

Assessment Report 95

**Assessment method:
Supplementary Environmental Report**

**Paru Road Upgrade
Department of Infrastructure, Planning and Logistics
June 2022**

This assessment report has been prepared by the Northern Territory Environment Protection Authority (NT EPA) pursuant to section 64 of the *Environment Protection Act 2019* (NT) (EP Act). It describes the outcomes of the NT EPA's assessment of the Paru Road Upgrade proposed by the Northern Territory Department of Infrastructure, Planning and Logistics on Melville Island.

This assessment report documents potential environmental impacts and risks identified during the environmental impact assessment process, focusing on those that could be significant, and the measures and recommended conditions required to address potentially significant impacts.

In accordance with section 65 of the EP Act the assessment report is for the Northern Territory Minister for Environment, Climate Change and Water Security to consider when making a decision about whether to approve the action under the EP Act.



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NT EPA Chairperson

8 June 2022

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Summary

This assessment report has been prepared by the Northern Territory Environment Protection Authority (NT EPA) pursuant to section 64 of the *Environment Protection Act 2019* (NT) (EP Act) for the Paru Road Upgrade (proposal).

The Department of Infrastructure, Planning and Logistics (proponent) proposes to upgrade Paru Road within NT Portion 1644 on Melville Island, by realigning four bends of the existing road, building one new creek crossing and clearing native vegetation for gravel extraction. The construction works will be along 13 km of an existing road located on freehold Aboriginal Land held by the Tiwi Aboriginal Land Trust, on land that is not zoned under the NT Planning Scheme.

The NT EPA assessed the proposal using the Supplementary Environmental Report assessment method, with a 25 business day public consultation period. The assessment was carried out in accordance with the requirements of the EP Act and Environment Protection Regulations 2020. The NT EPA examined the potential for significant direct, indirect and cumulative impacts on the environment.

In the course of the assessment the NT EPA examined potential significant impacts on the following five environmental factors:

1. Terrestrial ecosystems
2. Hydrological processes
3. Inland water environmental quality
4. Aquatic ecosystems
5. Community and economy.

The proposal is the first in a series of road upgrades on the Tiwi Islands by the proponent in response to a project development report released in 2012 which identified that the existing Tiwi Island road network had deteriorated. The proposal would improve the road and associated drainage features to improve safety for road users and environmental outcomes from improved erosion control.

The proposal would clear less than 66 hectares of native vegetation for gravel extraction and road realignments. The environmental risks associated with the proposal are limited by the small scale of activities and improved environmental outcomes through progressive rehabilitation of all gravel extraction areas and decommissioned roads.

The NT EPA concludes that the proposal can be implemented and managed in a manner that is environmentally acceptable and recommends that environmental approval be granted subject to the conditions recommended in Appendix 1. This assessment report and the draft environmental approval (Appendix 1) are provided to the Minister for Environment, Climate Change and Water Security (Minister) for consideration in deciding whether to grant an environmental approval.

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1. Introduction

This assessment report provides advice and recommendations of the Northern Territory Environment Protection Authority (NT EPA) to the Minister for Environment, Climate Change and Water Security (Minister) on completion of the NT EPA's environmental impact assessment of the Paru Road Upgrade (proposal). The proposal is to upgrade sections of Paru Road from gravel to bitumen, including realignment of four bends and a bridge crossing along 13 km of road on Melville Island.

The NT EPA has prepared this report in accordance with section 64 of the Environment Protection Act 2019 (NT) (EP Act). As prescribed by regulation 156 of the Environment Protection Regulations 2020 (EP Regulations), the purpose of this report is to:

- assess whether the proposal is likely to meet the environmental objectives
- assess the potential significant environmental impacts of the proposal
- make recommendations for avoiding, mitigating and managing those impacts
- advise the Minister as to the environmental acceptability of the proposal.

This report must assess the potential environmental impacts and risks of the proposal and whether there are any significant residual impacts remaining after all reasonable measures to avoid and then mitigate and manage the risks have been taken.

This assessment report and the draft environmental approval (Appendix 1) are provided to the Minister for consideration in deciding whether to grant an environmental approval for the proposal. Matters taken into account during the assessment are tabulated in Appendix 2. An environmental impact assessment timeline is provided at Appendix 3.

1.1. Proponent

The proponent is the Northern Territory Department of Infrastructure, Planning and Logistics (Australian business number 84 085 734 992). The proponent is responsible for planning, designing and procuring contractors to undertake the works in accordance with any environmental approval.

1.2. Location and context

The Tiwi Islands are located approximately 80 km north of Darwin and comprise Australia's second and fifth largest islands, Melville and Bathurst islands respectively. The Tiwi Islands experience a tropical monsoonal climate with distinct dry season (May to September) and wet season (October to April). The average annual rainfall for Melville Island is 1987 mm.¹

Paru Road is an existing unsealed road connecting the ferry terminal on Melville Island at Paru to communities of Milikapiti, Pirlangimpi and smaller outstations. In recent years, road usage has grown rapidly. This trend is expected to continue with the establishment of a new car ferry that is expected to double the capacity of vehicles travelling on the Tiwi Islands.

The nearest residence to the proposal is at Paru Outstation, approximately 900 m south-west of the proposal and 600 m east of the barge landing. The community of Wurrumiyanga (Nguuu) is located approximately 2 km south-west of the southern aspect of works, across the Apsley Strait. Taracumbi Outstation is located 8 km north of the northern aspect of road works and 200 m from water point 3 for the proposal (**Figure 1**). An established workers' camp located on

¹ Australian Government Bureau of Meteorology, 2022. [Climate statistics for Australian locations \(bom.gov.au\)](https://www.bom.gov.au)

Paru Road is proposed to house workers who are unable to commute from their place of residence.

2. Proposal

2.1. Description

The proposal is to upgrade Paru Road to a 30 m wide road corridor designed to straighten sections of the road and increase road safety. The proposal is located within NT Portion 1644 on Melville Island, on freehold Aboriginal Land held by the Tiwi Aboriginal Land Trust. The land is not zoned under the NT Planning Scheme. The proposal area covers 383.8 hectares (ha) with a maximum native vegetation clearing requirement of 66 ha. Table 1 describes the major components of the development and Figure 1 shows the location of road works, gravel pits and water points. A detailed description of the proposal is presented in section 1.5 of the proponent's referral².

Table 1 Proposal description

Aspect	Description
Timing	Works are to be undertaken over two years between the months of April to October so that proposal components are constructed and sealed before the wet season commences.
Road works	<ul style="list-style-type: none"> • Four road alignments (maximum native vegetation clearing required of 12 ha): <ul style="list-style-type: none"> ○ Chainage 5.3 km to 6.3 km (northern area) ○ Chainage 7.8 km to 9.0 km ○ Chainage 9.9 km to 11 km (in gravel pit 1) ○ Chainage 11.2 km to 12.0 km (southern area). • Sealing, line marking, signage and guardrails as required • Construction during dry season (April to October).
Gravel pits	<ul style="list-style-type: none"> • Five gravel pits (GP) within two gravel pit areas, GP1 and GP2 (maximum native vegetation clearing required of 54 ha): <ul style="list-style-type: none"> ○ GP1-1 (6.6 ha) ○ GP1-2 (3.6 ha) ○ GP1-3 (6.5 ha) ○ GP2-1 (34.0 ha) ○ GP2-1 (3.3 ha).
Creek crossings	<ul style="list-style-type: none"> • Realignment and single span bridge construction at Paru Creek (second order stream, chainage 7.8 km to 9.0 km) • Realignment of a drainage line (first order stream, chainage 5.3 km to 6.3 km).

² Proponent's [Referral – Main Document](#) submitted to the NT EPA

Aspect	Description
Water demand and sources	<ul style="list-style-type: none"> • 200 kL per day for construction, additional water for dust suppression and workers camp. • Estimated demand of 36 ML per year for two years. • Water sourced from three existing water points (WP): WP1 – Plantation Management Partners (RN008433 / RN008437) WP2 – Paru Creek WP3 – Stand pipe at Taracumbi Creek.
Remediation	<ul style="list-style-type: none"> • Progressive rehabilitation of gravel pits • (Assisted) natural regeneration in areas cleared for gravel pit through the actions: <ul style="list-style-type: none"> ○ spread unused rock and gravel material over exposed soil ○ rip area (to depth of 100 mm to 200 mm) along contour lines to reduce erosion ○ spread and scarify top soil and overburden to encourage regrowth from the soil's seed store ○ broadcast of local native seed if assisted revegetation is specified by the approval holder ○ spread cleared vegetation across the site in a manner representative of the surrounding area to assist the recolonisation of flora and fauna across the site. • ripped natural regeneration for the decommissioned road using material from vegetation clearing at realignment.
Post construction maintenance	The Tiwi Islands Regional Council (TIRC) will maintain the road following formal handover.

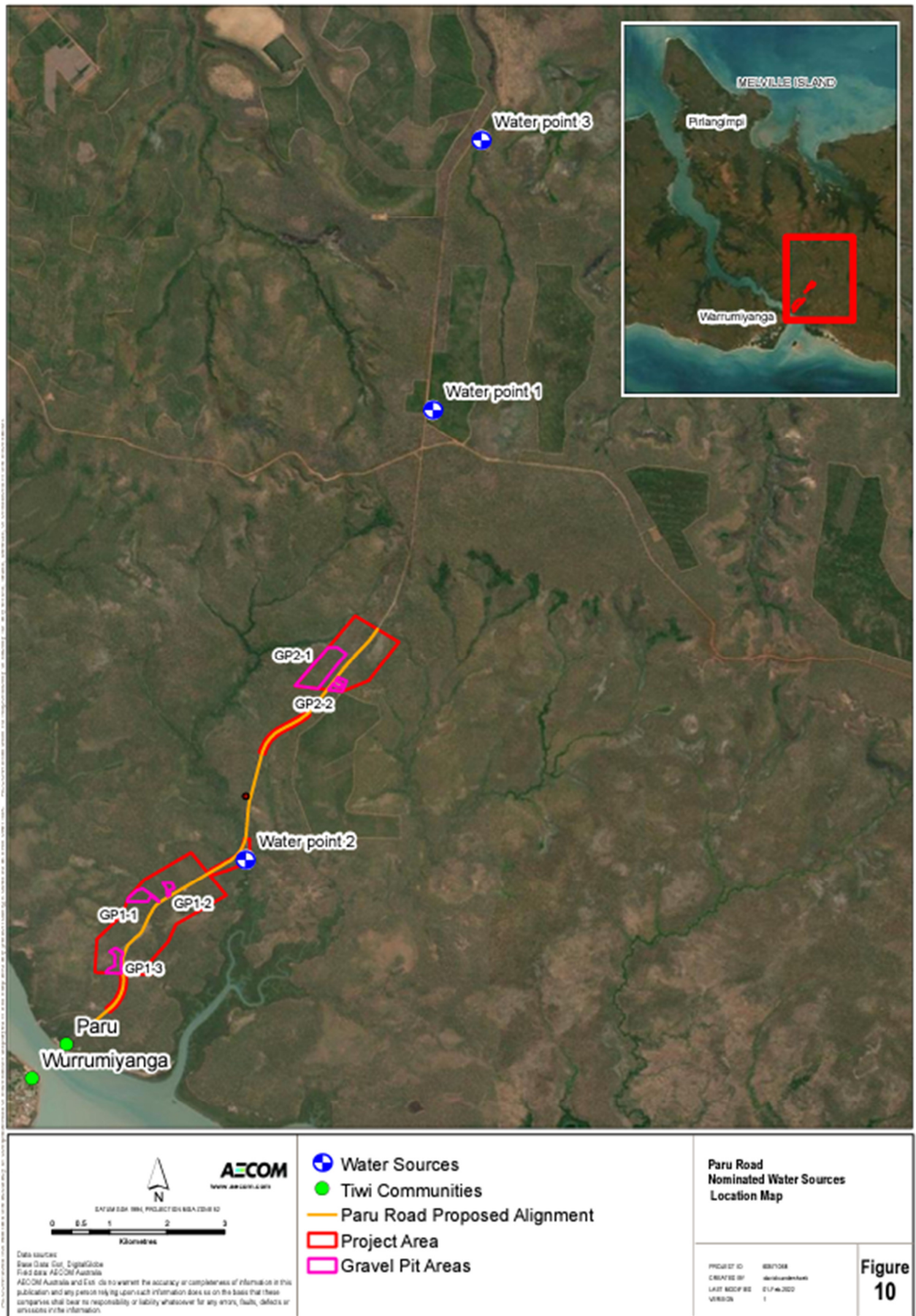


Figure 1 Proposal components (Source: SER)

2.2. Justification for the proposal and alternatives

The proponent advises that the proposed road upgrade would provide long term benefits for the community and business in the local area through providing:

- safe and efficient all-weather access between communities and businesses on Bathurst and Melville islands with further benefits of improved:
 - access to essential services such as medical, educational, police and food stores
 - educational opportunities through year-round access to schools
 - economic certainty for existing businesses and new Indigenous enterprises
 - access to employment opportunities across the islands
 - safety via upgraded road conditions
 - vehicle maintenance and condition, reducing repair and replacement costs for commercial activities.
- employment and capacity building – through upskilling of local people engaged in works.

The proponent selected the preferred road alignments with consideration of avoiding high value areas, high density threatened species *Typhohium mirabile* and unsurveyed habitat for *Typhonium* spp. in gravel pit GP1-2. The specific locations for gravel pit extraction works were determined to avoid the high environmental values of threatened flora and fauna, sensitive and significant vegetation, taking into account appropriate buffer zones.

Alternative designs for the main creek crossing were considered in consultation with the Tiwi Land Council (TLC) and TIRC. The single span bridge design was chosen to minimise environmental impacts.

3. Strategic context

The proposal is consistent with the NT Government's commitment to creating jobs and economic growth, and with strategic plans and initiatives including:

- **Indigenous Employment and Supplier-Use Infrastructure Framework** – aims to increase Indigenous employment and supplier-use in the delivery of land transport infrastructure projects funded or co-funded by the Australian Government
- **Corridor Investment Strategy** – provides an evidence-based approach to road transport infrastructure informed by consultation with the TLC, TIRC and forestry industry representatives and delivering outcomes for the Australian Government and NT Government.

4. Statutory context

4.1. Overview

The proposal requires assessment by the NT EPA under the EP Act. The NT Minister for Environment, Climate Change and Water Security is the approval authority.

The environmental approval is the principal approval; however, the proposal may also require separate regulatory approvals. It is the responsibility of the proponent to obtain all approvals, which may include, but not be limited to:

- an AAPA certificate (granted for the proposal area)

- a land clearing permit under the *Planning Act 1999*.

Pursuant to section 61 of the EP Act, the purpose of the environmental approval is to manage the potentially significant environmental impacts of a proposal during all phases. This includes planning, designing, construction, remediation and completion of the proposal.

4.2. Mandatory matters for consideration

In preparing this assessment report, the NT EPA considered the following information in accordance with regulation 157 of the EP Regulations:

- referral information
- supplementary environmental report (SER)
- submissions received in relation to the referral information and SER

The NT EPA took into account the purpose of the environmental impact assessment process under section 42 of the EP Act (addressed in Appendix 2) including consideration of:

- the objects (EP Act, section 3)
- the principles of ecologically sustainable development (EP Act, Part 2 Division 1)
- the environmental decision-making hierarchy (EP Act, section 26)
- the waste management hierarchy (EP Act, section 27)
- ecosystem-based management
- impacts of a changing climate.

Refer to Appendix 2 for further detail about matters that the NT EPA has taken into account during its assessment.

5. Consultation

The NT EPA published the referral for comment between 1 June 2021 and 29 June 2021. The SER was published for comment between 8 February 2022 and 14 March 2022. No public submissions were received during consultation on the referral and SER. Government authority submissions were received on the referral (five submissions) and on the SER (three submissions); all submissions are available on the NT EPA website.

The NT EPA considered the submissions received in relation to the SER in making this assessment report. The issues relating to potential significant impacts raised in submissions are discussed in more detail in section 6 below.

The NT EPA consulted with and invited submissions from the proponent on the assessment report and draft environmental approval. As there is no additional approval required for the proposed action, the NT EPA did not consult with any statutory decision maker. The NT EPA considered the proponent's submission in finalising its recommendations to the Minister.

The NT EPA acknowledges that the proponent has committed to continued engagement with relevant stakeholders during implementation of the proposal, should approval be granted.

6. Assessment of key environmental factors

6.1. Overview

The NT EPA identified that the proposal has the potential to have a significant impact on environmental values associated with five environmental factors (Table 2).

Table 2 Key environmental factors³

THEME	FACTOR	ENVIRONMENTAL OBJECTIVE
LAND	Terrestrial ecosystems	Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.
WATER	Hydrological processes	Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.
	Inland water environmental quality	Protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.
	Aquatic ecosystems	Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.
PEOPLE	Community and economy	Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.

The NT EPA considered other environmental factors during its consideration of the referral; however, the impact on those factors was not considered to be significant.

6.2. Terrestrial ecosystems

6.2.1. Environmental values

The terrestrial ecosystems of the Tiwi Islands are relatively extensive and intact with high biodiversity value. The Tiwi Islands support many endemic and threatened plant and animal species not found anywhere else in the Northern Territory (or the world) due to their isolation and higher rainfall. The islands also provide refuge for threatened species that have experienced population declines on the mainland.

Vegetation is dominated by tall eucalypt forest on sandy and lateritic plains and rises⁴ and generally low weed density. Rainforests associated with perennial freshwater springs and along large estuarine rivers are an important component of the regional vegetation.

Vegetation surveys undertaken by the proponent identified nine vegetation communities within the proposal area that are well represented and not considered to be rare or threatened at a regional scale. No threatened ecological communities are present. Targeted field surveys

³ [NT EPA Guide to Environmental Factors and Objectives.](#)

⁴ [Sites of Conservation Significance - Tiwi Islands](#)

identified the presence of threatened plants (including *Cycas armstrongii*, *Typhonium jonesii* and *T. mirabile*). Mapped riparian rainforest and associated threatened flora exists at the proposed water extraction site near Taracumbi Outstation.

Significant and sensitive vegetation types⁵ occur within the disturbance footprint (riparian and large trees with hollows suitable for fauna) and broader proposal area (monsoon vine forest). Targeted surveys undertaken by the proponent within the proposal area identified the presence of large trees (diameter at breast height greater than 40 cm) and very large trees (diameter at breast height greater than 50 cm) in consistent densities inside and outside the disturbance footprint of proposed gravel extraction areas.

The proponent's fauna surveys verified the presence and location of Butler's dunnart, the pale field rat and large trees with hollows suitable for fauna (including red goshawk, Tiwi masked owl, brush-tailed phascogale, black-footed tree-rat and the brush-tailed rabbit-rat).

Exotic grasses and other plants have increased in occurrence due to the increase in traffic from the mainland and across the Tiwi Islands. Wildings from non-NT-native *Acacia mangium* plantations have spread into both open forest and rainforest communities. Exotic grasses, in particular the grassy weeds Mission Grass, Guinea Grass and Gamba Grass present the highest risk for weed spread and potential environmental damage.

6.2.2. Investigations and surveys

General and targeted flora and fauna investigations and surveys have been undertaken by the proponent in and around the disturbance footprint. These consist of:

- a desktop assessment of threatened species and weeds within and surrounding the proposal area in 2021.
- a desktop assessment of significant and sensitive vegetation (wetlands and rainforest) in 2021.
- vegetation community mapping of the proposal area by AECOM from surveys conducted between 15 and 22 January 2021.
- a targeted survey of suitable *Typhonium jonesii* and *T. mirabile* habitat in and surrounding the proposed roadworks and gravel extraction areas between 15 and 22 January 2021.
- a biodiversity survey of terrestrial fauna⁶ between 15 and 21 January 2021.
- a targeted survey of large trees with hollows suitable for fauna within and surrounding areas proposed for gravel extraction between 4 and 11 October 2021.
- a targeted survey of small mammals (Butler's dunnart and pale field-rat) within the proposed gravel extraction areas between 4 October and 11 November 2021 (live trapping completed on 11 October 2021).

This work builds on recent and ongoing flora and fauna surveys conducted on the Tiwi Islands by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the NT Power Water Corporation and through the National Environmental Science Program (NESP)⁷.

⁵ Rainforest, monsoon vine forest or vine thicket, riparian vegetation and vegetation containing large trees with hollows suitable for fauna as defined in the [NT Planning Scheme Land Clearing Guidelines](#) (DEPWS 2021).

⁶ [Terrestrial Biodiversity Survey](#) (Appendix A to Referral)

⁷ NESP [Resource Hub](#)

The proponent's surveys were undertaken in accordance with standards set out in the NT EPA Guidelines for Assessment of Impacts on Terrestrial Biodiversity⁸ and other relevant guidelines⁹.

6.2.3. Consultation

Matters raised during consultation on the referral and SER relating to potentially significant impacts to terrestrial ecosystems include:

- information gaps and uncertainty relating to the potential risk to some threatened species
- potential for impacts on riparian vegetation and on threatened flora and fauna species from the proposed bridge construction and subsequent changes to flow regimes of Paru Creek
- those associated with site selection of gravel pits as they relate to:
 - areas in GP1-2 not surveyed for *Typhonium* (avoidance measure applied by proponent)
 - inappropriate survey effort for Butler's dunnart and pale field-rat
 - the configuration of gravel pit sizes so that some may exceed land clearing limit of less than 1 ha of native vegetation
- permitting of proposed vegetation clearing for gravel pits greater than 1 ha under the *Planning Act 1999*
- potential for impacts on fauna reliant on habitat provided by large trees with hollow from clearing for gravel extraction
- rehabilitation of gravel pits not being feasible within the life of the proposal; so remediation actions should be guided by the surrounding area such that redistribution of cleared vegetation should be representative of the natural surrounding area
- presence of weeds records from surrounding areas and adjoining roads including declared weeds subject to the *Weeds Management Act 2001*
- a requirement for weed management and invasive species measures beyond the construction phase to ensure that declines in habitat quality do not occur as a result of the works.

6.2.4. Potentially significant impacts

Terrestrial ecosystem values have the potential to be significantly impacted through:

- loss of habitat from vegetation clearing, in particular:
 - sensitive riparian vegetation at bridge crossing
 - *Typhonium* habitat
 - large trees with hollows that provide shelter and breeding habitat for threatened fauna.
- causing a decrease in the population of a threatened species, in particular:
 - *Typhonium jonesii* and *T. mirabile*
 - interrupting nesting birds (red goshawk and Tiwi masked owl)

⁸ [NT EPA Guidelines for Assessment of Impacts on Terrestrial Biodiversity](#)

⁹ [A guide for the use of remote camera for wildlife survey in northern Australia](#)

- arboreal mammals (brush-tailed phascogale, black-footed tree-rat and brush-tailed rabbit-rat)
- small ground dwelling mammals (Butler's dunnart and pale field-rat).
- habitat degradation or loss from:
 - surface water extraction
 - altered hydrological regimes in a high rainfall environment
 - introduction or spread of invasive exotic plants and weeds.

6.2.5. Avoidance and mitigation of impacts

The proponent's Standard Specification for Environmental Management (DIPL SSEM)¹⁰ documents minimum environmental management requirements for its contractors. The proponent has identified the following proposal specific measures to minimise impact on terrestrial ecosystems:

- avoid vegetation clearing consistent with the referral and SER documents, NT Land Clearing Guidelines¹¹ and DIPL SSEM section 26.3, in particular avoid clearing:
 - rainforest and riparian vegetation for gravel extraction
 - high density *Typhonium jonesii* population near the proposed realignment at chainage 9.9 km to 11 km
 - areas not surveyed for *Typhonium* spp. in gravel pit GP1-2
 - within 80 m of known or new red goshawk nests.
- minimise requirements to clear native vegetation to the extent practicable, in particular riparian vegetation along creeks and other waterways across the project area. Consistent with the proponent's objectives at section 3.6.2 of the CEMP Framework, Appendix D to the referral.
- minimise water extraction from surface waters associated with riparian vegetation at Taracumbi (water point 3) and Paru (water point 2) creeks and supplement with bore water (water point 1)
- minimise impact on threatened fauna by having fauna spotters present to conduct pre-clearing inspections for clearing of large trees that have a high risk of nesting or roosting fauna. Consistent with DIPL SSEM section 27
- implement a Gravel Pit Management Plan with measures to minimise vegetation clearing impacts on threatened fauna in gravel pits through progressive rehabilitation of extraction areas. Consistent with DIPL SSEM section 35
- implement an Erosion and Sediment Control Plan (ESCP), developed and monitored by a certified professional in erosion and sediment control (CPESC) to minimise habitat degradation due to vegetation clearing
- implement weed control and hygiene procedures for vehicles and equipment coming onto, or returning to, the site for construction activities to prevent the spread and introduction of invasive exotic species and plant diseases. Consistent with the proponent's objectives at 3.4.2 of the CEMP Framework, Appendix D to the referral.

¹⁰ Northern Territory Government Department of Infrastructure, Planning and Logistics [Standard Specification for Environmental Management Version 2](#)

¹¹ [Northern Territory Land Clearing Guidelines](#)

6.2.6. Assessment of impacts to environmental values

Loss of habitat and threatened species from vegetation clearing

The proponent conducted targeted field surveys within the proposal area (383.8 ha) to:

- identify habitat availability and threatened species presence within the proposal area and
- inform site selection of the gravel pits (maximum clearing of 54 ha) and road realignment (maximum clearing of 12 ha).

As a result of these surveys the proponent has revised its planned disturbance areas to avoid impacts from clearing vegetation, including:

- not clearing the northern part of gravel pit (GP1-2), as it was not surveyed for *Typhonium*
- reducing the distance of road being realigned at chainage 9900 m to 11 000 m (in gravel pit 1) from that originally proposed to avoid a surveyed *T. mirabile* population.

The NT EPA considers that changes made to the proposal design to avoid *Typhonium* habitat and populations reduces the direct impacts from vegetation clearing on *Typhonium*.

The proponent has committed to clear and rehabilitate the extraction areas progressively in line with its Gravel Pit Management Plan.

Advice from DEPWS in its submission on the SER identifies the loss of large/very large trees with hollows suitable for fauna. However, as the surrounding area provides equivalent suitable habitat and threatened species records, the DEPWS acknowledge the risk to threatened species is likely to be low.

The NT EPA notes that clearing of the riparian vegetation associated with the bridge construction at Paru Creek cannot be avoided. The proponent conducted ground truthing of the riparian vegetation, showing that it is dominated by paperbark and not the rainforest complex originally reported. The DEPWS Flora and Fauna Division advice supports the assessment of habitat not being suitable for threatened flora.

Based on the information included in the SER and the small size of the proposal, the proponent concluded that habitat supporting threatened species is available outside the areas of impact and so activities from the proposal would not result in significant impact to the overall habitat and populations of threatened species on Melville Island. The DEPWS Flora and Fauna Division advises that overall risks to biodiversity from the proposal are likely to be low.

The NT EPA acknowledges that while full rehabilitation is not feasible within the life of the action, the proponent has committed to remediation actions which are likely to lead to a stabilised state of the environment. The NT EPA notes the proponent's findings about large and very large trees that may contribute to a high biomass of cleared vegetation, and the potential for this to compromise standard remediation actions. To achieve a stabilised state the DEPWS Flora and Fauna Division recommends that the redistributed vegetation should be representative of the natural surrounding area and not pose an increased fire risk to the ecological integrity of the remediated gravel pits and proposal area.

The NT EPA considers that the small area of proposed vegetation clearing combined with the proponent's commitment of remediation actions are likely to result in the avoidance of significant impacts on regional populations of any of the threatened flora or fauna species that may occur in the disturbance footprint and proposal area more broadly.

Riparian vegetation degradation or loss from altered hydrological regimes

The proposal has the potential to impact on riparian vegetation at Taracumbi and Paru creeks, the sites for surface water extraction. To minimise impacts from surface water extraction on the

riparian vegetation, the proponent has identified an alternative groundwater source to supplement its water requirements when water extraction nears exceedance limits. The exceedance limits set for surface water and groundwater are consistent with advice from the DEPWS Water Resources Division, i.e. no more than 20% instantaneous flow for surface water, and no more than 20% annual recharge for groundwater. The proponent's DIPL SSEM requires water monitoring throughout construction activities to inform water extraction activities.

The NT EPA is satisfied that the exceedance limits are sufficiently conservative and robust, and that residual impacts remaining after implementation of the proponent's commitments would not be significant.

Habitat degradation from introduction or spread of invasive exotic plants and weeds

Three grassy weeds of particular concern are known to occur on Melville Island. These are, one weed of national significance, *Andropogon gayanus* (gamba grass) and two other large perennial grasses *Cenchrus polystachios* (perennial mission grass) and *Megathyrsus maximus* (guinea grass, synonym of *Panicum maximum* and *Urochloa maxima*). The proponent notes that increased development and traffic across the Tiwi Islands has led to the increased spread of grassy weeds, including along roadsides and within plantations. Weeds are to be managed post construction by the Tiwi Land Council through its Weed Management Program¹².

The proponent's surveys have not detected any weeds within the proposal footprint; however, a search of publicly available data¹³ indicates the presence of exotic plants and declared weeds within the proposal area. Some weeds known to occur on Melville Island are considered to be highly invasive, and there is potential for road works and extractive activities to introduce and increase the spread of weed species. The proponent has committed to constructing the proposal in accordance with the DIPL SSEM which requires a Weed Management Plan (WMP) if declared weeds or weeds of national significance (WoNS) have potential to be established and/or spread on site. A requirement of the WMP is that the contractor surveys for declared weeds and consults with the Northern Territory Government Weed Management Branch.

The NT EPA acknowledges the impact of invasive exotic species that are not declared weeds and therefore agrees with the specific objective of the proponent's CEMP Framework that, "no exotic species and plant disease imported into or exported from the project area", including seed sources, and notes that this should be included in the WMP for the proposal. The DEPWS Flora and Fauna Division recommends that weed management plans are implemented as required to protect flora and fauna values. The plan should have particular emphasis on the prevention and spread of invasive exotic grasses such as gamba grass, mission grass, guinea grass and tully grass (*Urochloa humidicola*) and ensure that all seed stock for stabilisation and remediation works be sourced from local (Tiwi) native stock.

The NT EPA considers that the implementation of the weed and invasive species management plan would minimise ongoing establishment of exotic grass species along the road corridor and the Tiwi Islands more broadly. Further to this the NT EPA recognises the importance of post construction weed monitoring and reporting to ensure weed and invasive exotic species population do not impact on terrestrial ecosystem values.

The NT EPA considers that the measures proposed by the proponent are appropriate to avoid habitat degradation and indirect impacts on flora and fauna from weeds and invasive exotic plant species.

¹² [Tiwi Weed Management Plan](#), Tiwi Land Council

¹³ [NR MAPS](#) Natural Resource Maps, Department of Environment, Parks and Water Security

The NT EPA is satisfied that any residual impacts remaining after implementation of the proponent's commitments would not be significant. The NT EPA's recommended conditions: **Terrestrial ecosystems** and **Environmental Performance Report**, provide certainty that the proponent's commitments would achieve the environmental outcomes relating to weed management.

6.2.7. Summary of factor assessment and recommended regulation

The NT EPA has considered the potential significant impacts of the proposal on terrestrial ecosystem values. In doing so, the NT EPA has considered whether reasonable conditions could be imposed, noting that the EP Act is the primary statutory decision-making process to ensure the NT EPA's factor objective is likely to be met. The NT EPA assessment findings are presented in Table 3.

The NT EPA has also taken into account the objects and principles of the EP Act (Appendix 2) in assessing whether the residual impacts will meet its environmental factor objective and whether reasonable conditions can be imposed.

The approval holder is responsible for the commitments made in the CEMP, ESCP and Gravel Pit Management Plan based on the CEMP Framework and the DIPL's Standard Specifications for Environmental Management.

Table 3 Summary of assessment for Terrestrial ecosystems

Residual impact to environmental value	Assessment finding	Recommended conditions and regulation by other statutory decision makers
Loss of habitat and threatened species from vegetation clearing	<p>Vegetation of the disturbance area has the same qualitative value as the surrounding habitat supporting threatened species.</p> <p>Proposal activities conducted in accordance with proposed measures are not likely to result in direct significant impacts on the habitat and populations of threatened species on Melville Island.</p> <p>Implementation of the progressive rehabilitation measures, weed and invasive species management plans to avoid and minimise impacts, means impacts are not considered significant and are likely to meet the NT EPA's objective for terrestrial ecosystems.</p>	<p>Regulated through recommended conditions:</p> <p>Condition 2 Terrestrial ecosystems</p> <p>Condition 7 Environmental Performance Report</p> <p>May be regulated by a land clearing permit under the <i>Planning Act 1999</i></p>
Riparian vegetation degradation or loss from altered hydrological regimes	<p>The Proponent's commitment to water management and monitoring contains measures to avoid, minimise and mitigate the impact of proposal activities on riparian vegetation.</p> <p>Residual impacts are not significant and the environmental outcome is likely to meet the NT EPA's objective for terrestrial ecosystems.</p>	No conditions recommended

Residual impact to environmental value	Assessment finding	Recommended conditions and regulation by other statutory decision makers
Habitat degradation from introduction or spread of invasive exotic plants and weeds	<p>The proponent has proposed avoidance and mitigation measures in the referral and SER to manage indirect impacts from invasive exotic plants and weeds on habitat, threatened species and overall biodiversity value.</p> <p>With implementation of the weed and invasive species management plans in the proponent's CEMP, residual impacts are not considered significant and the environmental outcome is likely to meet the NT EPA's objectives for this factor.</p>	<p>Regulated through recommended conditions:</p> <p>Condition 2 Terrestrial ecosystems</p> <p>Condition 7 Environmental Performance Report</p>

6.2.8. Conclusion against the NT EPA objective

With the implementation of relevant management plans and recommended conditions identified in Appendix 1, the NT EPA considers that the proposal could be conducted in such a manner that its objective for terrestrial ecosystems is likely to be met.

6.3. Inland water environmental quality

6.3.1. Environmental values

The proposal area is located on the south east aspect of Melville Island which falls from approximately 116 mAHD near the start of Paru Road (at Three Ways) to sea level near the southern end of the proposal area. The inland water environmental quality of the Tiwi Islands is considered high and, in general, the surface water chemistry is similar to the groundwater.

There are no water control districts, water allocation plans or beneficial use areas declared for surface water and groundwater management purposes within the proposal area. The proponent has not conducted water quality sampling to inform the proposal due to the pristine and high quality nature of both surface water and groundwater in the area.

Surface water

The NT Government's natural resources mapping product¹⁴ identifies Paru Creek as a second order intermittent stream which intersects with a first order intermittent stream at Paru Crossing. The water resources of Paru Creek are not well documented and water availability at water point 2 may vary from year to year depending on the rainfall recharge. Paru Creek is known to support sensitive vegetation (riparian rainforest and mangroves) and freshwater aquatic ecosystems, environmental values that rely on good water quality.

Groundwater

The environmental values supported by groundwater quality at and surrounding the proposal include riparian vegetation (see section 6.2), Paru and Taracumbi outstations (see section 6.4) and the forestry project of Plantation Management Partners (see section 6.4).

¹⁴ [NR Maps](#)

The shallow and unconfined aquifer that occurs below the project area consists of Van Diemen sandstone and overlying laterite and alluvium. The Van Diemen Sandstone aquifer is recharged by direct infiltration during localised rainfall events during the wet season. The groundwater resource is limited in the proposal area but is considered good quality.

The proponent has identified that water in the shallow and deep aquifers across the Tiwi Islands are within the Water Quality and Monitoring Guidelines as outlined in the *Australian and New Zealand Guidelines for Fresh Water Quality*¹⁵, except for pH. This is consistent with DEPWS Water Resources Division findings that water quality from domestic supply bore fields is of very high quality¹⁶.

6.3.2. Investigations and surveys

The proponent has relied on the following investigation to inform its water quality assessment of the proposal area:

- Water resources of the Tiwi Islands. Report produced by the Northern Territory Department of Infrastructure, Planning and Environment. Natural Systems Division¹⁷ (Haig, Knapton and Matsuyama 2003).

In addition the following strategy as relevant to water quality is available to the NT EPA:

- The Tiwi Islands Water Resource Strategy¹⁸ (TIWRS), NT Government (2012).

6.3.3. Consultation

Matters raised during consultation relating to potentially significant impacts to inland water environmental quality include:

- the adequacy of the erosion and sediment control plan (ESCP)
- the requirement for the ESCP to be:
 - developed and monitored by a Certified Professional in Erosion and Sediment Control (CPESC) only
 - modified to meet the changing conditions throughout the duration of the contract (section 6.2 of DIPL SSEM).
- a recommendation that the proposal requires a Gravel Pit Management Plan based on the extent of disturbance and potential high risk of erosion
- that no polluted and/or sediment-laden run-off is discharged directly or indirectly into drains or watercourses.

6.3.4. Potentially significant impacts

Inland water environmental quality and associated values have the potential to be impacted through:

- land clearing and construction activities associated with the new bridge, new road alignment and new road surface could impact on the surface water quality with:
 - increased dust and suspended sediment loads

¹⁵ [ANZECC 2000](#)

¹⁶ DIPE 2003 [Water resources of the Tiwi Islands](#)

¹⁷ DIPE 2003 [Water resources of the Tiwi Islands](#)

¹⁸ NRETAS 2012 [Tiwi Island Water Resources Strategy](#)

- contamination from leaks and spills of fuels, lubricants, solvents or other products.

6.3.5. Avoidance and mitigation of impacts

The proponent has proposed the following prevention measures to avoid and minimise impacts on inland water environmental quality:

- works to be undertaken in accordance with the:
 - Erosion and Sediment Control Plan developed by a Certified Professional in Erosion and Sediment Control (CPESC)
 - Prevention and response plan and waste management actions in the CEMP
 - Gravel Pit Management Plan.
- appropriate buffers have been implemented between proposed land clearing and waterways in accordance with the NT Land Clearing Guidelines
- vegetation management to minimise cleared areas and soil disturbance (in accordance with section 26.1 of the DIPL SSEM)
- dust management (in accordance with section 23 of the DIPL SSEM)
- storage of chemicals and dangerous goods (in accordance with AS1940, section 3.2 of the CEMP Framework and section 33.1 of DIPL SSEM)
- spillage prevention and containment (in accordance with section 3.2 of the CEMP Framework and section 33.2 of the DIPL SSEM).

6.3.6. Assessment of impacts to environmental values

Increased sediment loads from construction activities

The proposal has potential to increase soil erosion during construction leading to surface water quality impacts, including increased turbidity and sediment transport downstream of the proposal. However, the NT EPA considers that the implementation of the proposed erosion and sediment control planning, management and monitoring measures would ensure that sediment is captured and retained so there would be no material impact on surface water quality and therefore no adverse impacts to downstream habitats.

The NT EPA is satisfied that any sedimentation occurring as a result of the proposal can be adequately managed through implementation of the proponent's commitments and obligations under its ESCP and Gravel Pit Management Plan such that any residual impacts remaining after implementation of the proponent's commitments would not be significant. The NT EPA's recommended condition **Erosion and sediment control** is consistent with the proponent's commitments and reflects the NT EPA's views about the requirements necessary to achieve the environmental outcomes for water quality.

Contamination from leaks and spills

The proposal has the potential for impact from leaks and spills during construction due to the intact nature of the environment and the limited water resources of the proposal area.

The NT EPA considers the proponent's measures to avoid, mitigate and manage spills in its Prevention and Response Plan and waste management actions in the CEMP Framework to be appropriate for the construction of the proposal.

The NT EPA considers that potentially impacts on water quality from contamination are not likely to be significant due to the limited duration and small magnitude and/or extent of any potential incident. Impacts could be prevented and managed through the proponent's

commitment to implement procedures for spills in accordance with its CEMP such that the NT EPA’s objective for inland water environmental quality can be met.

6.3.7. Summary of factor assessment and recommended regulation

The NT EPA has considered the potential significant impacts of the proposal on inland water environmental quality. In doing so, the NT EPA has considered whether reasonable conditions could be imposed, or whether other statutory decision-making processes could ensure the NT EPA’s factor objective is likely to be met. The NT EPA assessment findings are presented in Table 5.

The NT EPA has also taken into account the objects and principles of the EP Act (Appendix 2) in assessing whether the residual impacts will meet its environmental factor objective and whether reasonable conditions can be imposed.

The approval holder is responsible for the commitments made in the CEMP, ESCP and Gravel Pit Management Plan based on the CEMP Framework and the DIPL’s Standard Specifications for Environmental Management.

Table 4 Summary of assessment for Inland water environmental quality

Residual impact to environmental value	Assessment finding	Recommended conditions
Increased sediment loads from construction activities	<p>Proposal activities conducted in accordance with proposed measures are not likely to result in significant impact on the inland water environmental quality of Melville Island.</p> <p>Implementation of the plans to avoid and minimise impacts from increased sediment loads and contamination means impacts are not considered significant and are likely to meet the NT EPA’s objective for inland water environmental quality.</p>	<p>Regulated through recommended condition:</p> <p>Condition 3 Erosion and sediment control</p>
Contamination from leaks and spills	<p>The potential for significant impact from leaks and spills during construction would be appropriately managed through Prevention and Response Plan and waste management actions in the CEMP.</p>	<p>No conditions recommended</p>

6.3.8. Conclusion against the NT EPA objective

With the implementation of relevant management plans and recommended conditions identified in Appendix 1, the NT EPA considers that the proposal could be conducted in such a manner that its objective for inland water environmental quality is likely to be met.

6.4. Hydrological processes

6.4.1. Environmental values

Surface water

Paru Creek, a major ephemeral stream (stream order 2) together with a minor ephemeral stream (stream order 1) intersect at the Paru Crossing realignment. Minor ephemeral streams occur

adjacent to the north road alignment (stream order 1) and gravel pits. Surface water flows in the Paru Creek usually cease to flow in July; however, perennial water remains at a small spring. This spring at Paru Creek represents the sole water supply for the Paru Outstation to the south of the proposal area, the location of potentially significant aquatic ecosystems and sensitive riparian vegetation.

There are no water control districts, water allocation plans or beneficial use areas declared for surface water and groundwater management purposes within the proposal area on NT Portion 1644.

Groundwater

The Tiwi Islands are sustained by two main regional aquifer systems. The proposal area is located above the shallower and unconfined aquifer that consists of Van Diemen sandstone and overlying laterite and alluvium.

The Van Diemen Sandstone aquifer is recharged by direct infiltration during localised rainfall events during the wet season. The aquifer requires several rainfall events before the aquifer becomes saturated and affects the water table.

The proponent identified 27 bores in and near the proposal area; many of these are historical bores and there are no bores on Paru road with sufficient yields to support the proposal's water requirements. Two bores located north of Three Ways yield an estimated 3 L/s and are owned by Plantation Management Partners.

6.4.2. Investigations and surveys

The proponent relied on the following investigations to inform the water resources of the proposal area:

- Water resources of the Tiwi Islands. Report produced by the Northern Territory Department of Infrastructure, Planning and Environment. Natural Systems Division¹⁹ (Haig, Knapton and Matsuyama 2003).
- Water supply investigation Paru Road, Melville Island, Tiwi Islands (Territory Groundwater Services Pty Ltd, 2019).

Further investigations available to the NT EPA relevant to hydrological processes includes:

- The Tiwi Islands Water Resource Strategy²⁰ (TIWRS), NT Government (2012).

6.4.3. Consultation

Matters raised during consultation relating to potentially significant impacts to hydrological processes include:

- information gaps and uncertainty relating to the total expected volume of water required for the proposal and the total estimated availability of surface waters and aquifer storage of the Van Diemen Sandstone
- potential impacts on groundwater if water extraction exceeds 20% of the recharge rate for the specified catchment

¹⁹ DIPE 2003 [Water resources of the Tiwi Islands](#)

²⁰ NRETAS 2012 [Tiwi Island Water Resources Strategy](#)

- information gaps and uncertainty relating to maintaining natural flow regimes upstream and downstream of the road crossing, the drainage lines and drainage of water from the road itself
- the need for details about the proposed creek crossing and measures to avoid significant impacts to the creek hydrology.

6.4.4. Potentially significant impacts

Hydrological processes have the potential to be impacted through:

- groundwater drawdown from extraction of surface waters and groundwater
- changes to existing surface flows from construction of a new bridge, culverts, new road alignment and new road surface.

6.4.5. Avoidance and mitigation of impacts

The proponent has proposed the following measures to avoid and minimise impacts on hydrological processes:

- supplement surface water extraction with bore water from allocated source
- consistent with the Territory Government's NT Water Allocation Planning Framework²¹, the Tiwi Islands Water Resource Strategy (TIWRS)²² and DIPL SSEM section 23.4, no more than more than 20% of:
 - instantaneous flow to be taken from surface waters (water points 2 and 3) and
 - annual recharge to be taken from groundwater (water point 1)
- single span bridge design for new Paru Creek crossing to avoid change in flows.

6.4.6. Assessment of impacts to environmental values

Groundwater drawdown from extraction of surface waters

The proponent proposes to extract about 200 kilolitres of water per day (kL/day) for earthworks and pavement works (including dust suppression, cleaning and wash down of plant and equipment), concrete batching and curing. Based on proposal activities over 6 months this equates to approximately 36 megalitres (ML) per year.

The DEPWS Water Resources Division advises of two exemptions from the *Water Act 1992* associated with road works and relating to the proponent's obligation to manage and use water resources sustainably in accordance with the *Water Act 1992* and NT Government policy²³.

The NT Water Allocation Planning Framework, the TIWRS and the DIPL SSEM identify that 80% of water in water bodies (including groundwater aquifers of the Top End) is to remain available to the natural environment. This allows for the use of up to, but no more than 20% of instantaneous flow for surface water and no more than 20% of annual recharge or groundwater.

The proponent concluded that activities from the proposal would not result in significant impact to surface and groundwater resources based on the information included in the SER, the volume of water required and the timing of extraction. All water extraction will occur in accordance with the relevant AAPA Certificate and current TLC Permit.

²¹ DENR 2020. [NT Water Allocation Planning Framework](#).

²² NRETAS 2012 [Tiwi Island Water Resources Strategy](#)

²³ [Guidelines for Water Extraction as they relate to Road Construction and Maintenance](#)

The DEPWS Water Resources Division recommended that in addition to the refined water estimate required by the proponent’s DIPL SSEM, an estimate of surface water availability and the estimated of total aquifer storage of the Van Diemen Sandstone would inform the 20% extraction limit.

The NT EPA is satisfied that implementing the proposal in the manner described in the SER, would not cause significant impacts to available water resources of the Paru sub-catchment and that any residual impacts remaining after implementation of the proponent’s commitments would not be significant.

6.4.7. Summary of factor assessment and recommended regulation

The NT EPA has considered the potential significant impacts of the proposal on hydrological processes. In doing so, the NT EPA has considered whether reasonable conditions could be imposed, or whether other statutory decision-making processes could ensure the NT EPA’s factor objective is likely to be met. The NT EPA assessment findings are presented in Table 4.

The NT EPA has also taken into account the objects and principles of the EP Act (Appendix 2) in assessing whether the residual impacts will meet its environmental factor objective and whether reasonable conditions can be imposed.

The approval holder is responsible for the commitments made in the CEMP, ESCP and Gravel Pit Management Plan based on the CEMP Framework and the DIPL’s Standard Specifications for Environmental Management.

Table 5 Summary of assessment for Hydrological processes

Residual impact to environmental value	Assessment finding	Recommended conditions
Groundwater drawdown from extraction of surface waters	<p>Water availability and requirements are low with a minimum requirement of 36 ML per year.</p> <p>Proposal activities conducted in accordance with proposed measures are not likely to result in significant impact on the water availability in the Paru sub catchment.</p> <p>Implementation of water management measures to avoid and minimise impacts, means impacts are not considered significant and likely to meet the NT EPA’s objective for hydrological processes.</p>	No conditions recommended

6.4.8. Conclusion against the NT EPA objective

With the implementation of the relevant management plans the NT EPA considers that the proposal could be conducted in such a manner that its objective for hydrological processes is likely to be met.

6.5. Aquatic ecosystems

The DEPWS Flora and Fauna Division confirm that no threatened or significant freshwater aquatic species have been previously recorded within or immediately adjacent to the proposal area.

The NT EPA is satisfied that, based on the environmental outcomes considered through its assessment of Terrestrial ecosystems, Inland water environmental quality and Hydrological processes there is no significant residual impact on aquatic ecosystems.

The NT EPA has also taken into account the objects and principles of the EP Act (Appendix 2) in assessing whether the residual impacts will meet its environmental factor objective and whether reasonable conditions can be imposed.

With the implementation of relevant management plans and recommended conditions identified in Appendix 1, the NT EPA considers that the proposal could be conducted in such a manner that its objective for aquatic ecosystems is likely to be met.

6.6. Community and economy

6.6.1. Environmental values

The Tiwi Islands cover 8320 km² and have a population of approximately 2741. The largest communities are Pirlangimpi and Milikapiti on Melville Island, and Wurrumiyanga (formerly Nguiu) and Wurankuwu on Bathurst Island.

The people, economy and environment of the Tiwi Islands are represented by the TLC and TIRC. The proponent has maintained ongoing stakeholder engagement and consultation with the TLC and TIRC throughout the design, planning, workforce involvement and post construction maintenance of the proposal.

The proponent recognises that the Tiwi people have a long record of pursuing economic development, which includes forestry, aquaculture, mining and tourism industries on Melville and Bathurst islands. Upgrade works to Paru Road would improve safety and access to essential services for residents and improve economic outcomes through better access and reduced vehicle maintenance and replacement costs for commercial ventures. The upgrade of Paru Road follows the establishment of a vehicle ferry to the barge facility at Paru.

Paru Road is located in the south-west of Melville Island, distant from the larger communities on Melville Island. Paru Outstation is approximately 900 m south-west of the proposal and 600 m east of the barge landing. The community of Wurrumiyanga is located on Bathurst Island, approximately 2 km south-west of the southern aspect of works and across the Apsley Strait. Taracumbi Outstation is located 8 km north of the northern aspect of road works and 200 m from water point 3.

6.6.2. Investigations and surveys

The proponent maintains ongoing stakeholder engagement and consultation with TLC and TIRC and relevant stakeholders.

The proponent undertook a number of investigations and surveys relevant to community and economy:

- Meetings were held in Darwin and on the Tiwi Islands through 2020 and 2021 to identify and prioritise road works on the islands and inform the community and the Corridor Investment Strategy.

- Site visit to enable DIPL staff to inspect existing roads proposed for upgrades and meet with local stakeholders, including forestry industry representatives, mid 2021.
- Ongoing email communication is maintained between DIPL, TLC and TIRC.

6.6.3. Consultation

Matters raised during consultation relating to potentially significant impacts on community and economy included:

- The SER should demonstrate:
 - local training and employment opportunities
 - transport management during construction
 - workers' accommodation arrangements
 - beneficial aspects of contributing to the local economy.

6.6.4. Potentially significant impacts

The proponent's SER identifies the following opportunities and impacts on community and economy may occur through implementation of the proposal:

- opportunities for employment, increased economic activity, and local community benefit from improved access to essential services and safety
- impacts to stakeholders and/or community members during road construction and closures may include:
 - temporary travel disruptions due to traffic management measures
 - workforce movement and accommodation.

6.6.5. Avoidance and mitigation of impacts

The proponent has proposed the following measures to avoid and mitigate impacts to the community and economy:

- implementation of traffic management (temporary lane closures and speed limits) and road safety measures (portable traffic signals) during construction
- ongoing stakeholder engagement and consultation.

The proponent has proposed the following measures to maximise opportunities for the community and economy during construction and on completion of the proposal:

- Indigenous participation through employment, development and training opportunities
- engagement of Tiwi operated businesses
- involvement of local and regional industry
- enhancement of the skills and capability of local and regional industry
- benefiting the regional economy through retention of skilled construction workforce.

6.6.6. Assessment of impacts to environmental values

In its statement of reasons for the decision to assess the proposal, the NT EPA identified a limited extent of community engagement, the lack of evidence of effective consultation, and therefore, the capacity for stakeholders to engage and have a say about the proposed action. In

its SER the proponent demonstrated its ongoing consultation with the TLC, the TIRC and community leaders.

The NT EPA considers that the potential for the proposal to impact negatively on community and economy of the Tiwi Islands has been adequately mitigated through the demonstrated consultation and works planning with all relevant stakeholders.

Opportunities for community and economy

The NT EPA acknowledges that the proposal could provide significant benefit to the community through access to essential services, employment opportunities and increased economic activity (the greater Tiwi Islands roads program is estimated at \$75 million).

The proponent has committed to Indigenous participation of the project workforce through its construction contractor, Tiwi Partners, and engagement of Tiwi rangers in its environmental management and monitoring activities. The proposal has considered the maintenance of Paru Road upon completion and the proponent has identified that local participation during construction will develop local capacity, knowledge and understanding of the asset for future maintenance.

The NT EPA considers the proponent's commitment to assist the TIRC to develop a maintenance strategy will improve maintenance and environmental outcomes of the upgraded Paru Road.

Temporary impacts on community members and other stakeholders

The proposal would result in temporary impacts to road users during construction and increase the long-term functionality of Paru Road with all-weather access. The NT EPA recognises that works would be conducted over two dry seasons during the high use period for roads on the Tiwi Islands.

Access along Paru Road would be maintained throughout construction and the proponent has addressed temporary impacts on road users through its contractor's traffic management plan. The traffic management plan would include details for safe traffic movement through the work site, procedures for notification to other road users and specific communication requirements. The proponent has committed to monitor for any conflicts between construction traffic and local traffic.

The use of an existing workers' camp established for previous infrastructure works is proposed to house workers near to proposed road works and so reduce further traffic impacts from the proposal.

The NT EPA is satisfied that potential impacts to community and the economy could be managed through implementation of the proponent's ongoing engagement and consultation with the TLC and TIRC.

6.6.7. Summary of factor assessment and recommended regulation

The NT EPA has considered the potential significant impacts of the proposal on community and economy. In doing so, the NT EPA considered that no conditions needed to be imposed to ensure the NT EPA's factor objective is likely to be met.

The NT EPA recognises the value of the proponent's ongoing engagement and consultation to facilitate positive environmental outcomes.

The NT EPA has also taken into account the objects and principles of the EP Act (Appendix 2) in assessing whether the residual impacts will meet its environmental factor objective and whether reasonable conditions can be imposed.

6.6.8. Conclusion against NT EPA's environmental factor objective

The NT EPA considers that the proposal could be conducted in such a manner that its objective for community and economy is likely to be met.

7. Whole of environment considerations

The NT EPA has considered connections and interactions between five key environmental factors (Terrestrial ecosystems, Hydrological processes, Inland water environmental quality, Aquatic ecosystems, and Community and economy) together with other environmental factors, (terrestrial environmental quality, culture and heritage), in its consideration of impacts to the whole of environment. The NT EPA is of the view that these impacts would not lead to any substantial effect on achievement of the NT EPA's environmental objectives.

When the separate environmental factors of the proposal were considered together in a whole of environment assessment, the NT EPA formed the view that the impacts from the proposal would not alter its views about whether the proposal could meet its factor objectives.

The NT EPA considers that an environmental performance report is required from the proponent upon two years after construction and remediation activities for the proposal have been finished to validate success of remediation and weed prevention measures. The NT EPA has recommended a condition to this effect. The purpose of the environmental performance reporting is to provide the proponent and the Minister with a current evaluation of the performance of the proposal with respect to actual impacts on environmental values over the life of the action compared to those predicted during the environmental impact assessment process.

The NT EPA is satisfied that the potential impacts of the proposal on the whole of environment, with consideration of the intrinsic interactions between environmental factors, would not lead to any significant impacts and that the NT EPA's environmental objectives can be met.

8. Conclusion and recommendation

The NT EPA has considered the proposal by the DIPL to upgrade Paru Road on Melville Island. The NT EPA's assessment of the proposal identified potential for significant residual environmental impact associated with the environmental factors of terrestrial ecosystems and inland water environmental quality.

The NT EPA considers that the proposal can be implemented and managed in a manner that is environmentally acceptable, and therefore recommends that environmental approval be granted subject to implementation of the proponent's commitments to avoid, minimise, manage and monitor environmental impacts and the NT EPA's recommended conditions in Appendix 1.

Appendix 1 – Draft environmental approval

Draft Environmental Approval

PURSUANT TO SECTION 65 OF THE ENVIRONMENT PROTECTION ACT 2019

Approval number	EP2021/007 - 001
Approval holder	Chief Executive Officer of the NT Department of Infrastructure, Planning and Logistics
Australian Business Number (ABN)	84 085 734 992
Registered business address	Level 3, Manunda Place, 38 Cavanagh Street, Darwin, Northern Territory 0800
Approval holder reference number	DIPL-0001

Action

Upgrade sections of Paru Road from gravel to bitumen on Melville Island, approximately 80 km northeast of Darwin including:

- **Land clearing** of up to 66 hectares (ha) of native vegetation including sensitive riparian vegetation and large trees with hollows for road realignment (12 ha) and gravel extraction (54 ha)
- **Progressive rehabilitation by remediation of approved extent** for gravel extraction
- Construction of one single span bridge at Paru Creek
- Extraction of no more than 20% instantaneous flow from surface waters and 20% annual recharge of groundwater from existing bores
- Works conducted over a 2 year period between the months of April and October.

Advisory notes

Approval is granted under section 65 of the EP Act for the action to be undertaken in the manner described, including with implementation of the environmental management measures, commitments and safeguards documented, in the **referral** and **SER**. If there is an inconsistency between the **referral** or the **SER** and this environmental approval, the requirements of this environmental approval prevail.

This approval does not authorise the approval holder to undertake an activity that would otherwise be an offence under the *Waste Management and Pollution Control Act 1998* or the *Water Act 1992*.

Submission of all notices, reports, documents or other correspondence required to be provided to the **CEO** as a condition of this approval must be provided in electronic form by emailing environmentalregulation@nt.gov.au

Address of action	Paru Road, Melville Island NT Portion 1644
NT EPA Assessment Report number	95
Decision maker	NOT FOR SIGNING
	Hon Lauren Jane Moss MLA, Minister for Environment, Climate Change and Water Security
Date of approval	

Environmental approval conditions

1 Limitations and extent of action

- 1-1 When implementing the action, the approval holder must ensure the action does not exceed the following extent:

Action element	Location	Limitation or maximum extent
Land clearing for gravel extraction	Figure 1	No more than 54 ha to be cleared within the five gravel pit areas of the approved extent .
Realignment of four bends	Figure 1	No more than 12 ha in total to be cleared between chainages: <ul style="list-style-type: none"> • 5.3 km to 6.3 km (northern area) • 7.8 km to 9.0 km • 9.9 km to 11 km • 11.2 km to 12.0 km (southern area).

2 Terrestrial ecosystems

- 2-1 The approval holder must implement, remediate and complete the action to meet the following environmental objective:

- (1) Protect terrestrial habitats to maintain flora and fauna values including biodiversity, ecological integrity and ecological functioning.

- 2-2 To support achievement of condition 2-1, the approval holder must implement the action in such a manner that:

- (1) no more than three (3) hectares in total of **unremediated land** is cleared of native vegetation at any point in time at gravel pits GP1-1, GP1-2 and GP1-3 of the **approved extent**; and
- (2) no more than three (3) hectares in total of **unremediated land** is cleared of native vegetation at any point in time at gravel pits GP2-1 and GP2-2 of the **approved extent**; and
- (3) at the **completion of the action**, all areas previously subjected to **land clearing** at gravel pits are **remediated** and achieve a state that is stable and composed of **local native** plant species; and
- (4) the introduction and spread of **declared weeds** and invasive exotic plants is prevented for the **life of the action**.

3 Erosion and sediment control

- 3-1 The approval holder must implement an Erosion and Sediment Control Plan on commencement of the action that is:

- (1) developed by a Certified Professional in Erosion and Sediment Control (CPESC), in accordance with International Erosion Control Association Australasia (IECA) 2008, *Best Practice Erosion and Sediment Control*; and
- (2) implemented for the **life of the action**; and
- (3) monitored by the CPESC and by the approval holder; and
- (4) reviewed by the CPESC within 12 months, or earlier if:

- (a) ongoing monitoring identifies a failure of the ESCP; or
 - (b) an accelerated or changed work program is required.
- 3-2 The approval holder must demonstrate that the Erosion and Sediment Control Plan is implemented in such a manner that there is no measurable adverse change in water quality at Paru Creek during the **life of the action**.
- 3-3 The approval holder must report on its compliance with the ESCP and condition 3-2. Each report must be:
 - (1) prepared by a CPESC; and
 - (2) submitted to the **CEO** by 30 May each year during the **life of the action** unless otherwise directed by the **CEO** in writing.
- 4 Commencement of action**
- 4-1 This approval expires five (5) years after the date on which it is granted, unless **substantial implementation** has commenced on or before that date.
- 4-2 Within 10 business days of **substantial implementation** of the action the approval holder must provide notification in writing to the **CEO**.
- 5 Completion of action**
- 5-1 The approval holder must provide notification in writing to the **CEO** within 10 business days of **completion of the action**.
- 6 Change of contact details**
- 6-1 The approval holder must provide notification in writing to the **CEO** of any change of its name, physical address or postal address for the serving of notices or other correspondence within 10 business days of such change.
- 7 Environmental Performance Report**
- 7-1 The approval holder must submit an Environmental Performance Report to the **CEO** no later than three (3) years after **completion of the action** unless otherwise directed by the **CEO** in writing.
- 7-2 The report required by condition 7-1 must be prepared by an **independent qualified person**.
- 7-3 The Environmental Performance Report must report on impacts of the action on the state of **Terrestrial ecosystems values**.
- 7-4 The Environmental Performance Report must:
 - (1) include two (2) years monitoring data after **completion of the action**
 - (2) include a comparison of the environmental values identified in condition 7-3 at the **completion of the action** against the state of each environmental value prior to **land clearing**; and
 - (3) include a comparison of the predicted impacts of the action as identified in the **referral** and **SER**, and the actual impacts of the action as verified by environmental monitoring data; and
 - (4) demonstrate that all cleared areas, including roadworks, have been stabilised and **remediated** with **local native** plant species; and

- (5) demonstrate the actions undertaken at gravel pits and decommissioned roads to prevent introduction of weeds and exotic plant species.

8 Provision of environmental data

- 8-1 All environmental monitoring data required to be collected or obtained under this environmental approval must be retained by the approval holder for a period of not less than 10 years commencing from the date that the data is collected or obtained.
- 8-2 The approval holder must, as and when directed by the **CEO**, provide any validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (such as maps)) relevant to the assessment of the action and implementation of this environmental approval, to the **CEO** in the form and manner, and at the intervals specified, in the direction.

Definitions

The terms used in this approval have the same meaning as the terms defined in the *Environment Protection Act 2019* and *Environment Protection Regulations 2020*.

approved extent	The extent identified in Figure 1 of this approval which includes equipment, plant and structures, whether stationary or portable, and the land on which the action is situated.
CEO	The Chief Executive Officer of the Department of Environment, Parks and Water Security [or another name for that department, which may vary from time to time], or their delegate.
completion of the action	The point in time that the approval holder has finished construction and remediation activities for the action, including removing all equipment, plant and structures.
declared weeds	A plant declared as a weed or potential weed under the <i>Weeds Management Act 2001</i> .
EP Act	<i>Environment Protection Act 2019</i> .
independent qualified person	A qualified person as defined under section 4 of the EP Act ; and who also meets the following requirements: <ul style="list-style-type: none"> a) was not involved in the preparation of the approval holder's referral or SER; and b) is independent of the personnel involved in the design, construction and operation of the action; and c) has obtained written approval from the CEO to be the qualified person to satisfy the independent qualified person reporting requirements under this approval.
land clearing	The removal or destruction, by any means, of native vegetation on an area of land. Land clearing includes the selective removal of a species of plant, a group of species of plants, a storey or group of storeys in whole or in part.
life of the action	The period of time from land clearing until the issue of a closure certificate under section 213 of the EP Act , or revocation of the environmental approval by the Minister at the request of the approval holder under section 114 of the EP Act.
local native	Refers to native plant species with Tiwi provenance, where seed is collected directly from Bathurst or Melville islands.
NT EPA	Northern Territory Environment Protection Authority.
progressive rehabilitation	The sequence of actions as they relate to remediation of gravel pits. Progressive rehabilitation must be completed, so that new or further land clearing may not commence until the previous cleared area is remediated .

referral	The approval holder's referral to the NT EPA under section 48 of the EP Act ; Environmental Impact Assessment Paru Road Upgrade – NT Portion 1644, Melville Island, dated 23 April 2021.
remediation	The actions undertaken as they relate to stabilisation of cleared areas resulting from the action, these include extraction areas, detours and access tracks, at a minimum: <ul style="list-style-type: none"> • spread unused rock and gravel material over exposed soil • rip area (to depth of 100 to 200 mm) along contour lines to reduce erosion • spread and scarify top soil and overburden to encourage regrowth from the soil's seed store • broadcast of local native seed if assisted revegetation is specified by the approval holder • spread cleared vegetation across the site in a manner representative of the surrounding area to assist the recolonisation of flora and fauna across the site.
SER	The approval holder's Supplementary Environmental Report to the NT EPA under regulation 119 of the Environment Protection Regulations 2020: Paru Road Supplementary Environmental Report Paru Road Upgrade, dated 1 February 2022.
substantial implementation	The first works of the proposed action defined as any ground disturbing activity relating to the action within the approved extent , including, but not limited to, land clearing , civil works or construction works. Substantial implementation does not include preliminary works such as geotechnical investigations and other preconstruction activities where no land clearing is required.
Terrestrial ecosystem values	The values as defined and quantified in the NT EPA's Assessment Report 95 include, but are not limited to: presence and occurrence of threatened plant and animal species and their habitat, local native plant species diversity and low weed and invasive species occurrence.

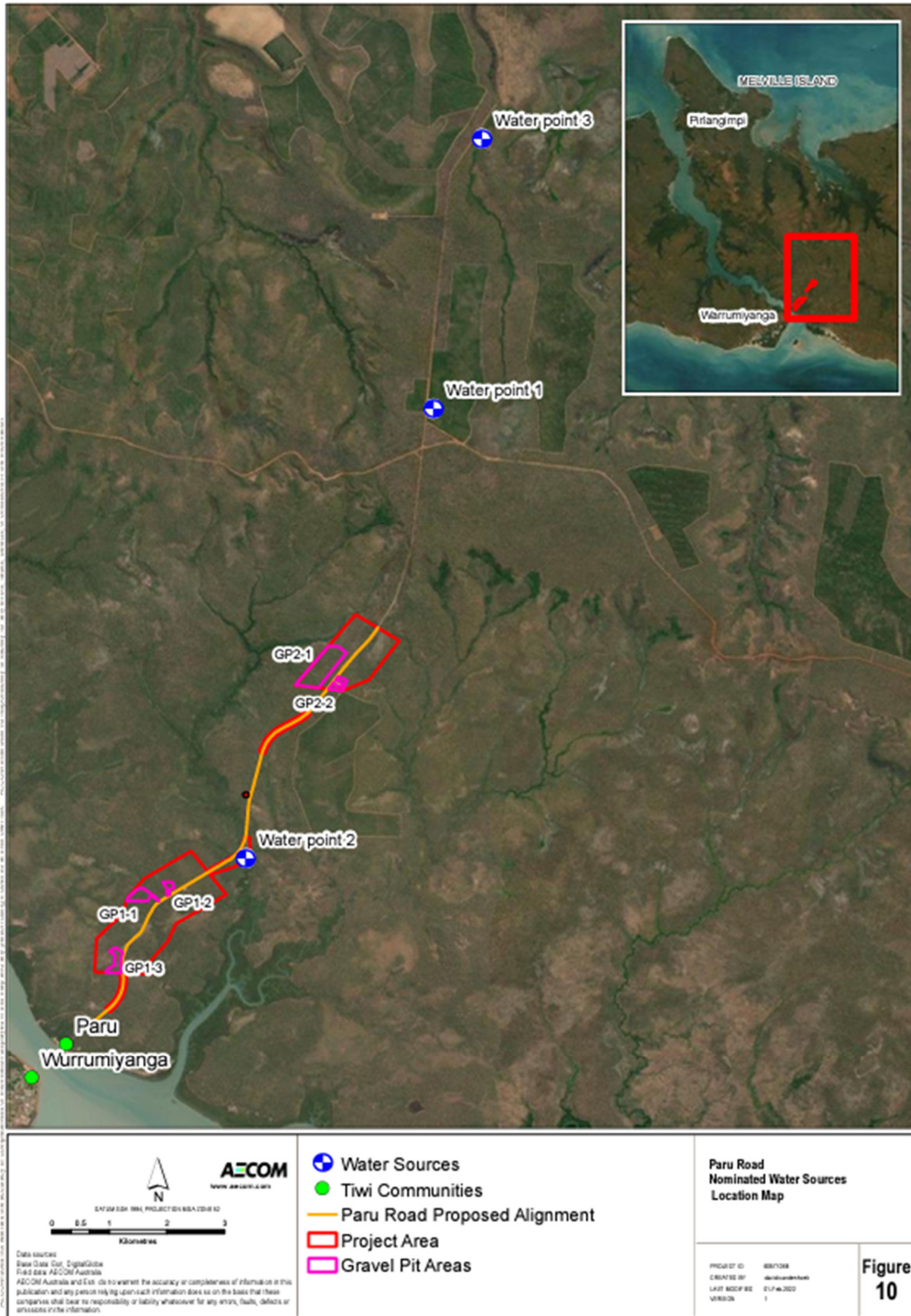


Figure 1 Location and extent of road works and gravel extraction

Spatial data depicting Figure 1 (Location and extent of action) are held by the Department of Environment, Parks and Water Security as follows:

NTEPA2020/0089-008~0007-08 Paru Road Spatial Data.

Appendix 2 – Matters taken into account during the assessment

Matters	NT EPA's consideration
<i>Objects of the EP Act</i>	
To protect the environment of the Territory	The proponent's referral, SER and this assessment report, including the NT EPA's recommended conditions for an environmental approval, provide detail about how the environment of the Territory would be protected from potentially significant environmental impacts that could occur as a result of implementation of the proposal.
To promote ecologically sustainable development so that the wellbeing of the people of the Territory is maintained or improved without adverse impact on the environment of the Territory	The NT EPA's consideration of the principles of ecologically sustainable development in relation to the proposal is addressed below.
To recognise the role of environmental impact assessment and environmental approval in promoting the protection and management of the environment of the Territory	The NT EPA recognises the importance of the environmental impact assessment and approval processes in the protection and management of the environment of the Territory. The NT EPA has assessed the potential environmental impacts of the proposal to inform an environmental approval decision by the Minister that, in the NT EPA's view, promotes the protection and management of the Territory.
To provide for broad community involvement during the process of environmental impact assessment and environmental approval	The NT EPA's public consultation undertaken during its assessment of the proposal provides for community involvement during the environmental impact assessment process. The proponent's ongoing consultation with the TLC and TIRC also provided for community involvement during the environmental impact assessment and approval process.
To recognise the role that Aboriginal people have as stewards of their country as conferred under their traditions and recognised in law, and the importance of participation by Aboriginal people and communities in environmental decision-making processes.	The NT EPA recognises the role of Aboriginal people as stewards of their country and the importance of participation by Aboriginal people and communities in environmental decision-making. The proponent has consulted and engaged with Tiwi organisations and businesses to maximise Aboriginal employment and training opportunities. Opportunities exist for the proposal workforce to employ the Tiwi Rangers in site demarcation, fauna spotting and monitoring activities, while road construction and maintenance actions will include Tiwi contractors and staff to enable positive environmental outcomes during and post construction.

Matters	NT EPA's consideration
<i>Principles of ecologically sustainable development</i>	
<p>Decision-making principle</p> <p>(1) Decision-making processes should effectively integrate both long-term and short-term environmental and equitable considerations.</p> <p>(2) Decision-making processes should provide for community involvement in relation to decisions and actions that affect the community.</p>	<p>The NT EPA has considered the decision-making principle in its assessment and has had particular regard to this principle in its assessment of terrestrial ecosystems and inland water environmental quality.</p> <p>The NT EPA notes the interconnectedness between environmental factors and recognises that the mitigation measures to avoid and minimise impacts on hydrological processes and inland water environmental quality is likely to reduce the significance of impacts on other factors including terrestrial and aquatic ecosystems.</p> <p>The NT EPA acknowledges that design requirements are a combination of the application of the environmental decision-making hierarchy under section 26 of the EP Act, the waste management hierarchy under section 27 of the EP Act, and the principles of ecological sustainable development.</p> <p>The NT EPA has recommended conditions for environment protection outcomes to be achieved through design, construction and rehabilitation phases of the proposal.</p> <p>The NT EPA considers that its environmental impact assessment and recommended conditions for an environmental approval have identified and mitigated both short-term and long-term environmental impacts, and that this has not resulted in any compromise between short and long term environmental and equitable considerations.</p> <p>The broader community has been provided the opportunity for involvement in the environmental impact assessment process during the NT EPA's public consultation on the proposal. The Tiwi community has maintained involvement with decision making process through proponent led engagement with the TLC and TIRC. All submissions received have been taken into account in the preparation of this report and the recommended conditions to inform the Minister's decision on environmental approval.</p>
<p>Precautionary principle</p> <p>(1) 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 was considered by the NT EPA when assessing the impacts of the proposal on the five key environmental factors.</p> <p>The proponent has identified appropriate measures to avoid or minimise impacts on the environment.</p> <p>The NT EPA has considered these measures during its assessment and has recommended conditions for environment protection outcomes to be achieved. From its assessment of this</p>

Matters	NT EPA's consideration
<p>(2) Decision-making should be guided by:</p> <p>(a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and</p> <p>(b) an assessment of the risk-weighted consequences of various options.</p>	<p>proposal the NT EPA has concluded that the environmental values will be protected provided its recommended conditions, and the proponent's commitments, are implemented.</p> <p>The proposal may result in some irreversible impacts on terrestrial flora and fauna associated with loss of vegetation from clearing; however, those impacts are not considered significant.</p>
<p>Principle of evidence-based decision-making</p> <p>Decisions should be based on the best available evidence in the circumstances that is relevant and reliable.</p>	<p>The NT EPA has considered the available evidence during the course of its assessment of the proposal, and this scientific and other evidence provides the foundation for its decision making and recommended conditions. The evidence made available to the NT EPA during the course of the assessment was adequate to inform the NT EPA's recommendation to the Minister.</p> <p>Where the NT EPA considered that further evidence is required to inform the management of potentially significant impacts on the environment, the NT EPA has recommended conditions requiring the proponent to demonstrate how impacts would be effectively avoided and/or mitigated.</p>
<p>Principle of intergenerational and intragenerational equity</p> <p>The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of present and future generations.</p>	<p>The NT EPA acknowledges that it is important to protect the sensitive environmental and water resource values of the Tiwi Islands for the benefit of future generations. It considers that the recommended conditions for an environmental approval would provide an appropriate degree of protection for these values and not constrain the ability of future generations to continue to access the biodiversity and water resources for a range of beneficial uses.</p> <p>Rehabilitation and closure of the proposal to maintain biodiversity and water resources would ensure that environmental quality is maintained into the future.</p> <p>The NT EPA has considered the principle of intergenerational equity and intragenerational equity in its assessment. From the assessment of this proposal the NT EPA has concluded that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.</p>
<p>Principle of sustainable use</p> <p>Natural resources should be used in a manner that is sustainable, prudent, rational, wise and appropriate.</p>	<p>The NT EPA acknowledges the importance of sustainable use of resources and has considered this principle during the environmental impact assessment process. It considers that this principle is closely linked to the principles of intergeneration and intragenerational equity, and conservation of biological diversity and ecological integrity.</p>

Matters	NT EPA's consideration
<p>Principle of conservation of biological diversity and ecological integrity</p> <p>Biological diversity and ecological integrity should be conserved and maintained.</p>	<p>This principle was considered by the NT EPA when assessing the impacts of the proposal on the environmental values of the receiving environment. In considering this principle, the NT EPA notes that terrestrial ecosystems and inland water environmental quality could be significantly impacted by the proposal if appropriate measures were not implemented to avoid and mitigate impacts. The assessment of these impacts is provided in this report.</p> <p>Biological diversity and ecological integrity are likely to be conserved due to the avoidance, minimisation and mitigation measures that will be implemented by the proponent and its contractor, and the NT EPA's recommended conditions to ensure that environmental protection outcomes are achieved.</p> <p>From its assessment of this proposal the NT EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.</p>
<p>Principle of improved valuation, pricing and incentive mechanisms</p> <p>(1) Environmental factors should be included in the valuation of assets and services.</p> <p>(2) Persons who generate pollution and waste should bear the cost of containment, avoidance and abatement.</p> <p>(3) Users of goods and services should pay prices based on the full life cycle costs of providing the goods and services, including costs relating to the use of natural resources and the ultimate disposal of wastes.</p> <p>(4) Established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, which enable persons best placed to maximise benefits or minimise costs to develop</p>	<p>This principle was considered by the NT EPA when assessing the impacts of the proposal.</p> <p>The NT EPA notes that the proponent would adhere to DIPL Specifications for Environmental Management²⁴ which includes provisions to manage waste disposal and prevent environmental harm during road construction activities.</p>

²⁴ DIPL [Standard specifications for environmental management](#)

Matters	NT EPA's consideration
solutions and responses to environmental problems.	
<i>Environmental decision-making hierarchy</i>	
<p>(1) In making decisions in relation to actions that affect the environment, decision-makers, proponents and approval holders must apply the following hierarchy of approaches in order of priority:</p> <ul style="list-style-type: none"> (a) ensure that actions are designed to avoid adverse impacts on the environment; (b) identify management options to mitigate adverse impacts on the environment to the greatest extent practicable; (c) if appropriate, provide for environmental offsets in accordance with this Act for residual adverse impacts on the environment that cannot be avoided or mitigated. 	<p>In its assessment of the proposal, the NT EPA considered the extent to which the proponent has applied the environmental decision-making hierarchy in its design of the proposal and the proposed measures to avoid and then mitigate significant impacts. The NT EPA is satisfied that this hierarchy has been applied appropriately to avoid and/or mitigate impacts and has recommended conditions to support the proponent's commitments.</p> <p>The NT EPA recognises the proponent's application of the environmental decision-making hierarchy extends to its contractor during implementation and closure of the proposal.</p> <p>The NT EPA did not identify any residual impacts that would require offsetting.</p>
<p>(2) In making decisions in relation to actions that affect the environment, decision-makers, proponents and approval holders must ensure that the potential for actions to enhance or restore environmental quality is identified and provided for to the extent practicable.</p>	<p>The proposal is located in an area with high natural quality and biodiversity value. Proposed remediation actions to rehabilitate gravel pits and decommissioned roads, as well as improve drainage and erosion controls, may restore the site and adjacent environmental quality if undertaken successfully.</p> <p>The NT EPA has recommended conditions requiring rehabilitation and closure of the site to ensure that environmental quality is restored to meet the NT EPA's objectives.</p>
<i>Waste management hierarchy</i>	

Matters	NT EPA's consideration
<p>(1) In designing, implementing and managing an action, all reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</p> <p>(2) For subsection (1), waste should be managed in accordance with the following hierarchy of approaches in order of priority:</p> <ul style="list-style-type: none"> (a) avoidance of the production of waste; (b) minimisation of the production of waste; (c) re-use of waste; (d) recycling of waste; (e) recovery of energy and other resources from waste; (f) treatment of waste to reduce potentially adverse impacts; (g) disposal of waste in an environmentally sound manner. 	<p>The NT EPA has considered the waste management hierarchy in its assessment and has had particular regard to this principle in its assessment of inland water environmental quality.</p> <p>The NT EPA is satisfied that the short duration and low magnitude of impacts together with the proponent's commitments in DIPL standard specifications for environmental management will ensure compliance with the waste management hierarchy.</p>
<i>Ecosystem-based management</i>	
<p>Management that recognises all interactions in an ecosystem, including ecological and human interactions.</p>	<p>The NT EPA acknowledges the importance of ecosystem-based management for achieving both sustainable development and biodiversity protection goals. With consideration of the links between inland waters (surface water and groundwater inputs), aquatic ecosystems, terrestrial ecosystems, communities and economy, the NT EPA also considered the connections and interactions between parts of the environment to inform a holistic view of impacts to the whole environment.</p> <p>The NT EPA formed the view that the impacts from this proposal can be managed to be consistent with the NT EPA's environmental factors and objectives.</p>

Matters	NT EPA's consideration
<i>The impacts of a changing climate</i>	
The effects of a changing climate on the proposal and resilience of the proposal to a changing climate	<p>The NT EPA considered the life of the proposal in the context of resilience to climate change, and how climate change may impact the proposal. The NT EPA had regard to measures and controls relating to extreme weather events such as flooding and high intensity rain events. The NT EPA considered that specific conditions did not need to be recommended to address this requirement. The NT EPA considered that conditions set for erosion and sediment control addressed the effects of a changing climate and no further conditions are necessary to address this requirement. The NT EPA had regard to this matter during its assessment of the proposal.</p>

Appendix 3 – Environmental impact assessment timeline

Date	Assessment stages
19 May 2021	Referral information received
27 May 2021	Referral information accepted
1 to 29 June 2021	Submission period on referral information (informal extension to 6 July 2021 due to CHO direction interrupting workforce)
13 July 2021	NT EPA decided environmental impact assessment required – assessment by supplementary environmental report (SER)
26 July 2021	Direction to provide additional information in the SER issued
3 February 2022	SER received
8 February to 14 March 2022	Submission period on SER
11 May to 3 June 2022	Consultation with proponent and statutory decision maker
8 June 2022	Statutory timeframe for the NT EPA's assessment report to be provided to the Minister for Environment, Climate Change and Water Security
30 business days after receiving the NT EPA's assessment report	Minister's decision on environmental approval due (if the Minister does not make a decision within 30 business days after receiving the assessment report the Minister is taken to have accepted the NT EPA's recommendation for approval).