historically, the closest sighting was 8 km NW of the study area in 1976 (CSIRO, 2020). Regionally there have been a few sightings including around Aurukun and Weipa. This species prefers sheltered coastal habitats (Higgins and Davies, 1996) which are not present within the study area.
Terek Sandpiper ( <i>Xenus cinereus</i> )*	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Regionally, there have been a few sightings along the coast including around Aurukun and Weipa (40-50 km from the study area).
Little Curlew ( <i>Numenius minutus</i> )*	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The study area is within the known distribution of this species. Historically the closest sighting is 8 km NW of

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			the study area with few sightings regionally (CSIRO, 2020). However, as this species predominately inhabits estuaries, the preferred habitat for this species does not occur within the study area.
Grey Plover ( <i>Pluvialis squatarola</i> )*	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Regionally there have been few sightings with the closest at Weipa (approximately 52 km north) (CSIRO, 2020). Although the study area is within known distributions (Pizzey, Knight and Pizzey, 2012; Morcombe, 2019) and there is potential habitat within and adjacent to the study area this species, has not been recorded to occur within the study or close surrounds. As this species predominately inhabits estuaries, the preferred habitat for this species does not occur within the study area.
Streaked Shearwater ( <i>Calonectris leucomelas</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Regionally there have been no recorded sightings along the coastline with a few in the western half of the Gulf of Carpentaria (CSIRO, 2020).
Latham's Snipe ( <i>Gallinago hardwickii</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The closest sighting is 110 km SE (2011) with very sparse distribution regionally (CSIRO, 2020). This species does not breed in Australia and its preferred habitat includes a wide variety of permanent and ephemeral wetlands (Naarding, 1981).
Common Noddy ( <i>Anous stolidus</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The closest sighting is 8 km NW in 1975 with sparse sightings regionally (CSIRO, 2020). This species is known to breed in offshore tropical islands and forages throughout the open ocean (Higgins and Davies, 1996).
Black-tailed Godwit ( <i>Limosa limosa</i> )*	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The closest sighting is 8 km NW in 1975 with sparse sightings regionally (CSIRO, 2020). Although this species is found in coastal habitats, it has not been reported to occur within the study area or close surrounds recently.
Sharp-tailed Sandpiper ( <i>Calidris acuminata</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Historically, the closest sighting is 8 km NW in 1975 with several sightings regionally (CSIRO, 2020). This species does not breed in Australia. Its preferred habitat includes muddy edges of shallow fresh or brackish wetlands, with inundated or emergent vegetation (Higgins and Davies, 1996) which does not occur within the study area.
Pectoral Sandpiper ( <i>Calidris melanotos</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The nearest sighting was approximately 200 km south historically with very sparse distribution regionally

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			(CSIRO, 2020). This species does not breed in Australia. Its preferred habitat includes shallow fresh to saline wetlands (Higgins and Davies, 1996) which do not occur within the study area.
Bar-tailed Godwit ( <i>Limosa lapponical</i> )	M/Ma	SLC (M)	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). The study area is within the known distribution of this species. Historically the closest sighting was 8 km NW in 1975 with sparse sightings regionally (CSIRO, 2020). Suitable habitat of this species occurs within the study area however, regionally it is predominately found in estuaries which do not occur within the study area.
Brydes Whale ( <i>Balaenoptera edeni</i> )	M/C	LC	Low: This species was not observed within the study area or during field surveys undertaken as part of the Amrun EIS (Rio Tinto, 2011). Anecdotal evidence from fishermen suggests presence on a decadal time scale. The closest recorded sighting is on the western side of the Gulf of Carpentaria approximately 500 km west in 2018 (CSIRO, 2020).
Longfin Mako ( <i>Isurus paucus</i> )	M	LC	Low: This species was not observed within the study area. The study area is within the geographic range of this species, however, the nearest sighting is offshore from Brisbane (2,300 km SE) (CSIRO, 2020).
Giant Manta Ray ( <i>Mobula birostris</i> )	M	LC	Low: This species was not observed by BMT surveys or detected in eDNA samples. The closest recorded sighting is on the eastern side of the Gulf of Carpentaria (~500 km west) (Armstrong et al., 2019).
Spotted Dolphin ( <i>Stenella attenuatal</i> )	C	LC	Low: This species was not observed within the study area. There have been no regional sightings. The study area is within the geographic range however, the closest recorded sighting is 650 km NE.
Common Dolphin ( <i>Delphinus delphis</i> )	C	LC	Low: This species was not observed within the study area. There have been no regional sightings. The study area is outside of the geographic range with the closest two sightings being offshore from Cairns (550 km SE) and Arnhem Land (830 km NW).
Risso's Dolphin ( <i>Grampus griseus</i> )	C	LC	Low: This species was not observed within the study area. There have been no regional sightings. The study area is within the geographic extent however, the nearest sightings are offshore of Hopevale (400 km SE) and offshore of West Arnhem (1,000 km NW).

<sup>1</sup> CE = Critically Endangered, E = Endangered, V = Vulnerable, M = Migratory, Ma = Marine, C = Cetacean under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

<sup>2</sup> E = Endangered, V = Vulnerable, NT = Near threatened, SLC = Special least concern, LC = Not Listed under the *Nature Conservation Act 1992* (Qld)

\*These species were not flagged on any of the conservation searches but were included as they were listed in the Amrun EIS and are listed under the EPBC Act